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Intimate partner violence and HIV risk factors among African American and African Caribbean women in clinic-based settings

Jamila K. Stockman^{a,*}, Marguerite B. Lucea^b, Jessica E. Draughon^b, Bushra Sabri^b, Jocelyn C. Anderson^b, Desiree Bertrand^c, Doris W. Campbell^c, Gloria B. Callwood^c, and Jacquelyn C. Campbell^b

^aDivision of Global Public Health, Department of Medicine, University of California, San Diego, La Jolla, CA ^bDepartment of Community Public Health, Johns Hopkins University School of Nursing, Baltimore, MD ^cCaribbean Exploratory (NIMHD) Research Center, University of the Virgin Islands, St. Thomas, US Virgin Islands

Abstract

Despite progress against intimate partner violence (IPV) and HIV/AIDS in the past two decades, both epidemics remain major public health problems, particularly among women of color. The objective of this study was to assess the relationship between recent IPV and HIV risk factors (sexual and drug risk behaviors, STIs, condom use and negotiation) among women of African descent. We conducted a comparative case-control study in women's health clinics in Baltimore, Maryland and St. Thomas and St. Croix, US Virgin Islands (USVI). Women aged 18–55 years who experienced physical and/or sexual IPV in the past two years (Baltimore, n=107; USVI, n=235) were compared to women who never experienced any form of abuse (Baltimore, n=207; USVI, n=119). Logistic regression identified correlates of recent IPV by site. In both sites, having a partner with concurrent sex partners was independently associated with a history of recent IPV (Baltimore, AOR: 3.91, 95% CI:1.79–8.55 and USVI, AOR: 2.25, 95% CI:1.11–4.56). In Baltimore, factors independently associated with recent IPV were lifetime casual sex partners (AOR: 1.99, 95% CI: 1.11–3.57), exchange sex partners (AOR: 5.26, 95% CI:1.92–14.42), infrequent condom use during vaginal sex (AOR: 0.24, 95% CI:0.08–0.72), and infrequent condom use during anal sex (AOR: 0.29, 95% CI:0.09–0.93). In contrast, in the USVI, having a concurrent sex partner (AOR: 3.33, 95% CI:1.46–7.60), frequent condom use during vaginal sex (AOR: 1.97, 95% CI:1.06–3.65), frequent condom use during anal sex (AOR: 6.29, 95% CI:1.57–25.23), drug use (AOR: 3.16, 95% CI:1.00–10.06), and a past-year STI (AOR: 2.68, 95% CI:1.25–5.72) were associated with recent IPV history. The divergent results by site warrant further investigation into the potential influence of culture, norms, and intentions on the relationships examined. Nonetheless, study findings support a critical need to continue the development and implementation of culturally tailored screening for IPV within HIV prevention and treatment programs.

Keywords

HIV/AIDS; intimate partner violence; Caribbean; African descent; women

*Corresponding author. jstockman@ucsd.edu.

Introduction

Despite progress against intimate partner violence (IPV) and HIV/AIDS in the past two decades, both epidemics remain major public health problems in the US and the Caribbean, particularly among women of color (Le Franc, Samms-Vaughan, Hambleton, Fox, & Brown, 2008; McFarlane, Groff, O'Brien, & Watson, 2005). US-based, nationally representative studies indicate that IPV victimization rates are consistently higher for African American women than their White counterparts (Black, et al., 2010; Taft, Bryant-Davis, Woodward, Tillman, & Torres, 2009; West, 2004). Additionally, in a population-based study of three Caribbean countries with predominantly Black respondents, over two-thirds (67%) of women reporting experiences of violence reported it being perpetrated by an intimate partner (Le Franc et al., 2008).

Similarly, HIV/AIDS has had a disproportionate impact on African American and African Caribbean women. In 2008, the rate of new HIV infections for African American women was about 19 times as high as that of White women and about four times that of Hispanic/Latina women (Centers for Disease Control and Prevention (CDC), 2011). Urban settings, such as Baltimore, MD, have been hard-hit by HIV. Per the 2010 US Census, Baltimore's population is 64% non-Hispanic Black, yet this group comprises 86% of the HIV cases in the city (US Census Bureau, 2012; Maryland Department of Health and Mental Hygiene, 2010). The Caribbean has the highest level of HIV prevalence outside sub-Saharan Africa, with women comprising about half of those infected (UNAIDS, 2009). The US Virgin Islands' (USVI) rate of reported AIDS cases was 31% higher than the US total overall in surveillance conducted among US states and dependent areas in 2007. In the USVI where 76% of the women are Black, 54–70% of HIV/AIDS cases are among Black women (Virgin Islands Department of Health, 2010; Virgin Islands Department of Health, 2008). The predominant HIV transmission mode for women in both settings is heterosexual contact.

These two epidemics are not independent of one another; areas of overlapping risk are well documented. IPV has been examined as both a precursor to HIV risk behaviors and HIV infection and a sequelae of testing and/or HIV seropositivity (Campbell et al., 2008; Gielen et al., 2007; Maman, Campbell, Sweat, & Gielen, 2000), although much research has been cross-sectional. Extant literature reports both recent and lifetime IPV being related to sexual risk taking behaviors, inconsistent condom use, and multiple partners (Cohen et al., 2000; Coker, 2007; Mittal, Senn, & Carey, 2011). Limited research has examined the different effects that timing of abuse may have on HIV risk behaviors. Research among minority populations in the US including Black women has shown that abused women are at increased risk for condom use inconsistency, having STIs, having partners with known HIV risks, and feeling worried about their own risk for HIV (El-Bassel et al., 2007; Gilbert, El-Bassel, Chang, Wu, & Roy, 2011; Surratt, 2007; Wu, El-Bassel, Witte, Gilbert, & Chang, 2003).

Recent research in South Africa has established a causal relationship between IPV and HIV risk and seroconversion, while considering issues of gender inequity, psychological distress, and risky male partners (Jewkes, Dunkle, Nduna, & Shai, 2010). The temporal relationship demonstrated that abused women and those with more gender inequity in their relationships were at higher risk for HIV infection. This landmark framework ascertains the causal link between IPV and HIV; however additional research is needed to validate the chronology and causality of the two epidemics in US populations. A growing body of literature also demonstrates intersections of substance abuse with HIV and IPV without clear consensus on findings but rather suggestions of complex reciprocal relationships (Meyer, Springer, & Altice, 2011).

As part of a larger study to examine IPV, health status and health care utilization among African American and African Caribbean women, we examined associations between recent IPV and HIV risk behaviors, STIs, and negotiation of sexual practices. We hypothesized in Baltimore, MD and the USVI (St. Thomas and St. Croix), geographic settings with high HIV rates among Black women, Black women who engaged in sexual and drug risk behaviors, had a recent STI, and poor negotiation of condom use would be more likely to report experiencing recent IPV. Such information can influence development of culturally tailored screening for IPV within HIV prevention programs.

Methods

Sample and procedure

Between 2009 and 2011, Black women in Baltimore, MD and St. Croix and St. Thomas, USVI were recruited into a comparative case-control study that examined abuse status and associated health outcomes. Women were recruited from primary care, prenatal or family planning clinics. Eligibility criteria were ages 18–55 years; having an intimate relationship within the past 2 years; identifying as African American, African Caribbean, or racial or ethnic heritage that included African descent; and ability to speak English in Baltimore and English or Spanish in the USVI. Women who reported abuse only by someone other than an intimate partner were ineligible. Interested participants provided written consent and were screened to determine their eligibility using audio-computer assisted self interview (ACASI). Cases were eligible women who reported lifetime and/or past two year experiences of physical, sexual, and/or psychological abuse by a current or former intimate partner and controls were non-abused eligible women selected from a computerized randomization process. Although women who experienced lifetime abuse were included in the overall study, this analysis (n=668) compares only those reporting abuse in the past two years (recent abuse) to non-abused controls. Enrolled participants completed additional questions via ACASI on sociodemographic characteristics, abuse history, HIV risk behaviors, STIs, and other health outcomes. Participants received a \$20 gift card upon completion of the interview. Institutional Review Boards at Johns Hopkins University and the University of the Virgin Islands approved the study protocol.

Measures

Dependent variable—Experiencing physical and/or sexual IPV in the past two years (recent IPV) was the dependent variable. Physical and sexual IPV were assessed using the Abuse Assessment Screen (Soeken, McFarlane, Parker, & Lominack, 1998) and the Severity of Violence Against Women Scale (Marshall, 1992). Women endorsing one or more items on these scales were classified as experiencing recent IPV. Select items on the AAS assessed within the past two years included, “being hit, slapped, kicked or physically hurt” and “being forced to have sex”. Select physical abuse items on the SVAWS assessed within the past year included, “being punched, choked, and use of a weapon”; sexual abuse items included, “being physically forced or verbally threatened to have sex”. Never-abused women composed the comparison group.

Independent variables—We assessed correlates in five domains for their associations with recent IPV: sociodemographic characteristics, sexual risk behaviors, STIs, condom use and negotiation, and substance use. Sociodemographics included age, education level, having a current partner, having children aged < 18 years, and current status of employment, medical insurance and pregnancy. We included ‘having a current partner’ versus ‘marital status’ as a more accurate indicator of current partner status regardless of being separated, divorced, widowed, or never married.

Sexual risk behaviors included three or more male sex partners in the past year, concurrent sex partners, a partner with concurrent sex partners, and a lifetime history of casual (i.e., hooking up with men from casually for sex) and/or exchange sex (i.e., sex in exchange for food, money, shelter or drugs) with male partners. The concurrent sex partnership measures were assessed using the direct question method versus overlapping start and end dates of sexual partnerships thereby reducing participant burden of an already lengthy survey, recall bias, and potential for missing data. A participant reporting having sex with other people during her current sexual relationship was classified as having concurrent partners. A partner with a concurrent sex partner was defined as the participant reporting a partner who engaged in sexual activity with someone else during the course of a sexual relationship with the participant.

Women self-reported whether they had an STI in the past year and identified one or more of the following STIs: HIV, herpes, syphilis, chlamydia, gonorrhea, or other. Due to low prevalence estimates of HIV, herpes, and syphilis, the STI measures were limited to any STI, chlamydia, and gonorrhea.

Condom use correlates included three questions on actual condom use: condom use at last vaginal, oral or anal sex, condom use during the last five vaginal sex acts, and condom use during the last five anal sex acts. Condom use negotiation variables were ever asking a partner to use a condom and ever refusing to have sex because a partner did not want to use a condom.

Substance use correlates included any drug use (e.g., street drugs, over-the-counter, drugs not prescribed or taken in a way that was not recommended) in the past year and current drinking behaviors measured by the AUDIT-C (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). The AUDIT-C consists of three questions with each scored on a scale of 0 to 4 and is used to identify persons who are hazardous drinkers. The final score was a summed score of the individual items. Higher scores were indicative of hazardous drinking behaviors.

Statistical analysis

We calculated the proportion of women who reported experiencing recent IPV and of women never experiencing abuse. Bivariate analyses were conducted using the Pearson's Chi-square or Fisher's exact tests for binary variables and t-tests and Wilcoxon's Rank Sum test for continuous normally and non-normally distributed variables, respectively. Logistic regression was used to examine the relationship between recent history of IPV and all correlates of interest. Adjusted odds ratios (AORs) and 95% confidence intervals (CIs) were computed. A backward stepwise regression manual procedure was used whereby all variables attaining significance levels less than 10% in bivariate models were considered for inclusion in the multivariate model. Variables were retained in the multivariate model if they were significant at the .05 level. The likelihood ratio test was then used to assess model fit. We assessed the association between IPV and HIV risk in separate models for each study site (Baltimore and the USVI).

Results

Characteristics of participants

By case-control study design, 51% (n=342) of the women included in this analysis reported recent IPV. In Baltimore, 107 women experienced recent IPV and 207 women were never abused. In the USVI, 235 women reported a recent IPV experience and 119 women had no abuse experiences. In Baltimore, the median age was 26.5 years (interquartile range [IQR], 22–34), 60% were unemployed and only 9% did not have medical insurance. Approximately

71% had children aged < 18 years living in the household, and 33% were currently pregnant. Almost 80% of women reported having a current partner. In the USVI, the median age was 26 years (IQR, 22–33), 48% were unemployed and 47% were also medically uninsured. Over three-fourths (76%) of women had children aged < 18 years and 25% were currently pregnant. Eighty-one percent reported having a current partner.

Correlates of recent IPV

Sociodemographic characteristics—In Baltimore, compared to non-abused women, women with a recent IPV experience more frequently reported having some college education (23% vs. 12%; $p=0.04$) and children (81% vs. 66%; $p<0.01$) (Table 1). In the USVI, women who experienced recent IPV were younger (median: 25; IQR, 22,31 vs. median: 28; IQR, 23,35) and less frequently reported having a current partner (76% vs. 91%; $p<0.001$) compared to their non-abused counterparts.

Sexual risk behaviors—In both Baltimore and the USVI, women with a recent IPV experience reported more frequently ever having casual (47% vs. 23%; $p<0.001$; 20% vs. 9%; $p=0.01$, respectively) and exchange sex partners (17% vs. 4%; $p<0.001$; 11% vs. 1%; $p<0.001$, respectively), multiple sex partners in the past year (31% vs. 19%; $p=0.01$; 19% vs. 8%; $p=0.01$, respectively), concurrent sex partners (28% vs. 14%; $p<0.01$; 21% vs. 8%; $p<0.01$, respectively), and a partner who has concurrent sex partners (22% vs. 8%; $p<0.001$; 23% vs. 13%; $p=0.02$, respectively) (Table 1).

Sexually transmitted infections—A history of STIs was associated with recent IPV among women in the USVI only. Compared to non-abused women, those with a recent IPV experience more frequently reported having had any STI (26% vs. 9%; $p<0.001$), Chlamydia (15% vs. 5%; $p<0.01$), and gonorrhea (8% vs. 1%; $p<0.001$), all in the past year (Table 1).

Condom use and negotiation—In Baltimore, women with a recent IPV experience were more likely to report not using condoms during their last sexual encounter than non-abused women (76% vs. 63%; $p=0.03$). Women who experienced recent IPV were less likely to always use condoms during the last 5 vaginal sex acts (7% vs. 18%; $p=0.01$) and less likely to sometimes use condoms during the last 5 anal sex acts (12% vs. 16%; $p=0.04$) compared to their non-abused counterparts. The two groups did not differ significantly in condom use negotiation practices.

In the USVI, women with a recent IPV experience were more likely to report sometimes using condoms during the last five vaginal (41% vs. 24%; $p=0.01$) and anal (37% vs. 8%; $p<0.01$) sex acts compared to their non-abused counterparts. These women were also more likely to have refused sex because a partner would not use a condom (44% vs. 33%), albeit at a $p=0.06$ level.

Substance use—In Baltimore, women experiencing recent IPV were more likely to have engaged in drug use in the past year (21% vs. 9%; $p<0.01$) and have a higher median AUDIT-C score than non-abused women. In the USVI, women with a recent history of IPV were also more likely to have engaged in drug use (12% vs. 3%; $p<0.01$) (Table 1).

Multivariate analysis

After adjusting for age, education, having a current partner, and having children < 18 years living in the household, both Baltimore and the USVI had only one sexual risk behavior in common that was independently associated with a history of recent IPV. Women with a partner who has had concurrent sex partners during the relationship were more likely to

report recent IPV (AOR: 3.91, 95% CI:1.79–8.55 in Baltimore and AOR: 2.25, 95% CI: 1.11–4.56 in USVI).

In Baltimore, other sexual and drug risk behaviors independently associated with a recent IPV history included having lifetime casual sex partners (AOR: 1.99, 95% CI: 1.11–3.57) and having lifetime exchange sex partners (AOR: 5.26, 95% CI:1.92–14.42). In contrast, women in the USVI reporting having concurrent sex partners (AOR: 3.33, 95% CI:1.46–7.60), and engaging in drug use in the past year (AOR: 3.16, 95% CI:1.00–10.06) were more likely to have a recent history of IPV. Women in the USVI reporting an STI in the past year were nearly three times more likely to report recent IPV (AOR: 2.68, 95% CI:1.25–5.72).

In Baltimore, women reporting always using condoms during the last five vaginal sex acts and sometimes using condoms during the last five anal sex acts had a lower odds of a recent history of IPV (AOR: 0.24, 95% CI:0.08–0.72; AOR: 0.29, 95% CI:0.09–0.93, respectively). In contrast, in the USVI those reporting sometimes using condoms during the last five vaginal sex acts and sometimes using condoms during the last five anal sex acts were more likely to have a recent history of IPV (AOR: 1.97, 95% CI:1.06–3.65; AOR: 6.29, 95% CI:1.57–25.23, respectively).

Discussion

We assessed associations between recent IPV experience and reported HIV risk factors among Black women in Baltimore, MD and St. Thomas and St. Croix, USVI. In our analysis, the women of Baltimore and USVI had only a few commonalities. The common independent sexual risk factor associated with recent IPV was the woman's partner having concurrent sex partners. No literature has previously examined this relationship specific to Black women in two different geographic settings with high rates of HIV, but previous studies in diverse settings (Dunkle et al., 2006; Raj et al., 2006; Raj, Reed, Welles, Santana, & Silverman, 2008; Silverman, Decker, Kapur, Gupta, & Raj, 2007) found that perpetrators of violence were more likely than non-violent men to have concurrent sexual partners. Although we are unable to ascertain if the current partner is the abuser, these findings are significant in light of the additional HIV/STI risk women with histories of recent IPV may face from their high-risk sexual partners.

Interestingly, we found women in Baltimore and the USVI were divergent in most of the HIV risk behaviors associated with recent IPV. Findings in Baltimore only support previous research (Campbell et al., 2008; Coker, 2007; Gielen et al., 2007) indicating that abused women also report engaging in riskier sexual practices, having casual and exchange sex partners. Also consistent with previous research (El-Bassel et al., 2007; Gielen et al., 2007; Gilbert et al., 2011; Wingood, DiClemente, & Raj, 2000), past-year drug use, having concurrent sex partners, and a past-year history of STIs were shown to be related to IPV in the USVI only. The most dramatic difference between sites concerned condom use. Supporting current literature (Mittal et al., 2011; Seth, Raiford, Robinson, Wingood, & DiClemente, 2010), abused women in Baltimore were less likely to report consistent condom use for recent vaginal sex acts or recent anal sex acts. However, in the USVI, abused women were twice as likely to use condoms at least semi-consistently for vaginal acts and more than six times as likely to use condoms for anal acts. This finding is surprising given the regional taboo on discussing sexuality including condom use, the lack of confidence in condom efficacy and the belief that condom use indicates distrust in partners (Bombereau & Allen, 2008). This finding, however, may be aligned with abused women in the USVI also being more likely to report both concurrent sex partners and semi-consistent condom use. As such, these women may be using condoms with partners outside of their current relationship

(Norman, 2003). However, we were unable to differentiate with whom they recently used condoms.

The divergent results raise several questions regarding the influence of culture, norms, and environment on the behaviors we examined. Although the USVI are a US territory, the customs and values are rooted heavily in Caribbean culture, with male dominance and distinct gender roles clearly evident in intimate relationships (Downer & Callwood, 2011). Equally important is the difference in the environment between both settings: Baltimore City is a more sprawling, urban area and the USVI is a more contained island setting. The role of culture and environment may influence the relationship between HIV risk and IPV.

The major limitation of this study is the reliance on self-report data; however, ACASI was used in order to maximize accurate reporting. We were unable to determine causality of whether IPV increased HIV risk or vice versa in this cross-sectional study. Furthermore, the structure of some questions, specifically those regarding condom negotiation and drug use, limited the analysis. For example, although the condom negotiation questions were specific to the most recent abusive partner (or current partner if never been abused), the individual questions simply stipulated “partner,” thereby limiting our ability to discern whether women were reporting condom negotiation with current partners, abusers, or casual/exchange sex partners. Looking forward, utilizing more precisely worded condom negotiation questions would be helpful. Our measure of drug use did not allow for assessment of individual types of drugs (i.e., crack, heroin, prescription drugs) or frequency of use, which would have been more informative in examining associations between substance use and IPV. Our understanding of the context of sexual risk behaviors was limited; including qualitative inquiry with HIV-positive and HIV-negative women who have experienced IPV would assist in providing context. Future research can ascertain whether results of this study are generalizable beyond Black women recruited from health clinics in Baltimore, MD and in the USVI.

Nevertheless, ours is one of the first studies to focus on the intersection of IPV and HIV among Black women in two culturally-distinct settings. Additionally, comparing women with a recent history of IPV to women who never experienced abuse allowed for examination of the increased HIV risk behaviors associated specifically with recent IPV. This study adds to the body of literature regarding the interaction between HIV and IPV in the Caribbean, as to date few studies have focused on this population.

IPV and HIV are widely recognized as public health problems with significant practice, research and policy implications. However, prevention strategies have generally focused on the problems individually without consideration of factors which serve to link the epidemics. Healthcare providers should identify and evaluate approaches that protect the safety of women when both IPV and HIV risk are present. Existing self-empowerment models that work well for women experiencing IPV should be evaluated for their utility in relationships where discordant HIV status exists. Also, providers must be knowledgeable of site relevant social and cultural determinants of women’s protective and risk behaviors including those of her male partner (El-Bassel, Caldeira, Ruglass, & Gilbert, 2009; Moreno, El-Bassel, & Morrill, 2007).

For several decades, health care organizations have recommended that women be routinely screened for IPV in health care settings, such as emergency departments, and this should extend to STD clinics. Successful practice models need to be developed that integrate screening and referral systems that support the health and welfare of women experiencing IPV and HIV risk.

Research aimed at identifying interventions to reduce risk factors for HIV among Black women experiencing IPV should be guided by theoretical frameworks and ecological perspectives that increase understanding of contextual, cultural and system factors that interact to increase or decrease IPV and HIV risk (Cavanaugh, Hansen, & Sullivan, 2010; El-Bassel et al., 2009; Gielen et al., 2007; Mikton, 2010). Prevention efforts must also focus on reducing male-perpetrated IPV and male HIV risk behaviors in intimate relationships. However, engaging couples through counseling may increase the injury potential for women also experiencing IPV, although recommended in HIV prevention programs.

Ultimately, creating policies that protect the interest of women at risk for or in abusive relationships is essential. For example, re-establishing the Office of Women's Affairs in the USVI would be an important mechanism for ensuring the health and welfare of women. Federal and state funding to support policies and programs to reduce IPV and related HIV/STIs would assist women on the mainland and on the islands. Communities can mobilize in making broad-reaching and concerted efforts to enforce extant policies and increase awareness and sensitivity to IPV and its relationship to STIs in all settings.

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Table 1
 Characteristics of women of African heritage by recent IPV history in Baltimore, MD and the US Virgin Islands, 2009–2011

	Total	Baltimore, MD		US/Virgin Islands			
	(n=668)	IPV (n=107)	No IPV (n=207)	p-value	IPV (n=235)	No IPV (n=119)	p-value
SOCIODEMOGRAPHICS							
Median age (IQR)	26 (22,33)	26 (22,32)	27 (21,36)	0.24	25 (22,31)	28 (23,35)	0.01
Education, n (%)							
No H.S. diploma	153 (23.0)	28 (26.2)	63 (30.7)	0.04	41 (17.5)	21 (17.8)	0.50
High school graduate	273 (41.1)	46 (43.0)	89 (43.4)		86 (36.8)	52 (44.1)	
Some college	149 (22.4)	25 (23.4)	25 (12.2)		71 (30.3)	28 (23.7)	
College graduate	89 (13.4)	8 (7.5)	28 (13.7)		36 (15.4)	17 (14.4)	
Currently unemployed, n (%)	356 (53.4)	67 (62.6)	121 (58.5)	0.48	108 (46.0)	60 (50.9)	0.39
Medically uninsured, n (%)	197 (29.6)	14 (13.1)	17 (8.3)	0.17	110 (46.8)	56 (47.5)	0.91
Has a current partner, n (%)	537 (80.4)	80 (74.8)	170 (82.1)	0.13	179 (76.2)	108 (90.8)	<0.001
Children < 18 years, n (%)	492 (73.7)	87 (81.3)	136 (65.7)	<0.01	185 (78.7)	84 (70.6)	0.09
Currently pregnant, n (%)	191 (28.6)	34 (31.8)	70 (33.8)	0.72	60 (25.5)	27 (22.7)	0.56
SEXUAL RISK BEHAVIORS							
3+ sex partners in past yr, n (%)	121 (18.9)	33 (31.1)	38 (18.8)	0.01	41 (18.6)	9 (8.0)	0.01
Ever had casual sex partners, n (%)	155 (23.2)	50 (46.7)	47 (22.7)	<0.001	47 (20.0)	11 (9.2)	0.01
Ever had exchange sex partners, n (%)	53 (7.9)	18 (16.8)	9 (4.4)	<0.001	25 (10.6)	1 (0.8)	<0.001
Concurrent sex partners, n (%)	118 (17.7)	30 (28.0)	28 (13.5)	<0.01	50 (21.3)	10 (8.4)	<0.01
A current partner who has concurrent sex partners, n (%)	110 (16.5)	24 (22.4)	16 (7.7)	<0.001	55 (23.4)	15 (12.6)	0.02
SEXUALLY TRANSMITTED INFECTIONS							
Any STI in past yr, n (%)	131 (19.6)	24 (22.4)	36 (17.4)	0.28	60 (25.5)	11 (9.2)	<0.001
Chlamydia in past yr, n (%)	76 (11.4)	14 (13.1)	22 (10.6)	0.51	34 (14.5)	6 (5.0)	<0.01
Gonorrhea in past yr, n (%)	30 (4.5)	5 (4.7)	6 (2.9)	0.48	18 (7.7)	1 (0.8)	<0.001
CONDOM USE/NEGOTIATION							
No condom use at last sex, n (%)	473 (72.0)	81 (75.7)	131 (63.3)	0.03	173 (74.6)	88 (77.9)	0.50

	Total		Baltimore, MD		US Virgin Islands		
	(n=668)	IPV (n=107)	No IPV (n=207)	p-value	IPV (n=235)	No IPV (n=119)	p-value
Condom use-last 5 vaginal sex acts, n (%)							
Never	336 (51.0)	66 (61.7)	95 (45.9)	0.01	105 (45.3)	70 (62.0)	0.01
Sometimes	230 (34.9)	34 (31.8)	75 (36.2)		94 (40.5)	27 (23.9)	
Always	93 (14.1)	7 (6.5)	37 (17.9)		33 (14.2)	16 (14.2)	
Condom use-last 5 anal sex acts, n (%)							
Never	171 (63.8)	38 (76.0)	48 (55.2)	0.04	53 (56.4)	32 (86.5)	<0.01
Sometimes	69 (25.8)	6 (12.0)	25 (28.7)		35 (37.2)	3 (8.1)	
Always	28 (10.5)	6 (12.0)	14 (16.1)		6 (6.4)	2 (5.4)	
Ever asked partner to use condom, n (%)	476 (71.8)	84 (78.5)	154 (74.4)	0.42	161 (68.8)	77 (67.0)	0.73
Ever refused sex because partner, n (%)would not use condom, n (%)	277 (42.1)	45 (42.1)	93 (45.2)	0.60	101 (43.7)	38 (33.3)	0.06
SUBSTANCE USE							
Drug use in past yr, n (%)	72 (10.9)	22 (20.6)	18 (8.7)	<0.01	28 (12.2)	4 (3.4)	<0.01
AUDIT-C score, median (IQR)	0 (0,2)	1 (0,2)	0 (0,2)	0.07	0 (0,2)	0 (0,2)	0.54

Table 2

Bivariate and multivariate logistic regression models of correlates of recent IPV among women of African heritage in Baltimore, MD and the US Virgin Islands, 2009–2011

	Baltimore, MD			US Virgin Islands		
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Ref	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Ref
SOCIODEMOGRAPHICS						
Median age (IQR)	0.99 (0.96–1.01)	0.99 (0.96–1.02)		0.97 (0.94–0.99)	0.95 (0.92–0.99)	
Education	Ref	Ref		Ref	Ref	
No H.S. diploma						Ref
High school graduate	1.20 (0.68–2.12)	1.31 (0.70–2.48)		0.87 (0.47–1.61)	0.71 (0.33–1.50)	
Some college	2.32 (1.14–4.72)	1.87 (0.82–4.24)		1.33 (0.68–2.61)	0.99 (0.44–2.22)	
College graduate	0.66 (0.27–1.64)	0.59 (0.21–1.65)		1.11 (0.51–2.41)	1.15 (0.47–2.82)	
Currently unemployed	1.19 (0.74–1.92)	---		0.84 (0.54–1.30)	---	
Medically uninsured	0.99 (0.64–1.54)	---		1.68 (0.80–3.56)	---	
Has current partner	0.65 (0.37–1.13)	0.35 (0.18–0.69)		0.33 (0.16–0.65)	0.20 (0.10–0.44)	
Children < 18 years	2.27 (1.29–3.99)	2.05 (1.06–3.98)		1.54 (0.93–2.55)	1.64 (0.89–3.03)	
Currently pregnant	0.91 (0.55–1.50)	---		1.17 (0.70–1.96)	---	
SEXUAL RISK BEHAVIORS						
3+ sex partners in past yr	1.98 (1.16–3.41)	---		2.58 (1.21–5.52)	---	
Ever had casual sex partners	2.99 (1.81–4.92)	1.99 (1.11–3.57)		2.46 (1.22–4.93)	---	
Ever had exchange sex partners	4.45 (1.92–10.29)	5.26 (1.92–14.42)		14.05 (1.88–104.99)	---	
Concurrent sex partners	2.49 (1.39–4.45)	---		2.95 (1.44–6.05)	3.33 (1.46–7.60)	
A partner who has concurrent sex partners	3.45 (1.74–6.83)	3.91 (1.79–8.55)		2.12 (1.14–3.94)	2.25 (1.11–4.56)	
SEXUALLY TRANSMITTED INFECTIONS						
Any STI in past yr	1.37 (0.77–2.45)	---		3.37 (1.70–6.69)	2.68 (1.25–5.72)	
Chlamydia in past yr	1.27 (0.62–2.59)	---		3.19 (1.30–7.82)	---	
Gonorrhea in past yr	1.64 (0.49–5.51)	---		9.78 (1.29–74.18)	---	
CONDOM USE/NEGOTIATION						

	Baltimore, MD			US Virgin Islands		
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)		Unadjusted OR (95% CI)	Adjusted OR (95% CI)	
No condom use at last sex	0.57 (0.34–0.96)	---		1.20 (0.70–2.05)	---	
Condom use-last 5 vaginal sex acts						
Never	Ref	Ref		Ref	Ref	
Sometimes	0.65 (0.39–1.09)	0.85 (0.45–1.60)		2.45 (1.46–4.12)	1.97 (1.06–3.65)	
Always	0.27 (0.11–0.65)	0.24 (0.08–0.72)		1.45 (0.75–2.82)	1.15 (0.52–2.56)	
Condom use-last 5 anal sex acts						
Never	Ref	Ref		Ref	Ref	
Sometimes	0.30 (0.11–0.81)	0.29 (0.09–0.93)		7.04 (2.00–24.79)	6.29 (1.57–25.23)	
Always	0.60 (0.35–1.02)	1.04 (0.26–4.17)		1.81 (0.35–9.52)	2.95 (0.44–20.00)	
Asked partner to use condom	1.26 (0.72–2.19)	---		1.09 (0.67–1.75)	---	
Refused sex because partner would not use condom	0.88 (0.55–1.41)	---		1.55 (0.97–2.48)	---	
SUBSTANCE USE						
Drug use in past yr	2.72 (1.39–5.33)	---		3.98 (1.36–11.64)	3.16 (1.00–10.06)	
AUDIT score, median (IQR)	1.17 (1.03–1.32)	---		1.07 (0.94–1.21)	---	

OR, odds ratio; CI, confidence interval;

--- denotes that the variable was not included in the multivariate model.