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Abuse impedes prevention: The intersection of intimate partner violence and HIV/STI risk among young African American women

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Abstract

Background—Intimate partner violence (IPV) is associated with risky sexual behavior and STIs among diverse groups of women. IPV was examined as a moderator of efficacy for an HIV/STI intervention.

Methods—848 African American women, 18-29, were randomly assigned to an HIV/STI intervention or control condition. Participants completed measures on sociodemographics, IPV, risky sexual behavior and received STI testing.

Results—IPV predicted inconsistent condom use and a risky sexual partner over 12-month follow-up. A significant interaction indicated that among women who experienced IPV, those in the intervention were more likely to test positive for *Trichomonas vaginalis* (TV). Among intervention participants, those who experienced IPV were more likely to test TV-positive than those who did not.

Discussion—In an HIV intervention that did not specifically address IPV, women in the control were less likely to acquire TV than those in the intervention. Consideration of contextual/interpersonal factors is essential when developing HIV intervention programs.

Keywords

intimate partner violence; HIV; STI; risky sexual behavior; African American; women

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BACKGROUND

African Americans are disproportionately impacted by HIV and other sexually transmitted infections (STIs). Racial disparities persist on STI acquisition among African Americans. In particular, rates of Gonorrhea and Chlamydia are 11 and 6 times as high, respectively, among African American women than their white counterparts (1). Additionally, in national HIV/AIDS surveillance data, HIV diagnosis among African American women accounted for the largest proportion of HIV diagnoses among women and HIV rates among African American women have been found to be 20 times as high as that of white women (2). Furthermore, 44% of all new HIV infections in 2010 were among African Americans. Among African American women, the largest percentage was among young women 13-24 years old (23%) and 25-34 years old (30%) (2). Sexual risk-reduction interventions and a comprehensive understanding of risk factors associated with sexual risk behavior are critical to abating the risk of HIV/STIs in this population.

An emerging and intersecting health concern is that women who experience intimate partner violence (IPV), defined as “physical, sexual, or psychological harm by a current or former partner or spouse” (3), may be unable to practice appropriate measures to prevent contracting HIV/STIs. IPV is considered a serious public health concern and is associated with adverse health outcomes, including poor physical, psychological, and sexual health (4-9) as well as overall healthcare costs (10). Although IPV affects a large proportion of women, the occurrence of IPV is not uniform across groups. African American women have reported experiencing IPV at a rate 35% higher than Caucasian women, and they were 2.5 times as likely to experience IPV relative to women from other racial/ethnic groups (11).

Previous studies have shown that IPV increases the likelihood of engaging in risky sexual behavior, increasing STI-risk (5-9, 12). It seems that IPV is not only an immediate threat to women’s health but may also thwart the use of protective sexual health behaviors that prevent disease acquisition. For example, African American women who have reported IPV are more likely to report inconsistent condom use or using condoms less frequently (7, 12), abuse due to condom negotiation (12), multiple and risky sexual partners (7, 13), early age of first sex (13), and having an STI (7, 8). These findings highlight the public health importance of understanding the implications of IPV on HIV/STI prevention, particularly among young women who are disproportionately more likely to contract HIV/STIs.

While many risk-reduction interventions target important skills, including condom use skills and negotiation, condom negotiation may increase fear of experiencing IPV, particularly among women who have experienced IPV in their relationships (12, 14). This, in turn, may interfere with a young woman’s ability to enact safer sex practices and thereby heighten her risk for STIs. Furthermore, among young African American women, contextual and structural factors such as the imbalanced male-to-female ratio that supports concurrent partnering, competition for male mates, and reduced relationship power may also negatively influence sexual communication between African American women and men (15, 16), thereby increasing their risk for infection. An increasing number of effective HIV/STI sexual risk-reduction interventions that have reduced HIV-risk behavior and STIs have been developed for African American women (17-19). A review of randomized controlled trials

found that the more effective programs have been theory-driven, emphasized gender-related influences, and utilized multiple sessions to promote condom use during sexual intercourse (19). However, currently, there do not seem to be published effective or efficacious HIV/STI prevention interventions geared towards also reducing IPV for high-risk young African American women (5, 19).

Given that HIV/STIs disproportionately affect young African American women, it is pertinent to examine factors, such as IPV, that can potentially impact risky sexual behaviors and STI acquisition. In an effort to support the importance of incorporating IPV in HIV/STI prevention interventions (5, 19, 20), the present study examined the moderating role of IPV on the efficacy of an HIV/STI risk reduction intervention to reduce sexual risk behaviors and STI infection longitudinally over a 12-month follow-up period. The main intervention trial found that women in the intervention condition were less likely to have nonviral incident STIs, incident high-risk HPV infection, and concurrent male sex partners. They also were less likely to report multiple male sex partners and more likely to use condoms during oral sex (21). Therefore, the purpose of the present study is two-fold: 1) to provide a better understanding of the longitudinal, negative impact of IPV on sexual risk behavior and STI acquisition among women who are participating in an HIV/STI intervention and 2) to determine whether IPV moderates the relationship between HIV intervention condition, sexual risk behavior, and STIs.

METHODS

Participants

Participants were part of a larger HIV intervention trial tailored for African American women (21). From October 2002 through March 2006, 9393 members from three Kaiser Permanente Centers having the greatest number of African Americans in Atlanta, GA, were randomly selected using the Kaiser subscriber database. Eligibility criteria included being an African American woman, 18-29 years, unmarried, sexually active in the prior 6 months, and providing written and verbal informed consent. Of these members, 979 (21.8%) met all eligibility criteria. All 979 eligible women were invited to participate and 848 (86.6%) completed baseline assessments and were randomized to study conditions. Of the 605 participants allocated to the HIV intervention condition, 441 (72.9%) completed the 6-month assessment and 452 (74.7%) completed the 12-month assessment. Of the 243 participants allocated to the comparison, 194 (79.8%) completed the 6-month assessment and 183 (75.3%) completed the 12-month assessment. No differences were observed between conditions with participants retained and lost to follow-up at the 6-month assessment (27.10% [n = 441] versus 20.20% [n = 194]) or 12-month assessment (25.30% [n = 452] versus 24.7% [n = 183]). Participants were compensated for travel and child care to attend each intervention session and complete behavioral and biological assessments. The Emory University Institutional Review Board approved the study protocol prior to implementation.

Intervention Methods (21)

The HIV/STI intervention consisted of two 4-hour group sessions, with an average of 10 participants per session, and was facilitated by two trained African American female health

educators. The general health promotion (control) condition consisted of one 4-hour group session that emphasized nutrition and exercise. The HIV intervention was informed by CDC-defined evidence-based HIV interventions developed by the study team and applied complementary theoretical frameworks to guide program activities. Social cognitive theory (22) informed HIV intervention content by seeking to enhance participants' attitudes and skills in abstaining from sexual intercourse, practicing low-risk sexual behaviors (i.e. outercourse), avoiding untreated STIs, using condoms consistently, and refraining from having multiple and concurrent sexual partners. Content regarding avoiding concurrency emphasized valuing one's body, perceiving one's body as a temple (a culturally appropriate connotation), informing participants of the heightened risk of STIs, including HIV, when women engage in concurrency, and discussing partner selection strategies that encouraged monogamy (for both the female participant and their male sexual partners).

HIV intervention content was also informed by the theory of gender and power (23), which examines economic forces, power imbalances, gender-related factors, and biological influences affecting women's HIV risk. Theoretically informed content sought to enhance women's awareness of power imbalances, such as relationships that threaten their safety, and by teaching women about economic forces which may reduce their self-sufficiency, such as dating male partners who desire pregnancy. The theory informed intervention content by educating participants about gender-related HIV prevention strategies, such as refraining from vaginal douching and enhancing sexual communication and by educating women about biological influences which could reduce HIV risk, such as encouraging participants to have their male sexual partners seek STI testing and treatment, if necessary. HIV prevention strategies were equally emphasized and the benefits of adopting multiple strategies were discussed.

Data Collection

Data collection occurred at baseline and at 6- and 12-month follow-up. At each assessment, participants completed a 40-minute audio computer assisted survey interview (ACASI) assessing sociodemographics, psychosocial factors associated with HIV/STI risk behaviors, and sexual risk behaviors. Subsequently, participants provided two vaginal swab specimens to be tested for STIs.

Measures

Intimate partner violence—Lifetime IPV was assessed by asking participants 3 questions: whether any male sexual partner had ever made them have vaginal and/or anal sex when they did not want to, physically abused them (i.e., punched, kicked, slapped, pushed, yanked your hair, or physically hurt you), or verbally abused them (i.e., threatened you, called you names, or swore at you). Male sexual partner was defined as a partner with whom the participant had a sexual relationship or someone with whom the participant had a special or committed relationship.

Self-reported sexual behaviors—Participants reported whether they engaged in consistent condom use during the past 6 months. Consistent condom use was defined as the use of a condom during every episode of vaginal intercourse during the past 6 months and

was calculated as the ratio of the number of times participants used a condom to the number of vaginal sex episodes reported during the past 6 months. A ratio of 1.00 indicated consistent condom use. Participants also reported their number of sexual partners during the past 12 months. Finally, the survey assessed whether in the past 6 months participants had engaged in vaginal sex with a man who had recently been released from jail, had an STI, used injection drugs, and/or had a concurrent sexual partner. Reporting yes to any of these items constituted having a risky sexual partner. All self-reported sexual behaviors were examined over the 12-month follow-up period.

Sexually transmitted infections—Acquiring an incident STI was defined as a positive laboratory test result for a new Chlamydia, Gonorrhea, or Trichomonas infection at the baseline, 6-month, or 12-month assessments. Participants provided 2 vaginal swabs at each of the 3 assessments. One swab was evaluated for *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) using the Becton Dickinson ProbeTec ET *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Amplified DNA Assay (Sparks, MD). A second vaginal swab was tested for *Trichomonas vaginalis* (TV) using Taq-Man PCR. The Caliendo Laboratory developed and validated this test which employs a homogenous kinetic PCR to amplify and detect a conserved part of a repeated DNA fragment of TV. All assays were conducted at the Emory University, Department of Pathology, Caliendo Research Laboratory. Women testing positive were provided directly observable single-dose treatment, received risk-reduction counseling per CDC recommendations, and were encouraged to refer sex partners for treatment. The county health department was notified of reportable STIs.

Data Analyses

Descriptive statistics assessed the prevalence of sociodemographics, IPV, sexual behavior, and STIs. IPV was dichotomized into women who reported ever experiencing IPV versus those who did not at baseline. Binary generalized estimating equations (GEE) models were conducted to control for repeated within-subject measurements and allow for a number of observations on participants longitudinally. GEE models assessed the impact of IPV at baseline and interaction effects between HIV/STI intervention group and IPV at baseline on risky sexual behavior and STIs over the 12-month follow-up period. Posthoc pairwise comparisons were conducted in GEE to examine and interpret the significant interactions further. Age and baseline outcome measures were included as covariates. Analyses were conducted in SPSS, v. 18.

Population-averaged (PA) models were used over subject-specific (SS) models due to the preference of the PA interpretation of similar coefficients. For a binary model, the SS interpretation of the coefficient on IPV is the change in likelihood of the outcome when that individual experiences their first IPV. However, for these analyses, the purpose was to discuss the PA interpretation, which is the difference in the likelihood for the average non-IPV versus average IPV person. Since implementation decisions are generally reached through consideration of the intervention's effectiveness for populations, the PA approach was preferred.

RESULTS

Participant Characteristics

At baseline, 424 (50%) of the women endorsed ever experiencing IPV by a male sexual partner. There were no differences in experiences of IPV between the intervention (52.1%) and control (49%) conditions at baseline. Participants' average age was 22.04 ($SD= 3.61$) years. The majority of women reported completing 1-4 years of college (59.3%), with 25.6% graduating from high school, 11.2 % completing some high school (9th-11th grade), and 3.9% having graduate school training. In terms of their living situation, 53.5% reported living with parent(s), 20.2% living alone, 12.4% living with a roommate, 5.2% living with their boyfriend, 5.4% living with another relative, and 3.3% living with their children. Additionally, the majority of women obtained their spending money from their job (65.4%). Participant characteristics on the outcome variables at baseline, 6- and 12-month follow-up are displayed in Table 1.

Binary GEE Models and Posthoc Pairwise Comparisons

After controlling for age and baseline outcome measures, GEE models revealed that women who reported ever experiencing IPV, relative to those who did not, were more likely to report inconsistent condom use during the past 6 months (72.6% vs. 62.8%, $p=.04$) and having a risky sexual partner during the past 6 months (27.8% vs. 18.5%, $p=.01$) over the 12-month follow-up period. A significant interaction between IPV and study condition on testing positive for *Trichomonas vaginalis* (TV) also was found ($p=.04$) (Table 2). As shown in Figure 1, posthoc pairwise comparisons indicated that among women who did not experience any IPV, those in the control condition were more likely to test positive for TV than those in the intervention condition over the 12-month follow-up period (3.8% vs. 1.2%, $p=.05$). However, among women who reported experiencing IPV, those in the intervention condition were more likely to test positive for TV than those in the control condition over the 12-month follow-up period (3.5% vs. 1.8%, $p=.05$). Finally, among women who received the intervention, those who experienced IPV were more likely to test positive for TV than those who did not experience IPV (3.5% vs. 1.2%, $p=.05$). Due to the small number of women testing positive for Gonorrhea (see Table 1), an interaction effect was not examined. Also, there was not a significant interaction between IPV and study condition on inconsistent condom use, having a risky sexual partner, testing positive for Chlamydia, or testing positive for any STI (Table 2).

DISCUSSION

A common component of many HIV/STI intervention programs for women is to improve their communication and negotiation skills regarding condom use (19, 24, 25). However, if women are in an abusive relationship, they may not have the ability to utilize these skills in their relationship due to fear of abuse (6, 26). In this sample of young adult African American women, 50% reported ever experiencing IPV. Previous studies have reported a wide range of lifetime IPV prevalence rates, from 29% to 52% among African American female adolescents and women (26-28). The women in the present study were highly educated and the majority had completed 1-4 years of college. However, the high prevalence

of reported IPV is noteworthy and indicates a potentially high-risk sample of women in the present study. The findings from the current study indicated that lifetime IPV was associated with inconsistent condom use and having a risky sexual partner, which corroborates previous findings indicating that IPV is associated with HIV/STI risk behaviors and STI infection (5, 7, 8, 12, 20). Additionally, to our knowledge, this is the first study to examine the impact of IPV on HIV/STI intervention efficacy in predicting TV infection among young adult African American women.

Interestingly, among women who experienced IPV, the findings were less expected, as those in the intervention condition were more likely to test positive for TV than those in the control condition. For women who did not experience IPV, the HIV/STI intervention led to expected results, in that women were less likely to test positive for TV if they received the intervention. Additionally, within the intervention condition, those who experienced IPV were more likely to test positive for TV than those who did not experience IPV. The results from the main intervention paper found that participants in the intervention condition were 38% less likely to have a nonviral STI over the 12-month follow-up period (21). Therefore, these findings indicate that IPV may hinder the use of safe sex practices that prevent disease acquisition. It is possible that although women with IPV histories in the intervention condition may have learned useful skills, these skills may not have been beneficial given the context in which they were applied. For example, women may be fearful that condom negotiation may lead to abuse from their partner (26) and young women may perceive that utilizing these skills may place their relationship at risk. If they experience abuse, then they may be less likely to request or use condoms, leading to riskier behavior and ultimately STI acquisition (7, 29, 30). Additionally, although the interaction between IPV and HIV/STI intervention condition on the likelihood of reporting a risky sexual partner was not significant ($p=.07$), the trend of the interaction was similar to the interaction effect for testing positive for TV (in all cases of the aforementioned significant interaction effect). Women reporting a risky sexual partner (i.e., a partner who had recently been released from jail, had an STI, used injection drugs, and/or had a concurrent sexual partner), may have been at higher risk for contracting an STI, despite being enrolled in an HIV risk-reduction intervention. Finally, women who experienced IPV were more likely to use condoms inconsistently and have risky sexual partners, placing them at further risk for STI infection.

There were no significant interaction effects found when examining Chlamydia or a combined variable, "any STI." A national survey found that African Americans were more likely to be infected with TV than women from other racial/ethnic groups (31). Although women were treated for STIs at each assessment, previous research has indicated that the reinfection rate for TV may be high, especially given that it is not a reportable STI infection, in contrast to the other bacterial STIs such as Chlamydia and gonorrhea, partner treatment is low (32, 33), and often men are asymptomatic (34). Additionally, it is possible that the women were asymptomatic (35) and the infection was not detected or treated at 6-month follow-up but was detected at 12-month follow-up (36). However, it is difficult to determine why these differences existed in the present study without further information on the male sexual partner and his STI history. The finding for TV is clinically significant, as previous research has indicated that TV increases both HIV transmission and acquisition among women, particularly African American women (37). These findings from the significant

main and interaction effects suggest that for a particular group of women, certain core skills that are taught in HIV/STI prevention interventions may not be beneficial for women who potentially lack control in their relationships. In contrast, it potentially could place women at increased risk of engaging in sexual risk behavior and contracting an STI.

Although the current intervention was based on principles from social cognitive theory (22) and the theory of gender and power (23), it seems that HIV/STI interventions for women who have experienced IPV should go beyond improving skills in self-efficacy and female empowerment. Assisting young women who are disproportionately more likely to contract HIV/STIs avoid or terminate abusive sexual partnerships may be an essential element to reducing their risk of infection. Due to potential psychological barriers or fear of abuse, it may be beneficial for HIV/STI prevention interventions to be tailored for women with previous or current experiences of IPV (38). This could involve inclusion of components on IPV, addressing healthy and unhealthy relationships, and providing specific guidelines on effective condom negotiation and overall safer sex practices for women who may fear abuse from their male sexual partner. There could potentially be two tiers of interventions designed for women – one for women without abuse histories and one for women with abuse histories. The women who have previous or current experiences of IPV could complete a more intensive HIV/STI intervention that would also address IPV reduction. Another potential strategy would be to merge social and community-level interventions for IPV with HIV preventive efforts. For example, it could be beneficial to collaborate with healthcare settings, specifically emergency rooms and domestic violence services. In general, clinicians and practitioners should be trained in how to recognize IPV and its role in negative health outcomes in order to promote more structural and community-level changes.

There were limitations to this study. A crude measure of IPV was utilized, which did not include information regarding the frequency, duration or severity of abuse. Additionally, the IPV measure assessed lifetime IPV and did not assess recent abuse or abuse over a definitive time period. It is difficult to determine whether the findings would be different among women who reported proximal IPV versus distal IPV. Constructs, such as fear of abuse, power dynamics, relational context, and other relational variables associated with aspects of IPV were not assessed. Moreover, the data on IPV and sexual behaviors rely on retrospective self-report data. Participants may have had difficulty recalling important information, and/or they provided socially desirable responses to the sensitive questions (e.g., women may have underreported experiences of IPV). However, it is noteworthy that STI results were biologically confirmed and not based on self-report. Finally, the sample was homogeneous. Thus, the results may have limited generalizability, and replication with diverse ethnic and geographic populations would be needed.

Given that HIV risk-reduction interventions primarily target increasing women's skills at partner communication, including condom use negotiation, IPV may decrease the use of safe sex practices that prevent disease acquisition. However, an HIV intervention that does not focus on IPV specifically may limit women who experience IPV from enacting safer sex practices. These findings underscore the importance of considering contextual factors when developing HIV intervention programs. It is necessary to take into account the complexities around addressing IPV and to ensure that it does not lead to adverse consequences for

women when utilizing skills that they have learned. Additionally, it is important to consider social determinants of health. Any social and/or cultural norms that promote IPV should be challenged, and sociodemographic, community-level, and other contextual or structural factors contributing to IPV should be considered when developing HIV/STI prevention programs for young adult African American women (16, 29). Finally, from a public health standpoint, it is necessary to address the potential for scaling up such interventions to increase the impact among large groups of women and communities.

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Figure 1.
The interaction between interpersonal condition and HIV/STI interaction condition in predicting a positive test result for *Trichomonas vaginalis* over a 12-month period.

Table 1

Participant characteristics on risky sexual behavior and STIs at 6- and 12-month follow-up.

Outcomes	N(%)
<u>Baseline</u>	
Condom use during the past 6 months	
Inconsistent	584 (76.2%)
Consistent	182 (23.8%)
Risky sexual partner during the past 6 months	
Yes	301 (35.6%)
No	545 (64.4%)
<i>Trichomonas vaginalis</i>	
Positive	55 (6.5%)
Negative	793 (93.5%)
Gonorrhea	
Positive	27 (3.2%)
Negative	821 (96.8%)
Chlamydia	
Positive	88 (10.4%)
Negative	760 (89.6%)
Any STI	
Positive	144 (17%)
Negative	704 (83%)
<u>6-month follow-up</u>	
Condom use during the past 6 months	
Inconsistent	379 (69.4%)
Consistent	167 (30.6%)
Risky sexual partner during the past 6 months	
Yes	156 (24.6%)
No	477 (75.4%)
<i>Trichomonas vaginalis</i>	
Positive	12 (1.9%)
Negative	631 (98.1%)
Gonorrhea	
Positive	4 (0.6%)
Negative	637(99.4%)
Chlamydia	
Positive	33 (5.2%)
Negative	607 (94.8%)
Any STI	
Positive	46 (7.2%)
Negative	594 (92.8%)
<u>12-month follow-up</u>	

Outcomes	N(%)
Condom use during the past 6 months	
Inconsistent	354 (66.2%)
Consistent	181 (33.8%)
Risky sexual partner during the past 6 months	
Yes	138 (21.8%)
No	496 (78.2%)
<i>Trichomonas vaginalis</i>	
Positive	20 (3.2%)
Negative	610 (96.8%)
Gonorrhea	
Positive	7 (1.1%)
Negative	629 (98.9%)
Chlamydia	
Positive	43 (6.8%)
Negative	594 (93.2%)
Any STI	
Positive	64 (10.2%)
Negative	564 (89.8%)

Table 2

Binary GEE analyses assessing the impact of IPV on risky sexual behavior and STIs.

Outcomes	IPV			Intervention $\times$ IPV		
	AOR ^a	95% CI ^b	p	AOR ^a	95% CI ^b	p
Inconsistent Condom Use	1.38	1.01-1.90	.04	.91	.46-1.78	.78
Risky Sexual Partner(s)	1.49	1.10-2.02	.01	1.85	.95-3.57	.07
Testing positive for TV	2.10	.51-8.70	.31	5.95	1.05-33.33	.04
Testing positive for CT	1.06	.65-1.74	.81	1.61	.72-3.59	.25
Any STI ^c	1.18	.52-2.67	.69	1.10	.54-2.26	.79

^aOdds ratio adjusted for age and baseline outcome measures^b95% confidence interval^cAny STI includes testing positive for TV and/or CT.