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Examining relationships of intimate partner violence and food insecurity with HIV-related risk factors among young pregnant Liberian women

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Abstract

Gender inequities place women at an increased risk for HIV acquisition, and this association may particularly disenfranchise young pregnant women. Intimate partner violence (IPV) and food insecurity may contribute to gender differences in power, thereby influencing HIV disparities between women and men. Factors influencing gender disparities in HIV are unique and country-specific within sub-Saharan Africa, yet these factors are understudied among women in Liberia. This paper sought to examine the unique contributions and intersections of intimate partner violence (IPV) and food insecurity with HIV-related risk factors among young pregnant women in Liberia. Between March 2016 and August 2016, cross-sectional data collected from 195 women aged 18–30, residing in Monrovia, Liberia who were receiving prenatal services were used to examine the independent and interaction effects of IPV and food insecurity on HIV-related risk factors (i.e., sexual partner concurrency, economically-motivated relationships). IPV (31.3%) and food insecurity (47.7%) were prevalent. Young women who experience IPV are more likely to report food insecurity ($p < 0.05$). Young women who experienced IPV and food insecurity were more likely to start a new relationship for economic support ($ps < 0.05$). Young women who experience IPV and food insecurity were more likely to report engaging in transactional sex ($ps < 0.05$). There were no significant interaction effects between IPV and food insecurity ($ps > 0.05$). IPV and food insecurity each uniquely heighten young Liberian women's vulnerability to HIV. Intervention and policy efforts are need to promote and empower women's sexual health through integrated sexual and reproductive health services, and reduce IPV and food insecurity among pregnant Liberian women.

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Keywords

intimate partner violence; sexual risk; HIV; women; Liberia

Introduction

Women in sub-Saharan Africa experience the greatest burden of the HIV/AIDS epidemic (UNAIDS, 2016). Recent research suggest that gender inequities influencing women's HIV vulnerability are country-specific (Sia et al., 2016), yet some sub-Saharan countries have received little attention in HIV prevention research. Liberia has received little attention in HIV prevention and further research is warranted. The HIV prevalence is 1.5 times higher among women than men and young Liberian women (aged 15–24) are three times more likely to be infected with HIV than young men (Kiazolu, Cooper, Jones, Garbo, & Kiazolu, 2016). Young pregnant women, one of the largest subpopulations in Liberia, have increased risk for morbidity and mortality because of HIV/AIDS (Loaiza & Liang, 2013) and mother-to-child transmission accounts for more than 90% of new infections among children.

Intimate partner violence (IPV) and food security are possible gender inequities placing young pregnant Liberian women at greater risk for the sexual transmission of HIV. Gender norms contribute to power differentials, which can lead to men's use of IPV and create challenges for safe sex negotiation (Jewkes & Morrell, 2010). Women also engage in transactional sex in order to obtain food for themselves and their families (Miller et al., 2011; Weiser et al., 2007) and primary partners use food to coerce women into unprotected sex. These relationships are salient for Liberian women because violent conflict within a country legitimizes pro-violent attitudes against women (Callands, Sipsma, Betancourt, & Hansen, 2013) and there is a high prevalence of food insecurity in Liberia (Kakwani & Son, 2016). Given the research suggesting a strong relationship between IPV and food insecurity, women who experience both IPV and food insecurity may be more vulnerable to HIV acquisition. Thus, this study examined the independent and interactive effects of IPV and food insecurity on HIV-related risk factors (i.e., sexual partner concurrency, economically-motivated relationships) among young pregnant Liberian women.

Methods

One hundred and ninety-five pregnant women in Liberia were recruited from a community health clinic located in Monrovia. Between March 2016 and August 2016, pregnant women who received prenatal care from the community health clinic were referred by a clinic staff. A 10-minute screener was administered to determine eligibility. A research assistant administered the screening and subsequent assessment questions using a computer-assisted personal interview program. Women were eligible if: (a) received prenatal services from the community health clinic; (b) age 18 – 30 years old; (c) residing in Monrovia; (d) gestational age between 13 and 24 weeks; and (e) no pregnancy-related medical problems. If eligible, research assistant obtained consent before administering the 90-minute questionnaire. Of the 199 women referred by a clinic staff, 197 were eligible, 195 women were enrolled in the study, 2 refused to participate. Participants were remunerated \$9 USD. Participation was

voluntary, confidential, and healthcare services were not affected by participation. All study procedures were approved by the both U.S. (IRB00000063) and Liberian-based Institutional Review Board (FWA 00004853; Organization number IOR0004203).

IPV, experiences of physical and/or sexual abuse in any intimate relationship in her lifetime, was assessed using an item from the Conflict Tactics Scale 2-Short form (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and 10 items from the Sexual Experiences Survey (Koss & Oros, 1982). An affirmative answer to any form of violence was coded as experiencing IPV. Food insecurity, limited or uncertain access to food in her lifetime, was assessed using an item from the validated and commonly used Harvard Trauma Questionnaire (Mollica et al., 1992): “Do you get hungry and have no food to eat or water to drink?” “Yes” was coded as experiencing food insecurity.

Four HIV-related risk factors were assessed: 1) sexual partner concurrency; 2) gaining economic support by staying in an undesired relationship, 3) starting a new relationship for economic support, and 4) engaging in transactional sex. Sexual partner concurrency was assessed by asking “Is your partner sleeping outside (with other men or women)?” “Yes” was coded as sexual partner concurrency. Staying in a relationship, starting a new relationship, and engaging in transactional sex for economic support was assessed using the 9-item Transactional Sex scale (Dunkle, Wingood, Camp, & DiClemente, 2010). “Yes” were coded as: 1) staying in a relationship for economic support, 2) starting a new relationship for economic support, and 3) engaging in transactional sex.

Descriptive statistics, and chi-square and t-tests were performed to describe the sample and assess bivariate associations. Separate logistic regression models were conducted to examine associations between predictors and outcomes. An interaction term between IPV and food insecurity was entered into the models to test moderation. Covariates significantly associated with any predictor at the $p < 0.05$ level were included in the adjusted models. All analyses were conducted using SAS 9.4 (SAS Institute, Cary, NC).

Results

The average age was 22.6 years ($SD=3.67$ years), 71 women (36.6%) had at least a high school education, and 32.3% were working (Table 1). The majority (89.7%) reported being in a relationship and 49.2% had living children. One in three (31.3%) women reported IPV and 47.7% women reported food insecurity in their lifetime. Food insecurity differed by education, and employment and relationship status ($p < 0.05$).

There were significant associations between IPV and food insecurity with HIV-related risk factors (Table 3). Women who experience IPV had a greater odds of food insecurity ($AOR=2.55$, 95% $CI=1.32$, 4.94). Women who experience IPV ($AOR=6.33$, 95% $CI=2.94$, 13.62) and food insecurity ($AOR=2.85$, 95% $CI=1.29$, 6.30) had a greater odds of starting a new relationship for economic support and food insecurity. Women who experience IPV ($AOR=6.65$, 95% $CI=3.06$, 14.44) and food insecurity ($AOR=2.89$, 95% $CI=1.30$, 6.45) had a greater odds of engaging in transactional sex.

IPV and food insecurity were not significantly associated with sexual partner concurrency ($p>0.05$). Also, the effect of the IPV and food insecurity interaction term was nonsignificant for each HIV-related risk factor ($p>0.05$).

Discussion

The present study examined the effects of IPV and food insecurity with HIV-related risk factors among young pregnant Liberian women. These findings highlight the importance of IPV and food insecurity experiences as HIV risk factors among young pregnant Liberian women.

The role of economically motivated relationships among young pregnant Liberian women is important. Research on transactional sex in Liberia focuses on youth (Atwood et al., 2012), and our findings demonstrate that this experience is prevalent among young adult women. Also, experiencing IPV and food insecurity were associated with transactional sex and starting a new relationship for economic support. Abusive partners can impact women's ability to secure economic resources (de Moraes, Marques, Reichenheim, de Freitas Ferreira, & Salles-Costa, 2016), which could increase the likelihood of engaging in transactional sex. Women in food-insufficient homes may engage in transactional sex and start new relationships to provide food for themselves and their families (Miller et al., 2011). Given the high estimates of maternal deaths (Loaiza & Liang, 2013), young pregnant Liberian women might be engaging in economically-motivated relationships in order to maintain optimal maternal-child health.

Consistent with previous research (de Moraes et al., 2016), our findings indicate that women who experience IPV had a greater odds of food insecurity. The health consequences of IPV such as depression and injuries, could disrupt women's attainment of economic resources for food. Conversely, food insecurity could exacerbate power differentials between women and men, such that women may feel that their sexual decisions are constrained by dependence on their male partners for food and other resources (Miller et al., 2011).

There were no significant interaction effects on HIV-related risk factors. These findings strengthen evidence that both IPV and food insecurity uniquely impact women's HIV-related risk. HIV risk reduction interventions for Liberian women should target components to address the impact of IPV and food insecurity on women's sexual decision-making.

Several study limitations should be noted. The cross-sectional data limits causal inferences about IPV, food insecurity, and HIV-related risk factors. A bidirectional relationship between IPV, transactional sex, and food insecurity could exist (Dunkle et al., 2010). These analyses relied on self-reported data, and subject to underreporting of IPV, food insecurity, and HIV-related risk factors. This is concern is minimal because if underreporting was present, our estimates would be biased towards the null. Further, our nonsignificant interaction might be an artifact our sample size (<200). Our sample comprised pregnant Liberian women, and thus, might not be generalizable to non-pregnant women. Multiple methods are used to measure food insecurity and our study used a proxy measure, a common tool for research in developing countries (Webb et al., 2006). The severity of food insecurity was not examined

but our food insecurity prevalence is consistent with Liberia's estimated 2016 population-level prevalence (49%, (Kakwani & Son, 2016)).

Conclusion

Our findings have implications for interventions. HIV risk reduction interventions targeting young Liberian women need to address both IPV and food insecurity in the context of relationships with male partners. IPV may affect Liberian women's implementation of risk reduction behaviors (Callands et al., 2013) and this is true for Liberian women who experience food insecurity. Therefore, interventions should use an empowerment framework (Callands et al., 2013). Further, studies in high-income countries show that women who experience IPV (Willie, Kershaw, Campbell, & Alexander, 2017; Willie, Stockman, Overstreet, & Kershaw, 2017) are accepting of pre-exposure prophylaxis (PrEP), a potential woman-controlled, biomedical HIV prevention option. Thus, additional research is needed to understand the acceptability of PrEP among Liberian women among pregnant women. Moreover, for Liberian women, gender equitable solutions that reduce IPV and food insecurity by eliminating violence against women, and providing equal access to economic resources are needed. Structural interventions designed to promote egalitarian gender may reduce IPV. Collectively, policy and programmatic initiatives should consider the role of IPV and food insecurity in women's HIV risk.

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References

- Atwood KA, Kennedy SB, Shamblen S, Taylor CH, Quaqua M, Bee EM, Dennis B. Reducing sexual risk taking behaviors among adolescents who engage in transactional sex in post-conflict Liberia. *Vulnerable children and youth studies*. 2012; 7(1):55–65. [PubMed: 23626654]
- Callands TA, Sipsma HL, Betancourt TS, Hansen NB. Experiences and acceptance of intimate partner violence: associations with sexually transmitted infection symptoms and ability to negotiate sexual safety among young Liberian women. *Culture, health & sexuality*. 2013; 15(6):680–694.
- de Moraes CL, Marques ES, Reichenheim ME, de Freitas Ferreira M, Salles-Costa R. Intimate partner violence, common mental disorders and household food insecurity: an analysis using path analysis. *Public Health Nutrition*. 2016:1–10.
- Dunkle KL, Wingood GM, Camp CM, DiClemente RJ. Economically motivated relationships and transactional sex among unmarried African American and white women: results from a US national telephone survey. *Public Health Reports*. 2010; 125(4_suppl):90–100. [PubMed: 20626196]
- Jewkes R, Morrell R. Gender and sexuality: emerging perspectives from the heterosexual epidemic in South Africa and implications for HIV risk and prevention. *Journal of the International AIDS Society*. 2010; 13(1):6. [PubMed: 20181124]
- Kakwani, N., Son, HH. *Social Welfare Functions and Development* Springer; 2016 Measuring food insecurity: Global estimates; 253-294
- Kiazolu, MV., Cooper, SA., Jones, MJ., Garbo, DJT., Kiazolu, MV. Liberia HIV & AIDS Response Progress Report Liberia: NAC; UNAIDS; NACP; 2016:1-54
- Koss MP, Oros CJ. Sexual Experiences Survey: a research instrument investigating sexual aggression and victimization. *Journal of Consulting and Clinical Psychology*. 1982; 50(3):455. [PubMed: 7096751]

- Loaiza, E., Liang, M. Adolescent pregnancy: a review of the evidence New York: UNFP; 2013
- Miller CL, Bangsberg DR, Tuller DM, Senkungu J, Kawuma A, Frongillo EA, Weiser SD. Food insecurity and sexual risk in an HIV endemic community in Uganda. *AIDS and Behavior*. 2011; 15(7):1512–1519. [PubMed: 20405316]
- Mollica RF, Caspi-Yavin Y, Bollini P, Truong T, Tor S, Lavelle J. The Harvard Trauma Questionnaire: validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *The Journal of nervous and mental disease*. 1992; 180(2):111–116. [PubMed: 1737972]
- Sia D, Onadja Y, Hajizadeh M, Heymann SJ, Brewer TF, Nandi A. What explains gender inequalities in HIV/AIDS prevalence in sub-Saharan Africa? Evidence from the demographic and health surveys. *BMC Public Health*. 2016; 16(1):1136. [PubMed: 27809824]
- Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The revised conflict tactics scales (CTS2) development and preliminary psychometric data. *Journal of Family Issues*. 1996; 17(3):283–316.
- UNAIDS Global AIDS Update Geneva, Switzerland: 2016 1-13
- Webb P, Coates J, Frongillo EA, Rogers BL, Swindale A, Bilinsky P. Measuring household food insecurity: why it's so important and yet so difficult to do. *The Journal of nutrition*. 2006; 136(5):1404S–1408S. [PubMed: 16614437]
- Weiser SD, Leiter K, Bangsberg DR, Butler LM, Percy-de Korte F, Hlanze Z, Heisler M. Food insufficiency is associated with high-risk sexual behavior among women in Botswana and Swaziland. *PLoS Medicine*. 2007; 4(10):e260.
- Willie T, Kershaw T, Campbell JC, Alexander KA. Intimate partner violence and PrEP acceptability among low-income, young black women: exploring the mediating role of reproductive coercion. *AIDS and Behavior*. 2017:1–9.
- Willie TC, Stockman JK, Overstreet NM, Kershaw TS. Examining the Impact of Intimate Partner Violence Type and Timing on Pre-exposure Prophylaxis Awareness, Interest, and Coercion. *AIDS and Behavior*. 2017; doi: 10.1007/s10461-017-1901-8

Table 1

Participant Characteristics (N=195).

	Total		IPV		Food Insecurity	
	N (%)		N (%)	p-value	N (%)	p-value
Overall	195 (100.0)	61 (31.3)			93 (47.7)	
Age (M, SD)	22.6 (3.67)	22.7 (3.89)	.73		22.81 (3.70)	.51
Education			.52			.05
No School	16 (8.25)	6 (37.5)			10 (62.5)	
Primary	57 (29.4)	21 (36.8)			30 (52.6)	
Secondary	50 (25.8)	16 (32.0)			28 (56.0)	
High School or greater	71 (36.6)	18 (25.4)			25 (35.2)	
Employment			.12			<.01
Not Employed	132 (34.9)	46 (34.9)			72 (54.6)	
Employed	63 (32.3)	15 (23.8)			21 (33.3)	
Relationship Status			.09			<.01
In a relationship	175 (89.7)	58 (33.1)			78 (44.6)	
Not in a relationship	20 (10.3)	3 (15.0)			15 (75.0)	
Have Living Children			.54			<.03
Yes	96 (49.2)	32 (33.3)			53 (55.2)	
No	99 (50.8)	29 (29.3)			40 (40.4)	

M, mean, SD, standard deviation, IPV, intimate partner violence. p-values derived from chi-square and t tests.

Table 2
Prevalence of HIV-Related Risk Factors and Unadjusted Associations with IPV and Food Insecurity (N=195)

Economically Motivated Relationships					
	Food Insecurity	Sexual Partner Concurrency	Staying in Relationship	Starting New Relationship	Transactional Sex
Prevalence, N (%)	93 (47.7)	10 (5.1)	99 (51.3)	54 (28.3)	53 (27.8)
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
IPV	1.95 (1.05, 3.60) ***	0.22 (.03, 1.81)	1.51 (.82, 2.80)	7.04 (3.50, 14.15) ***	7.46 (3.69, 15.08) ***
Food Insecurity	--	1.71 (0.44, 6.65)	1.07 (.61, 1.88)	3.35 (1.71, 6.53) ***	3.20 (1.64, 6.25) ***

IPV, intimate partner violence; OR = odds ratio; CI= confidence interval. p<.05;

**
p<.01;

p<.001.

Table 3

Adjusted Associations with HIV-Related Risk Factors (N=195)

	Economically Motivated Relationships				
	Food Insecurity	Sexual Partner Concurrency	Staying In Relationship	Starting New Relationship	Transactional Sex
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Age					
	1.03 (.92, 1.15)	1.16 (.70, 4.31)	.99 (.89, 1.11)	1.08 (.94, 1.24)	1.07 (.94, 1.23)
Education					
No Education	1.00	1.00	1.00	1.00	1.00
Primary Education	1.04 (.29, 3.73)	.33 (.04, 2.99)	2.79 (.83, 9.43)	.32 (.08, 1.30)	.29 (.07, 1.22)
Secondary Education	1.07 (.29, 3.90)	.41 (.04, 3.95)	2.43 (.69, 8.50)	.43 (.11, 1.72)	.36 (.09, 1.47)
High School and higher	.39 (.11, 1.39)	.27 (.03, 2.51)	.65 (.19, 2.19)	.16 (.04, .69)**	.15 (.03, .64)**
Employment Status					
Working	.29 (.14, .60)***	.76 (.30, 1.91)	1.05 (.50, 2.18)	.45 (.18, 1.14)	.49 (.19, 1.24)
Not Working	1.00	1.00	1.00	1.00	1.00
Relationship Status					
In A Relationship	.15 (.04, .48)***	--	8.65 (2.28, 32.85)***	3.04 (.71, 12.98)	5.22 (.99, 27.65)
Not In A Relationship	1.00	--	1.00	1.00	1.00
Living Children					
Yes	1.84 (.82, 4.13)	.59 (.21, 1.67)	1.72 (.76, 3.88)	.52 (.19, 1.44)	.48 (.17, 1.35)
No	1.00	1.00	1.00	1.00	1.00
IPV					
Yes	2.55 (1.32, 4.94)***	2.85 (.99, 8.16)	1.18 (.59, 2.36)	6.33 (2.94, 13.62)***	6.65 (3.06, 14.44)***
No	1.00	1.00	1.00	1.00	1.00
Food Insecurity					
Yes	--	1.74 (.70, 4.31)	.99 (.50, 1.94)	2.85 (1.29, 6.30)**	2.89 (1.30, 6.45)**
No	--	1.00	1.00	1.00	1.00

IPV, intimate partner violence; AOR = adjusted odds ratio; CI= confidence interval. p<.05;

p<.01;

.100>d

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