AIDS PATIENT CARE and STDs
Volume 26, Number 4, 2012

DOI: 10.1089/apc.2011.0275

Intimate Partner Violence Among HIV-Infected Crack Cocaine Users

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Abstract

HIV-infected crack cocaine users are at high risk for HIV transmission and disease progression because they encounter difficulty practicing safe sex, entering and remaining in HIV care, and taking antiretroviral therapy (ART). We hypothesized intimate partner violence (IPV) occurs frequently in this population and contributes to these shortcomings. From December 2006 to April 2010 inpatient HIV-infected crack users were recruited from Grady Memorial (Atlanta, GA) and Jackson Memorial Hospitals (Miami, FL). Participants were screened for IPV using a 5-item tool that was adapted from a previously validated instrument, the STaT. IPV survivors were questioned about support service utilization. Multivariable analysis was conducted to evaluate the association between IPV and unprotected sexual intercourse and sexually transmitted infection (STI) diagnosis in the prior 6 months, use of outpatient HIV care in the past year, and current ART use. We enrolled 343 participants, the majority African Americans of low socioeconomic status. The estimated IPV prevalence was 56%, highest in women (68%) and gay, bisexual, and transgendered men (71%). In multivariable analysis, IPV was associated with diminished ART use (adjusted prevalence ratios [adjPRs] 0.57; 95% confidence interval [CI] 0.41–0.80), unprotected sexual intercourse (adjPR 1.34; 95% CI 1.08–1.68) and STI diagnosis in the prior 6 months (adjPR 3.49; 95% CI 1.60–7.62). After experiencing abuse, IPV survivors most commonly turned to emergency services; however, 38% reported not using any supportive services. This study highlights that IPV occurs frequently among HIV-infected crack users and is associated with outcomes known to facilitate HIV transmission and disease progression. Reduced utilization of outpatient HIV care, ART nonadherence, and new STI diagnoses in this population should trigger IPV screening and support services referral.

Introduction

The prevalence of HIV among crack cocaine users is high[1–3] and largely attributed to a link between crack use and high-risk sexual behaviors that promote HIV disease transmission and progression.[4,5] In a recent study we documented that over one third of 1038 HIV-infected inpatients hospitalized in two public hospitals of two major Southeastern cities reported crack use.[6] Crack use was associated with unprotected sexual intercourse and diminished utilization of outpatient HIV care and medications.[6] We hypothesize that these outcomes among HIV-infected crack users may be associated with their experiences of intimate partner violence (IPV).

IPV, defined by the Centers for Disease Control and Prevention as "physical, sexual, or psychological harm by a current or former partner or spouse[7] can occur among heterosexual or same-sex couples and does not require sexual intimacy,"[8] occurs frequently among drug-using populations.[9] Prior studies suggest crack users are often survivors of lifelong violence.[10–15] A postulated mechanism is that they often first experience abuse during childhood,[12,13] begin using crack as a coping mechanism,[14,15] and therefore have heightened vulnerability to further acts of violence, such as IPV.[10] Many HIV-infected persons, especially those who are unstably housed, also report high frequencies of IPV.[16,17] Stigma and self-perceived inferiority resulting from an HIV diagnosis may increase vulnerability to IPV[18] and its deleterious physical and mental health effects. The extent to which IPV experiences of HIV-positive crack users may fuel their unsafe sex practices and nonadherence to HIV medications and clinical care is unknown.

We aimed to estimate the prevalence of IPV among HIV-infected crack users and determine whether IPV is associated

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with behaviors and conditions known to increase risk of HIV transmission (unprotected sexual intercourse and sexually transmitted infections) and disease progression (reduced utilization of outpatient HIV care and diminished use of antiretroviral therapy). We also aimed to identify community-based IPV services that HIV-infected crack users access most frequently after experiencing abuse and determine barriers they encounter in utilizing these services. This knowledge could be used to determine how to concentrate scarce resources to empower and support HIV-infected IPV survivors, and ultimately help control HIV disease progression and transmission.

Methods

Study setting and participants

The study was designed as a cross-sectional study nested within a larger, dual-center randomized controlled trial, Project HOPE (Hospital visit is an Opportunity for Prevention and Engagement).[19] Between December 2006 and April 2010, individuals were enrolled from inpatient services at Jackson Memorial Hospital (Miami, Florida) and Grady Memorial Hospital (Atlanta, Georgia). Enrollment criteria included minimum age of 18 years, HIV-seropositivity, use of crack cocaine in the prior 2 years, sexual activity (i.e., vaginal or anal) in the prior 6 months, and capacity to communicate in English. The Project HOPE study team reviewed the hospital HIV social workers' census lists on a daily basis and contacted the patients' primary physician to determine the patient's preliminary eligibility.

Each potential enrollee was initially approached by a member of the study team. As part of the informed consent process, all were notified about the nature of the questions they would be answering (i.e., demographics, sexual behaviors, substance abuse, violence, and incarceration histories) and given information regarding the parent Project HOPE intervention. All participants provided written informed consent. The study was approved by Emory University and University of Miami institutional review boards and Grady and Jackson Memorial Hospital Research Oversight Committees. Participants received monetary compensation for their time and effort.

Procedures

After providing informed consent, participants underwent a bedside interview using a handheld device that lasted approximately 2 h. Data were retrieved from the handheld devices after each interview, initially stored on password-protected databases at each study site, and subsequently merged for analysis. Only study staff had access to the databases. A study member was present for the duration to facilitate the interview, answer participant questions, and manage technical difficulties when they arose. Most recent $CD4^+$ T-cell counts were obtained by chart abstraction. Participants were questioned about sociodemographics, current homelessness, insurance status, sexuality, frequency of crack and alcohol use, multitude of sexual partners, lifetime IPV, transactional sex histories (i.e., trading sex for drugs), current use of ART, use of outpatient HIV care in the prior year, condom use, and sexually transmitted infection (STI) frequency.

IPV was defined as an affirmative response to at least one of five screening questions assessing lifetime IPV: "Were you ever in a relationship in which 'a sexual partner beat, physically attacked, or physically abused you,' 'sexually attacked, raped, or sexually abused you,' 'a sexual partner threw, broke, or punched things,' 'a sexual partner threatened you with violence,' or in which 'you felt controlled by a sexual partner?'" (Table 1). This 5-part IPV screener was adapted from STaT (Slapped, Threatened, or Throw things), an instrument that was developed to succinctly screen for lifetime IPV in a clinical setting and had a Cronbach α of 0.81. The modified version of the STaT was chosen over more conventional IPV scales because of its brevity, capacity to measure lifetime IPV exposure, and because the STaT was previously validated in a similar study population in the emergency department of one of our study sites.[20,21] Violence toward inanimate objects has been recognized by the IPV research community as a form of IPV,[22,23] and thus was addressed in the third screening question. Two questions were added to the STaT questionnaire to address sexual violence (i.e., being sexually attacked, raped, or sexually abused) and partner controlling behaviors (i.e., feeling controlled by a sexual partner). Thus, our screener included assessment of physical, sexual, and emotional abuse as well as threats of violence. To account for severity of abuse, "severe IPV," was defined as an affirmative response to at least three of five IPV screening questions.

Finally, participants reporting histories of IPV were asked about their utilization of various community support services, barriers to care, and level of comfort they felt discussing IPV with their HIV providers. Participants who reported IPV were asked to identify from a list the services they used after experiencing abuse. The list was adapted and expanded from a prior study which evaluated the differences in service utilization patterns of 153 African American women by IPV status who presented to inner-city urgent and emergency care.[24] It included emergency departments, walk-in clinics, primary care doctors (typically, the HIV care providers), 911 services, help lines, legal assistance, financial assistance, support groups, shelters, mental health services, spiritual leaders, and family or friends. Participants were next asked to choose from barriers to resource utilization they encountered that included putting it off, not wanting to deal with it, dislike of physicians and health care, fear of partner notification, fear of being judged or pitied, fear of their children being hurt or separated from them, fear of financial repercussions, fear of being treated rudely or unkindly, perception of IPV services as unpleasant or unhelpful, inconvenience of available services, lack of transportation, prolonged appointment wait times, lack of appointment availability, lack of phone access, costliness of support services, and lack of knowledge of support services.

Table 1. Intimate Partner Violence Screening Tool

Were you ever in a relationship in which:
- a sexual partner beat, physically attacked, or physically abused you?
- a sexual partner sexually attacked, raped, or sexually abused you?
- a sexual partner threw, broke, or punched things?
- a sexual partner threatened you with violence?
- you felt controlled by a sexual partner?

Measures and data analysis

IPV and severe IPV were the primary predictor variables. Outcome variables included self-report of unprotected vaginal and/or anal sexual intercourse in the prior 6 months, an STI diagnosis (i.e., chlamydia, gonorrhea, syphilis, or trichomoniasis) in the prior 6 months, current use of ART, and use of HIV outpatient care in the prior 12 months. Specifically, participants were first asked, "Of the people you had sex with in the past 6 months, with how many did you have vaginal or anal sex?" followed by "How many of *those* partners did you use condoms with every time?" If the response to the first question exceeded the number reported in the second, the response was coded as unprotected intercourse in the prior 6 months. If the responses were equal, the response was coded as protected intercourse in the prior 6 months. For the other outcomes, participants were asked "In the past 6 months were you told by a doctor or nurse that you had (1) chlamydia, (2) gonorrhea, (3) syphilis, or (4) trichomoniasis?," "Do you currently take any HIV medications?," and "In the past 12 months have you gone to a doctor or clinic for HIV care?" Variables with multilevel responses were dichotomized for ease of subsequent bivariate analysis. The χ^2 test was used for bivariate analysis.

Logistic regression was used for multivariable analysis to evaluate the association between IPV and each of the four outcomes. Collinearity was tested using Collin macros[25]. Interaction was evaluated using a chunk test with the Wald test statistic. Confounding of each of the four models was assessed using the methods described by Kleinbaum and Klein.[26] All covariates identified to have significant association with the outcomes in bivariate analysis were tested in the full models. A final reduced model was then constructed to include the predictor variable, outcome variable, identified confounders, interaction terms, and other clinically important covariates using Kleinbaum and Klein methods.[26] Adjusted prevalence ratios (adjPRs) were calculated. The outcome variable "unprotected intercourse in the prior 6 months" was analyzed using two approaches: among participants reporting sexual intercourse with an HIV-negative or unknown-status sexual partner and among all participants regardless of the reported HIV status of their sexual partners. This approach was taken because we were interested in not only evaluating the link between IPV and unprotected sexual intercourse as a whole, but also exploring this link in sexual encounters during which potential risk for transmitting HIV to seronegative individuals existed. The variable "STI diagnosis in the prior 6 months" was also analyzed using two approaches: participants who reported being tested for an STI in the prior 6 months ($n=156$) and all participants regardless of whether the participant sought STI testing ($n=343$). This outcome was analyzed in this dual manner in an attempt to simultaneously compensate for a potential bias that would occur in only analyzing individuals who reported seeking testing for an STI and to give weight to the individuals who were in fact tested for an STI and diagnosed.

All analyses were conducted using SAS 9.2 statistical software (SAS Institute, Cary, NC). A p value of less than 0.05 was considered significant for all statistical tests.

Results

Between December 2006 and April 2010 (when enrollment in the parent study concluded), 343 participants, 173 women and 170 men, were enrolled (Table 2). The mean age of the cohort was 45 years and 89% were African American. While only 11% of the women self-identified as being lesbian, bisexual, or transgendered, approximately one third of the men self-identified as gay, bisexual, or transgendered. The majority was of extremely low socioeconomic status (annual income less than $5000), unemployed, homeless, and had never completed high school. While all participants smoked crack within the prior 2 years, approximately half of the women and one third of the men smoked crack at least daily over the prior 6 months. Eighteen percent of all participants reported drinking alcohol at least daily. The median CD4 count was 184 cells per microliter (25–75 IQR: 61–353 cells per microliter). In the 6 months prior to the study, approximately one-fourth of all participants engaged in transactional sex, half engaged in unprotected vaginal and/or anal sexual intercourse, and 14% reported being diagnosed with a STI. Among participants who reported having vaginal and/or anal sexual intercourse with a partner who was HIV-uninfected or whose

Table 2. Characteristics of Participants by Gender

	Women, n=*173 (%)*	*Men*, n=*170 (%)*	*Total*, n=*343 (%)*
Mean age (years)	44	45	45
African American	154 (90%)	150 (89%)	304 (89%)
Sexuality: Heterosexual	154 (89%)	117 (69%)	271 (79%)
Sexuality: LGBT	19 (11%)	51 (30%)	70 (20%)
Annual income ≤$5000	117 (68%)	95 (57%)	212 (62%)
Education < high school diploma	105 (61%)	75 (44%)	180 (53%)
Currently employed	2 (1%)	11 (7%)	13 (4%)
Currently homeless	74 (45%)	91 (59%)	135 (52%)
Frequency of alcohol use ≥ daily	29 (17%)	34 (20%)	63 (18%)
Frequency of crack use ≥ daily	73 (46%)	51 (32%)	124 (39%)
Transactional sex/6 months	63 (36%)	18 (11%)	81 (24%)
Median CD4	199 (83-374)	176 (46-313)	184 (61-353)
Unprotected sex/6 months	88 (52%)	67 (40%)	155 (45%)
STI diagnosis/6 months	35 (20%)	12 (7%)	47 (14%)
HIV care/12 months	93 (74%)	109 (75%)	202 (75%)
Currently report use of ART	45 (26%)	55 (32%)	100 (29%)

LGBT, lesbian, gay, bisexual, and transgender; STI, sexually transmitted infection; ART, antiretroviral therapy.

status was unknown in the prior 6 months ($n=248$), 40% (100/248) engaged in unprotected vaginal and/or anal sexual intercourse. Among participants reporting STI testing in the prior 6 months ($n=156$), the most commonly reported STIs included syphilis (18%), trichomonas (8%), chlamydia (6%), and gonorrhea (5%). While three fourths of all participants reported using outpatient HIV care in the prior year, less than one-third reported currently being on HIV medications.

The prevalence of lifetime IPV was 56% (193/343). Sixty-eight percent (118/173) of the women reported IPV, whereas 44% (75/170) of the men reported IPV. The prevalence of severe IPV was 36% (123/343), with half of the women and one-fifth of the men reporting severe IPV (Table 3). Frequencies of IPV and severe IPV varied by sexual orientation among the men, but less so for the women. IPV occurred in 71% (36/51) of men self-identifying as gay, bisexual, or transgendered and 33% (38/117) of heterosexual men, while severe IPV occurred in 39% (20/51) and 12% (14/117), respectively. Among the women, IPV occurred in 63% (12/19) of lesbian, bisexual, or transgendered women and 69% (106/154) among heterosexual women, whereas severe IPV occurred in 42% (8/19) and 52% (80/173), respectively.

The most common types of IPV reported were having a partner throw, punch, or break things (47% or 160/343), being threatened with violence (43% or 149) and being controlled by a partner (42% or 143). While a significant proportion of men were survivors of IPV, physical and sexual abuse were not frequently reported (12% or 20/170 and 6% or 10/170, respectively). Among the women, however, 43% (74/173) reported physical IPV and 29% (50/173) reported sexual IPV.

In bivariate analysis (Table 4), IPV and severe IPV were both associated with more frequent reporting of unprotected vaginal and/or anal sexual intercourse in the prior 6 months regardless of the HIV status of the sexual partners and when analyzed among those with HIV-negative or HIV status-unknown sexual partners (data not shown). IPV and severe IPV were also associated with being diagnosed with an STI in the preceding 6 months, diminished utilization of outpatient HIV care in the preceding 12 months, and a lower likelihood of being on ART. Individuals who had multiple sexual partners, were lesbian, gay, bisexual, or transgendered (LGBT), of female gender, reported frequent (≥daily) use of alcohol and crack, or reported transactional sex within the prior 6 months had a higher likelihood of reporting unprotected sexual intercourse in the prior 6 months. The female gender and age 45 years or older were associated with increased reported STI diagnoses in the prior 6 months. Individuals with annual income over $5000, who drank alcohol less than daily, were insured, and not currently homeless were more likely to report outpatient HIV care within the past 12 months. Individuals who reported annual income over $5000, insurance, and those who reported using crack less than daily were more likely to report current ART use.

In multivariable analysis, after controlling for gender, frequency of crack use, report of recent transactional sex, and sexuality, IPV was associated with unprotected sexual intercourse in the prior 6 months when analyzed among those reporting sexual intercourse with HIV-negative or HIV status-unknown partners (adjPR 1.54; 95% CI 1.15, 2.06) and when analyzed regardless of the HIV status of the sexual partners (adjPR 1.34; 95% CI 1.08, 1.68; Table 5). IPV was also associated with being diagnosed with a STI in the prior 6 months after controlling for number of sexual partners, gender, and sexuality, when all participants were analyzed (adjPR 3.87; 95% CI 1.67, 8.96) and when only participants reporting STI testing were analyzed (adjPR 2.40; 95% CI 1.09, 5.31). After controlling for frequency of crack use and homelessness, IPV was no longer associated with use of outpatient HIV care in the prior year (adjPR 0.91; 95% CI 0.77, 1.07). Finally, IPV was associated with a lower likelihood of current ART use (adjPR 0.57; 95% CI 0.41, 0.80); however, the association was demonstrated among the men (adjPR 0.31; 95% CI 0.17, 0.56), but not the women (adjPR 1.13; 95% CI 0.64, 1.97).

When the survivors of IPV ($n=193$) were questioned about which resources they utilized most frequently after experiencing abuse, 38% denied use of any IPV support services. The most commonly used services were 911 phone services (31% or 60/193), the emergency departments (27% or 53/193), and family or friends (20% or 38/193). Less than 10% of IPV survivors reported using mental health services, domestic violence shelters, support groups, walk-in-clinics, spiritual leaders, domestic violence help lines, primary care doctors, legal or financial aid services. The most commonly reported barriers to service utilization included unwillingness to deal with the violence (58/193 or 30%), fear of partner notification (22/193 or 11%), belief that the services would not be helpful (19/193 or 10%), lack of awareness of location (14/193 or 7%) and existence of available resources (11/193 or 6%), and fear of being judged or pitied (12/193 or 6%). Conversely, the majority of IPV survivors reported some (13%) to a lot (67%) of comfort in discussing IPV with their HIV care providers.

Table 3. Intimate Partner Violence Severity by Gender

Number of affirmative responses to IPV questions	*Men*, n=*170* (%)	*Women*, n=*173* (%)	*Total*, n=*343* (%)
At least 1 questions	75 (44)	118 (68)	193 (56)
At least 2 questions	59 (35)	105 (61)	164 (48)
At least 3 questions	35 (21)	88 (51)	123 (36)
At least 4 questions	14 (8)	67 (39)	81 (24)
All 5 questions	5 (3)	39 (23)	44 (13)

IPV, intimate partner violence.

Discussion

Our findings suggest that HIV-infected crack users, both men and women, are frequent survivors of IPV. In fact over two thirds of the women and men self-identifying as gay, bisexual, and transgendered in our study reported experiencing IPV. These high rates should be of particular concern to clinicians and public health officials because IPV, as suggested by this study, is associated with behaviors that contribute to the progression of HIV disease and sexual transmission of STIs and HIV to others. While we hypothesize that these associations will be stronger in HIV-infected individuals who report ongoing or recent IPV exposure, this needs to be evaluated in future studies.

Many clinicians who avoid IPV screening in clinical practice cite time and resource constraints as limiting factors.[27] Our study suggests that targeted IPV screening of individuals

Table 4. Bivariate Analysis

	Unprotected sexual intercourse in the past 6 months[a]			*STI diagnosis in the past 6 months*[b]			*Current use of antiretroviral therapy*			*HIV care in the past 12 months*		
	Yes (n = *155*)	*No* (n = *180*)	*PR*	*Yes* (n = *47*)	*No* (n = *296*)	*PR*	*Yes* (n = *100*)	*No* (n = *243*)	*PR*	*Yes* (n = *202*)	*No* (n = *68*)	*PR*
IPV	104 (68%)	85 (47%)	1.58[c]	39 (85%)	154 (52%)	4.24[d]	43 (43%)	150 (63%)	0.57[c]	108 (53%)	45 (67%)	0.87[f]
Severe IPV	67 (43%)	52 (29%)	1.38[e]	28 (60%)	95 (32%)	2.64[c]	26 (26%)	97 (40%)	0.63[f]	65 (32%)	31 (46%)	0.86[f]
Female	88 (57%)	80 (44%)	1.31[f]	35 (74%)	138 (47%)	2.87[c]	45 (45%)	128 (53%)	0.80	93 (46%)	32 (47%)	0.99
Income >$5000	55 (44%)	98 (47%)	0.94	NA	NA	NA	46 (46%)	81 (34%)	1.45[f]	95 (47%)	20 (30%)	1.18[f]
Sexuality: LGBT	40 (26%)	27 (15%)	1.39[f]	9 (20%)	61 (21%)	0.94	NA	NA	NA	NA	NA	NA
Frequency of alcohol use ≥ daily	37 (24%)	25 (14%)	1.38[f]	NA	NA	NA	11 (11%)	52 (21%)	0.55[f]	29 (14%)	13 (19%)	0.91
Frequency of crack use ≥ daily	70 (48%)	47 (29%)	1.51[c]	NA	NA	NA	33 (38%)	91 (40%)	0.93	57 (31%)	27 (45%)	0.85[f]
African American	135 (87%)	165 (92%)	0.79	40 (85%)	264 (89%)	0.73	91 (91%)	213 (88%)	1.30	183 (91%)	60 (88%)	1.07
Education ≥ high school diploma	70 (45%)	90 (50%)	0.90	NA	NA	NA	45 (45%)	116 (48%)	0.91	95 (47%)	35 (52%)	0.95
≥1 Sexual partner in the past 6 months	85 (55%)	71 (39%)	1.39[e]	27 (57%)	133 (45%)	1.54	NA	NA	NA	NA	NA	NA
Transactional sex in the past 6 months	53 (34%)	22 (12%)	1.80[c]	15 (32%)	66 (22%)	1.52	NA	NA	NA	NA	NA	NA
Age >45 yrs	68 (44%)	94 (52%)	0.83	16 (34%)	150 (51%)	0.55[f]	52 (52%)	114 (47%)	1.15	101 (50%)	34 (50%)	1.00
Currently homeless	NA	NA	NA	NA	NA	NA	26 (38%)	109 (56%)	0.58[e]	68 (46%)	32 (55%)	0.90
Incarcerated in past 6 months	NA	NA	NA	NA	NA	NA	27 (27%)	75 (31%)	0.87	60 (30%)	15 (22%)	1.10
Insurance status	NA	NA	NA	NA	NA	NA	68 (68%)	97 (40%)	2.29[d]	121 (60%)	29 (43%)	1.20[f]

[a]Data shown is unprotected sex variable analyzed among all participants, regardless of HIV status of partner.
[b]Data shown is STI variable analyzed among all participants, regardless or reported STI testing.
[c]<0.001; [d]0.0001; [e]0.05; [f]0.01.
STI, sexually transmitted infection; PR, unadjusted prevalence ratio; IPV, intimate partner violence.

Table 5. Multivariate Analyses of IPV with Outcomes That Promote HIV Transmission and Disease Progression

Outcomes	*Prevalence ratio*	*95% Confidence intervals*
Unprotected sexual intercourse within the past 6 months[a]	1.34	1.08, 1.68
Diagnosis with a sexually transmitted infection within the past 6 months[b]	3.49	1.60, 7.62
Use of HIV care within the past 12 months[c]	0.90	0.79, 1.03
Current use of antiretroviral therapy[d]	0.57	0.41, 0.80
Men	0.31	0.17, 0.56
Women	1.13	0.64, 1.97

[a]Final model also included frequency of crack use, gender, engagement in transactional sex in the prior 6 months, and sexuality. Data shown is unprotected sex variable analyzed among all participants, regardless of HIV status of partner.
[b]Final model also included number of sexual partners, gender, and sexuality. Data shown is STI variable analyzed among all participants, regardless or reported STI testing.
[c]Final model also included frequency of crack use and homelessness.
[d]Final model also included gender and an IPV-gender interaction term.
STI, sexually transmitted infection.

who present with a new STI diagnosis, who fail to take prescribed ART, or who miss repeated clinic appointments may be more realistic. When noted in clinical practice these markers could be used to initiate the IPV screening and referral process. Since more than two thirds of our participants who survived IPV reported high levels of comfort in discussing their IPV experiences with their HIV care providers, HIV outpatient clinic visits may be opportunities for clinicians to address IPV.

The low rate (62%) and limited nature of support service utilization by our participants after they experienced abuse suggest a need for new public health strategies. IPV survivors in our study reported using services that were immediately available rather than services with the potential to provide longer lasting support and ultimately empower them to leave abusive relationships. This suggests that after initial stabilization of the IPV survivor, 911 phone services, and emergency departments may be opportune channels for referral to services with capacity to provide ongoing assistance (i.e., mental health resources, shelters, financial and legal aid, and HIV primary care). Furthermore, the commonly cited barriers to service utilization suggest that public health and clinical efforts should focus on increasing awareness of available IPV support services and improving patient sense of comfort and confidentiality. Furthermore, while our study evaluated lifetime utilization of support services after exposure to IPV, future studies should evaluate whether access to and utilization of IPV support services is impacted by the age at which IPV is experienced.

There are several limitations to our study. The primary limitation is its cross-sectional design which limits our ability to draw causal inferences and establish temporality. The design may also have introduced a selection bias as we only enrolled hospitalized individuals who tend to have more advanced HIV disease. Perhaps individuals who are not admitted to the hospital experience different frequencies of abuse by their partner. Additionally, since DHHS guidelines for ART initiation were revised during the study period, participant eligibility for ART initiation may have also varied and thus biased the association between IPV and ART use. The assessment of our variables by personal recall alone may also have compromised their accuracy. Also, in an effort to capture the maximum number of IPV histories we broadly defined IPV as an affirmative response to any of the five screening questions, and may have sacrificed specificity in doing so. We attempted to account for this potential shortcoming by creating a second variable, severe IPV, which was also associated in bivariate analysis with all four measured outcomes. Regardless, had individuals been misclassified as having prior histories of IPV the bias would have been toward the null, and thus the prevalence ratios would have been underestimates of the true IPV effect. A final limitation of the study is that two of the five IPV screening questions were not part of the validated STaT instrument. At the time of initial study design, a succinct IPV scale that incorporated sexual violence screening had not yet been developed and validated in HIV-infected individuals. Because we felt that the assessment of sexual violence and controlling partner behaviors was necessary in fully characterizing the IPV experiences of our participants, we adapted the STaT tool to better address these components.

Thus, among this often neglected, difficult-to-reach population, IPV may continue to fuel HIV transmission and disease progression by interfering with access to outpatient HIV care and medication adherence and by reducing capacity to practice safe sex. Future investigations should attempt to prospectively evaluate whether HIV-positive crack users who experience IPV are more likely to engage in these high-risk behaviors than their non-abused counterparts. They should further assess the prevalence and impact of other established risk factors of poor HIV-related health,[28,29] such as childhood abuse and shame resulting from histories of abuse and acquiring an HIV diagnosis, on medication adherence, HIV testing, and HIV status disclosure in this population. Safe sex interventions aimed at curbing HIV transmission, should incorporate IPV screening of heterosexual and LGBT individuals, methods for negotiating barrier protection in settings of abuse, and consider incorporating female-initiated barriers (i.e., female condoms, diaphragms, and microbicides) that may be less likely to challenge the IPV perpetrator's sense of power and control.[30,31] Similarly, interventions aimed at improving adherence to ART and clinic appointments should incorporate IPV screening and referral to services aimed at longitudinally empowering IPV survivors.

Acknowledgments

We would like to thank all members of the Project HOPE research team and the study participants at Emory University and University of Miami for their contribution to this work and Dr. Mitch Klein for guidance with statistical analysis. This work was supported in part by the NIH/NIDA (RO1 DA01761201-A2), the NIH/NIAID Emory Center for AIDS Research (2P30AI050409), University of Miami D-CFAR (P30AI073961) and NCRR Atlanta Clinical and Translational Science Institute (UL1RR025008).

Author Disclosure Statement

None of the authors have financial or other beneficial interest in the products or concepts mentioned in the manuscript that would bias the report.

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