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Sexually Transmitted Infections, Sexual Risk Behavior and Intimate Partner Violence Among African-American Adolescent Females with a Male Sex Partner Recently Released from Incarceration

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Abstract

Background—Social networks directly and indirectly influence STI risk. The objective was to explore associations between sex with a male recently released from incarceration and sexual risk and intimate partner violence (IPV) among African-American adolescent females.

Methods—Sociodemographic, psychosocial and sexual behavior data were collected at baseline, 6- and 12-months from African-American females, 15–21 years, participating in an HIV/STI prevention trial. Among 653 participants with 1 follow-up assessments, generalized estimating equations tested associations during follow-up between having a recently released partner and STI acquisition, sexual risk behaviors and IPV, adjusting for age, treatment assignment and corresponding baseline measure.

Results—Eighty-three (13.6%) participants had a recently released partner at 6-months and 56 (9.3%) at 12-months. Participants with a recently released partner were more likely to: have vaginal (AOR: 5.48), anal (AOR: 2.43) and oral (AOR: 1.51) sex, a casual partner (AOR: 1.66), sex while high/drunken (AOR: 1.57) or with a high/drunken partner (AOR: 2.27); use condoms

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Registration: The study is registered at www.clinicaltrials.gov (NCT00633906).

Implications and contribution: Among African-American adolescent females, sex with a male recently released from incarceration is associated with sexual risk and intimate partner violence (IPV). Despite high incarceration rates among African-American men, this is the first study to investigate both sexual risk and IPV among young African-American females with a recently released partner.

inconsistently (AOR: 0.58); acquire Chlamydia (AOR: 1.80) and experience emotional (AOR: 4.09), physical (AOR: 2.59) or sexual abuse (AOR: 4.10) by a boyfriend. They had a greater number of sex partners, lower partner communication- and refusal-self-efficacy, were high/drunk during sex more frequently and used condoms during oral sex less frequently.

Conclusions—A recently released sex partner is associated with sexual risk and IPV among African-American adolescent females. Prevention programs should inform adolescents about potential risks associated with recently released partners as well as provide adolescents with skills to establish and maintain healthy sexual relationships.

Keywords

Adolescent; African-American; Incarcerated partner; Sexually transmitted infections; Sexual risk; Intimate partner violence

Introduction

Black adolescent females bear the greatest burden of both gonorrhea and Chlamydia among all age, gender and race categories in the United States.¹ Perhaps contributing to the high rates of sexually transmitted infections (STIs) among young Black women is the disproportionately high incarceration rate of Black men.^{2,3} In 2009, the incarceration rate among Black males (4,749 inmates per 100,000 U.S. residents) was 6.7 times that of white non-Hispanic males and 2.6 times that of Hispanic males.⁴ Black men accounted for 40% of the population of men (n=2,096,300) in custody at prisons and jails during the one-day mid-year census in 2009.⁴ At mid-year in 2006, approximately 12% of Black males 24–29 years of age were incarcerated, as compared to 1.7% of white men the same age.⁵ Nationally, one-quarter to one-third of Black men will be incarcerated at some time in their lives.^{6,7}

Sex with a partner with an incarceration history is a human immunodeficiency virus (HIV) and STI risk factor.^{8,9} Sex with a partner recently released from incarceration could increase risk via several pathways. Relative to the general population, incarcerated populations are more likely to be infected with HIV and STIs.^{10,11} Many men have multiple and concurrent sex partners, unprotected sex and sex while high or drunk soon after release from incarceration.^{10,12} Increased STI risk may occur via direct transmission, or partners recently released from incarceration may expose individuals to riskier social networks.¹³

Finally, men with an incarceration history may be more prone to violence, as incarceration is related to several intimate partner violence (IPV) perpetration risk factors (e.g., unemployment, economic stress, substance use, history of violence victimization and perpetration, low academic achievement).^{11,14–16} “Intimate partner violence” refers to “behavior within an intimate relationship that causes physical, sexual or psychological harm.”¹⁷ Intimate partners include current and former spouses and non-marital partners.¹⁸ IPV within dating relationships is often termed “dating violence”.¹⁹ Among adolescent females, dating violence is associated with increased sexual risk behavior, substance use and pregnancy.²⁰ African-American women who have experienced sexual violence as youth have increased risk for: abortion, subsequent abuse as an adult, STIs, >2 lifetime STIs, early sexual debut and a greater number of lifetime sexual partners.^{21,22} IPV may result in HIV and STI transmission during forced sex or disempowerment to negotiate safer sexual practices, as suggested by the theory of gender and power.^{20,21,23} A history of dating violence is associated with increased fear about the consequences of condom negotiation and fear of talking to a partner about pregnancy prevention among African-American adolescent females.²³ This peripheral path through partner communication is supported in the adult literature and among African-American adolescents.^{21,24,25}

Despite high incarceration rates among young African-American men and high rates of sexual risk behavior among inmates following release, we are aware of no studies which have investigated the risks of having a male sex partner recently released from incarceration specifically among African-American adolescent females. Our objectives were to assess the associations between having sex with a male partner recently released from incarceration and STI acquisition, sexual risk behavior, psychosocial constructs related to sexual risk behavior and IPV among African-American adolescent females.

Methods

Study sample

From March 2002 to August 2004, 715 African-American adolescent females enrolled in a HIV/STI prevention trial, completed baseline assessments and were randomized to study conditions, as previously described.²⁶ Participants were recruited from 3 reproductive health clinics in Atlanta, Georgia. Eligibility criteria included self-identifying as African-American, age 15 to 21 years and vaginal intercourse in the past 60 days. Exclusion criteria included being married, currently pregnant or attempting to become pregnant. On a return visit to the clinic, adolescents completed informed consent procedures and baseline assessments and were randomized to trial conditions. Written informed consent was obtained from all participants, with parental consent waived for those younger than 18 years due to the confidential nature of clinic services. Of eligible adolescents, 84.4% enrolled in the study, completed baseline assessments and were randomized to study conditions. Participants were compensated \$50 for travel and childcare to attend intervention sessions and complete assessments. The Emory University institutional review board approved all study protocols. This analysis reports on the 653 (91%) participants who completed at least one follow-up assessment post-intervention.

Study procedures

The study procedures have been described elsewhere.²⁶ Briefly, the intervention (HORIZONS) consisted of 2 4-hour group HIV/STI prevention sessions, 4 15-minute telephone contacts to reinforce information presented in the group sessions and vouchers given to male sex partners to facilitate HIV/STI screening and treatment. Telephone contacts occurred 3–4 weeks and 10–12 weeks following the baseline and 6-month assessments. Participants randomized to the control condition attended a 1-hour group session to watch an STI/HIV prevention video followed by a group discussion. Participants received telephone contacts on the same schedule as participants randomized to the intervention condition but only to update locator information.

Data collection occurred at baseline and 6 and 12 months following completion of the group sessions and consisted of an audio computer-assisted self-interview (ACASI) and self-collected vaginal swabs. The ACASI assessed sociodemographics, sexual history, attitudes, and psychosocial constructs associated with STI/HIV-preventive behaviors. Identical questions were asked at each assessment. Following the ACASI, participants provided 2 self-collected vaginal swabs.²⁷ One specimen was assayed for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*, using the Abbott LCx Probe System (Abbott Laboratories, Abbott Park, Illinois).^{28–30} After discontinuation of this assay in September, 2002, all specimens were subsequently tested using the BD ProbeTec ET *C trachomatis* and *N gonorrhoeae* Amplified DNA assay (Becton Dickinson and Company, Sparks, Maryland).³¹ The second specimen was tested for *Trichomonas vaginalis* using a non-commercial real-time polymerase chain reaction assay.³² Participants with a positive STI test result received directly observable single-dose antimicrobial treatment and risk-reduction counseling per

Centers for Disease Control and Prevention recommendations and were encouraged to refer sex partners for treatment. The County Health Department was notified of reportable STIs.

Measures

Sociodemographic Characteristics—School enrollment was assessed with, “Are you currently attending school?” (yes/no). Family aid index was assessed with a 4-item scale. Participants respond yes/no to “In the past 12 months, did you or anyone you live with receive any money or services from”: a) “Welfare (including TANF (Temporary Assistance to Needy Families) or SSI)?”; b) “food stamps?”; c) “WIC (Women, Infants and Children)?” and d) “Section 8 housing (housing subsidies)?”.

Substance Use—Participants responded yes/no to, “In your lifetime, have you ever tried marijuana?” and “In your lifetime, have you ever tried alcohol?”.

Sex with a Recently Released Partner—Participants were asked, “In the past 6 months, have you had vaginal sex with a guy who you know has just been released from a jail, prison, or detention center?” (yes/no).

STIs—Participants were defined as having Chlamydia, gonorrhea or trichomoniasis at baseline if they tested positive for these infections. Participants were defined as acquiring Chlamydia, gonorrhea or trichomoniasis at the 6- or 12-month assessment if they had a positive test result following a negative test result or documented treatment with effective single-dose antibiotics at the preceding visit. A composite “any STI” variable was created to indicate infection with Chlamydia, gonorrhea and/or trichomoniasis.

Sexual Risk Behaviors—Age at first sex was assessed with, “How old were you the first time you willingly had vaginal sex?”. “In your entire life, how many guys have you had vaginal sex with?” assessed participants’ lifetime number of sex partners. We assessed the following risk behaviors in the 60 days prior to assessment: (a) vaginal sex (yes/no) (b) number of vaginal sex partners, (c) number of times had vaginal sex, (d) percent condom use during vaginal sex, (e) anal sex (yes/no), (f) number of anal sex partners, (g) number of times had anal sex, (h) percent condom use during anal sex, (i) oral sex (yes/no), (j) number of oral sex partners, (k) number of times had oral sex, (l) percent condom use during oral sex, (m) had sex while high or drunk (yes/no), (n) number of times had sex while high or drunk, (o) had sex with a partner who was high or drunk (yes/no) and (p) number of times had sex with a partner who was high or drunk. The dichotomous vaginal, anal and oral sex variables were created from the questions about the numbers of sex partners in the past 60 days. We assessed the frequency questions (number of partners, number of sex acts, percent condom use) only among participants who endorsed engaging in the behavior in the past 60 days. Percent condom use was calculated by dividing the number of times the participant reported using a condom by the total number of sex acts reported. We also assessed: (q) consistent condom use, defined as 100% use during vaginal sex in the 60 prior to assessment, (r) having a current boyfriend who has had concurrent sex partners during the relationship (yes/no) and (s) currently having a casual partner (yes/no).

Psychosocial Constructs—An 8-item scale measured fear of consequences of condom negotiation; a sample item was, “I have been worried that if I talked about using condoms with my boyfriend or sex partner he would threaten to leave me” ($\alpha=.84$).³³ Partner sexual communication self-efficacy was assessed with a 6-item index; a sample item was, “How hard is it for you to demand that he use a condom?” ($\alpha=.83$).³³ Partner sexual communication frequency was assessed with a 5-item index; a sample item was, “During the past 60 days, how many times have you and your boyfriend or sex partner(s) talked about

how to prevent pregnancy?”³³ Perceived peer norms supporting risky sexual behavior was measured using an 8-item index ($\alpha=.68$). A sample item included “How many of your friends think that cheating on your partner is okay?”. Finally, refusal self-efficacy was assessed with a 7-item index ($\alpha=.84$); a sample item was, “How sure are you that you would be able to say NO to having sex with someone you want to date again?”³⁴

Abuse/IPV—All participants were asked whether they ever experienced emotional, physical and sexual abuse. Among participants at least 18 years of age, we assessed IPV perpetrated by a boyfriend or a casual partner in the 60 days prior to assessment. Participants were asked about abuse by a boyfriend or casual partner separately. Emotional abuse was assessed with, “In the past 60 days, have you been emotionally abused by [your boyfriend / a casual sex partner]?” Physical abuse was assessed with, “In the past 60 days, have you been physically abused (hit, punched, kicked, slapped, etc.) by [your boyfriend/ a casual sex partner]?”. Sexual abuse was assessed with, “In the past 60 days, has [your boyfriend/ a casual sex partner] made you have vaginal sex when you didn't want to?”

Adolescents less than 18 years of age were not surveyed about recent abuse due to concerns about the quality of the data to be obtained and so as not to deter their participation in the research given the research team's responsibility to report recent abuse to minors to local authorities. All participants were offered referrals for needed services, and a clinical psychologist was available throughout the study to provide assistance to participants in the event they became distraught during research activities.

Data analysis

Descriptive statistics summarized selected baseline characteristics. We compared selected baseline characteristics according to participants' reports of having a recently released partner in the six months prior to baseline assessment using t-tests and chi-square statistics. Generalized estimating equations tested unadjusted and adjusted associations during follow-up between STI acquisition, sexual risk factors and IPV (outcome measures) and having a recently released partner in the 6 months prior to the two follow-up visits. Adjusted models controlled for age at baseline, treatment assignment and the corresponding baseline measure of the outcome. Baseline values for percent condom use during anal sex were imputed for participants who reported anal sex during follow-up but not at baseline. The imputed values were set equal to mean percent condom use among participants who reported anal sex at baseline. Baseline values for percent condom use during oral sex were similarly imputed for participants who reported oral sex during follow-up but not at baseline. Statistical analyses were conducted using STATA version 11.1 SE (STATA Corp., College Station, TX).

Results

Sample characteristics

Eighty-three participants (13.6%) reported sex with a male partner recently released from jail, prison or detention at the 6-month assessment, and 56 participants (9.3%) reported a recently released partner at 12-months. Nineteen participants, 3.4% of participants with complete follow-up data, reported a recently released partner at both follow-up assessments. Table 1 presents selected baseline characteristics among study participants.

Characteristics associated with having a recently released partner at baseline

Table 2 compares baseline characteristics according to participants' reports of having a recently released partner in the 6 months prior to baseline assessment. Participants with a recently released partner were less likely to be enrolled in school (55.9% vs. 68.4%,

$p=0.014$) were more likely to have ever tried marijuana (88.2% vs. 76.2%, $p=0.007$) and tended to be younger at first sex (14.3 vs. 14.6 years, $p=0.050$).

Associations between having a recently released partner and STIs, HIV/STI risk factors and IPV

Table 3 presents unadjusted associations between having a recently released partner and STIs, selected HIV/STI risk factors and IPV during follow-up while Table 4 presents the adjusted associations. Controlling for potential confounders, participants with a recently released partner were more likely to acquire Chlamydia (AOR: 1.80, 95% CI: 1.14, 2.85) and any STI (AOR: 1.61, 95% CI: 1.06, 2.45). In the 60 days preceding follow-up visits, participants with a recently released partner were more likely to: have had vaginal (AOR: 5.48, 95% CI: 2.11, 14.22), anal (AOR: 2.43, 95% CI: 1.42, 4.19) and oral (AOR: 1.51, 95% CI: 1.05, 2.16) sex; have a casual sex partner (AOR: 1.66, 95% CI: 1.11, 2.49); have had sex while high/ drunk (AOR: 1.57, 95% CI: 1.02, 2.44) or with a high/ drunk partner (AOR: 2.27, 95% CI: 1.57, 3.27); use condoms inconsistently (AOR: 0.58, 95% CI: 0.35, 0.94) and experience emotional (AOR: 4.09, 95% CI: 2.11, 7.92), physical (AOR: 2.59, 95% CI: 1.23, 5.45) or sexual abuse (AOR: 4.10, 95% CI: 1.39, 12.13) by a boyfriend. Participants with a recently released sex partner had a greater mean number of vaginal (B^* : 0.66, 95% CI: 0.21, 1.10) and anal (B^* : 0.28, 95% CI: 0.05, 0.50) sex partners in the past 60 days, were high or drunk during sex more frequently (B^* : 3.22, 95% CI: 0.88, 5.57) and used condoms during oral sex less frequently (B^* : -0.11, 95% CI: -0.19, -0.03). They also had lower refusal self-efficacy (B^* : -1.07, 95% CI: -1.95, -0.19) and partner communication self-efficacy (B^* : -0.56, 95% CI: -1.09, 0.02). Participants with a recently released partner had less frequent sexual communication with their partners (B^* : -0.70, 95% CI: -1.42, -0.02), although the association was only marginally statistically significant.

Discussion

Among African-American adolescent females in our study, having a male sex partner who was recently released from jail, prison or detention was associated with increased STI acquisition, increased sexual risk behavior, psychosocial constructs related to sexual risk behavior and abuse by a boyfriend. To our knowledge, this is the first study to examine the associations between having a recently released male sex partner and both sexual risk and IPV and the first study to explore these topics specifically among African-American adolescents.

Adolescents with a partner recently released from incarceration were more likely to acquire Chlamydia, which is a leading cause of infertility and facilitates HIV transmission.²⁷ Adolescents may have been infected by their recently incarcerated partner or as a result of exposure to new social networks supporting risk-taking. Adolescents with a recently released partner reported increased sexual risk behavior and decreased refusal self-efficacy, a correlate of inconsistent condom use.³⁵ For males and females, incarceration may lead to or be a proxy for involvement in networks with high HIV and STI prevalence and risk behaviors.^{3,11,13} HIV prevalence in prison populations is 6–10 times higher than in the general population.³⁶ It has been estimated that 14% of all individuals with HIV in the United States were released from a correctional facility in 2006.³⁷ Especially given high rates of sexual risk behavior following release, incarcerated individuals may serve as a bridge between higher and lower sexual risk groups.³

Nationally, IPV rates are especially high among African-American and younger women.³⁸ Among African-American women 15–24 years, IPV is the primary reason for premature death from homicide and nonfatal injury.³⁹ Outside of studies involving men incarcerated for domestic violence and small qualitative studies, we are unaware of any studies which

have explored associations between IPV victimization and having a partner with an incarceration history. In our study, African-American adolescent females with a sex partner recently released from incarceration were 2–4 times as likely to experience IPV perpetrated by a boyfriend, although we were unable to determine if the recently incarcerated partner was the perpetrator. Dating violence is related to fear of condom negotiation and sexual communication with one's partner.²³ In our study, having a partner recently released from incarceration was significantly associated with lower partner sexual communication self-efficacy and marginally associated with lower partner sexual communication frequency. The experience of IPV associated with having a recently incarcerated partner could potentially impact sexual risk in future relationships, as fear of abuse may prevent individuals from negotiating condoms and engaging in HIV/STI risk reduction in future relationships.²⁴

Strengths and Limitations

Our study is subject to a number of limitations. First, subjects were participating in an HIV/STI prevention intervention trial, and, thus, the findings may not be fully generalizable, although our study achieved high recruitment and retention rates.²⁶ We might expect that our ability to detect associations with having a sexual partner recently released from incarceration would be reduced given that the intervention aimed to reduce STI incidence, however, we found a number of significant findings related to both outcome and potential mediating variables.

We had limited information about the recently incarcerated sexual partner. We were unable to determine whether the incarcerated partner was a boyfriend or casual or new partner. We did not have information about length of or reason for incarceration, type of correctional facility or the participant's incarceration history. We are limited in our ability to make inferences about causality. Importantly, we were unable to determine if the recently incarcerated partner was the IPV perpetrator, nor if sexual risk behaviors were practiced with the incarcerated partner. We are unable to exclude the possibility that young African-American women who practiced riskier behaviors or experienced IPV might have been more likely to select recently incarcerated partners. We are also unable to exclude the possibility that increased risk behavior and STI acquisition occurred during the partner's incarceration. Additionally, although community incarceration and STI prevalence rates are correlated through a variety of hypothesized mechanisms,⁴⁰ we were unable to control for neighborhood of residence or community-level factors.

In addition, IPV was assessed retrospectively using self-reported yes/no questions. Thus, we could not determine when specific episodes of abuse occurred or the frequency, severity or duration of abuse. A more thorough assessment based on an extensive survey or face-to-face interview may be useful for more accurately assessing and characterizing abuse. Also, given our extreme definition of sexual violence, females not reporting sexual violence per our definition may have experienced other forms of sexual abuse. Lastly, we were able to assess associations between IPV and having a recently released partner only among participants at least 18 years of age; the degree to which these findings apply to younger participants is unknown.

Despite these limitations, our study has several unique strengths. Our study focuses on a high-risk population of African-American adolescent females in a setting with exceptionally high incarceration rates among Black men. In addition, we demonstrated over-time associations between having a recently incarcerated sexual partner and STI acquisition using biologic end points. We also presented associations with sexual risk behavior, psychosocial constructs related to risk and IPV, demonstrating how having a recently incarcerated partner may lead to increased risk both in the short- and long-term.

Implications

Many participants in our study had sex with a partner recently released from incarceration. Although STI and HIV rates are high among incarcerated populations, routine screening and treatment in correctional settings is far from universal. Our findings highlight the potential impact HIV/STI prevention and treatment efforts in correctional settings may have on the general community.

HIV/STI prevention programs should heighten African-American adolescent females' awareness of potential risks associated with a recently released sex partner. Interventions should provide young women with skills and strategies to identify, establish and maintain healthy sexual relationships. Of particular importance is enhancing young women's self-efficacy to negotiate safer sexual practices with their partners. Such intervention approaches should also seek to raise awareness regarding the prevalence of IPV in adolescent relationships and connect adolescents in abusive relationships with available services. Screening for IPV as part of sexual health services or via HIV/STI prevention interventions can also facilitate appropriate referrals. Ultimately, multi-faceted sexual health interventions provide a unique opportunity to empower young African-American women with the confidence and skills to establish and maintain healthy relationships, free of IPV, and practice safer sexual behaviors.

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Table 1

Selected baseline characteristics among the sample of African-American females 15–21 years of age who completed at least one follow-up visit

Variable	Females (N=653), n (%)
Sociodemographic characteristics	
Age (years), mean (SD) [‡]	17.8 (1.7)
Currently in school	434 (66.5%)
Family aid index, mean (SD)	0.87 (1.0)
Substance use	
History of alcohol use	555 (85.0)
History of marijuana use	510 (78.1)
Lifetime sexual history	
Age at first sex (years), mean (SD) [∞]	14.6 (1.7)
Lifetime number of sex partners, mean (SD) [§]	8.4 (19.3)
STIs	
Any STI	177 (27.1)
Chlamydia	107 (16.4)
Gonorrhea	28 (4.3)
Trichomoniasis	83 (12.7)
Sexual behavior in past 60 days	
Number of vaginal sex partners, mean (SD) [§]	1.5 (1.4)
Consistently used condoms ^θ	134 (25.8)
Had anal sex	69 (10.6)
High/ drunk during sex [§]	203 (31.2)
Partner high/ drunk during sex [§]	285 (43.8)
Lifetime abuse	
History of emotional abuse	394 (60.3)
History of physical abuse	305 (46.7)
History of sexual abuse	157 (24.0)
IPV in past 60 days[‡]	
Emotionally abused by boyfriend [✓]	83 (24.1)
Physically abused by boyfriend [✓]	48 (14.0)
Sexually abused by boyfriend [✓]	8 (2.3)
Emotionally abused by casual partner [✓]	22 (6.4)
Physically abused by casual partner [✓]	18 (5.2)
Sexually abused by casual partner [✓]	6 (1.7)

[‡] Assessed only for the 347 participants 18 years of age

$\ddagger$ Missing one response

$\S$ Missing two responses

$\int$ Missing three responses

∞ Missing four responses

θ Missing 134 responses

Table 2

Comparison of baseline characteristics among African-American females 15–21 years of age according to their report of sex in the prior 6 months with a male partner recently released from incarceration

Variable	Sex with a recently released partner (n=102)	No sex with a recently released partner (n=551)	p-value
Sociodemographic characteristics			
Age (years), mean (SD)	17.8 (1.6) [‡]	17.8 (1.7)	0.387
Currently in school, n (%)	57 (55.9)	377 (68.4)	0.014
Family aid index, mean (SD)	0.86 (0.94)	0.87 (1.03)	0.894
Substance use			
History of alcohol use, n (%)	89 (87.3)	466 (84.6)	0.486
History of marijuana use, n (%)	90 (88.2)	420 (76.2)	0.007
Lifetime sexual history			
Age at first sex (years), mean (SD)	14.3 (1.6)	14.6 (1.7) [∞]	0.050
Lifetime number of sex partners, mean (SD)	8.5 (12.0)	8.4 (20.4) [§]	0.950

[‡] Missing one response

[§] Missing two responses

[∞] Missing four responses

Table 3

Unadjusted associations between having a sex partner who was recently released from incarceration and STIs, HIV/STI risk factors and IPV

Logistic Regression Models				
Outcome	n	OR	95% CI	p-value
STIs				
Any STI [†]	647	1.66	1.10, 2.49	0.016
Chlamydia [†]	647	1.86	1.18, 2.93	0.007
Gonorrhea	647	1.84	0.84, 4.06	0.129
Trichomoniasis	647	1.36	0.76, 2.42	0.296
Sexual Risk Behavior				
Boyfriend ever have concurrent partners during relationship, if have a boyfriend	561	1.48	0.98, 2.23	0.065
Currently have a casual partner [†]	653	1.70	1.14, 2.52	0.009
Vaginal sex [†]	653	5.38	2.07, 14.01	0.001
Consistent condom use, if had vaginal sex [†]	579	0.51	0.34, 0.77	0.001
Anal sex [†]	653	2.45	1.46, 4.11	0.001
Oral sex [†]	653	1.52	1.13, 2.05	0.005
High/ drunk during sex [†]	653	1.57	1.02, 2.44	0.042
Partner high/ drunk during sex [‡]	653	2.34	1.68, 3.26	<0.001
Intimate Partner Violence[§]				
Emotionally abused by boyfriend [‡]	339	3.14	1.68, 5.89	<0.001
Physically abused by boyfriend [‡]	339	3.83	1.93, 7.60	<0.001
Sexually abused by boyfriend [†]	339	4.28	1.48, 12.33	0.007
Emotionally abused by casual partner	339	2.63	0.89, 7.79	0.081
Physically abused by casual partner	339	1.78	0.35, 9.03	0.489
Sexually abused by casual partner	339	1.74	0.52, 5.78	0.370
Linear Regression Models				
Outcome	n	B	95% CI	p-value
Sexual Risk Behavior				
Number of vaginal sex partners, if had vaginal sex [†]	618	0.69	0.24, 1.14	0.003
Number of times had vaginal sex, if had vaginal sex	478	-0.29	-3.43, 2.85	0.857
Percent condom use during vaginal sex, if had vaginal sex	579	-0.08	-0.16, 0.00	0.037
Number of anal sex partners, if had anal sex [†]	72	0.25	0.03, 0.47	0.028
Number of times had anal sex, if had anal sex	72	-0.45	-1.08, 0.17	0.154
Percent condom use during anal sex, if had anal sex	72	0.01	-0.23, 0.25	0.949
Number of male oral sex partners, if had oral sex	328	0.72	-0.04, 1.48	0.065
Number of times had oral sex, if had oral sex	328	1.73	-0.24, 3.71	0.086

Logistic Regression Models				
Outcome	n	OR	95% CI	p-value
Percent condom use during oral sex, if had oral sex [†]	327	-0.08	-0.15, 0.00	0.039
Number of times high/ drunk during sex, if >0 [‡]	216	4.07	1.81, 6.33	<0.001
Number of times partner high/ drunk during sex, if >0	280	0.75	-1.41, 2.92	0.495
Psychosocial Constructs Associated With Sexual Risk Behavior				
Fear of consequences of condom negotiation	653	0.73	-0.10, 1.56	0.086
Partner sexual communication self-efficacy	653	-0.52	-1.11, 0.07	0.086
Partner sexual communication frequency	653	-0.81	-1.54, -0.07	0.032
Perceived peer norms supporting risky sexual behavior [†]	615	1.16	0.34, 1.98	0.006
Refusal self-efficacy [†]	653	-1.24	-2.09, -0.39	0.004

OR: odds ratio, CI: confidence interval, B: linear coefficient

[†] p 0.05

[‡] p 0.001

[§] Assessed only for participants ≥ 18 years of age at baseline

Table 4

Adjusted associations between having a sex partner who was recently released from incarceration and STIs, HIV/STI risk factors and IPV

Logistic Regression Models				
Outcome	n	AOR*	95% CI	p-value
STIs				
Any STI [†]	647	1.61	1.06, 2.45	0.026
Chlamydia [†]	647	1.80	1.14, 2.85	0.012
Gonorrhea	647	1.71	0.78, 3.76	0.178
Trichomoniasis	647	1.32	0.73, 2.39	0.364
Sexual Risk Behavior				
Boyfriend ever have concurrent partners during relationship, if have a boyfriend	560	1.50	0.98, 2.28	0.060
Currently have a casual partner [†]	653	1.66	1.11, 2.49	0.013
Vaginal sex [‡]	653	5.48	2.11, 14.22	<0.001
Consistent condom use, if had vaginal sex [†]	475	0.58	0.35, 0.94	0.029
Anal sex [‡]	651	2.43	1.42, 4.19	0.001
Oral sex [†]	651	1.51	1.05, 2.16	0.026
High/ drunk during sex [†]	653	1.57	1.02, 2.44	0.042
Partner high/ drunk during sex [‡]	653	2.27	1.57, 3.27	<0.001
Intimate Partner Violence[§]				
Emotionally abused by boyfriend [†]	339	2.98	1.59, 5.60	0.001
Physically abused by boyfriend [†]	339	3.53	1.73, 7.21	0.001
Sexually abused by boyfriend [†]	339	4.10	1.39, 12.13	0.011
Emotionally abused by casual partner	339	2.78	0.91, 8.50	0.074
Physically abused by casual partner	339	1.60	0.35, 7.38	0.549
Sexually abused by casual partner	339	1.82	0.50, 6.61	0.361
Linear Regression Models				
Outcome	n	B*	95% CI	p-value
Sexual Risk Behavior				
Number of vaginal sex partners, if had vaginal sex [†]	615	0.66	0.21, 1.10	0.004
Number of times had vaginal sex, if had vaginal sex	477	-0.41	-3.53, 2.71	0.798
Percent condom use during vaginal sex, if had vaginal sex	475	-0.04	-0.12, 0.05	0.426
Number of anal sex partners, if had anal sex [†]	72	0.28	0.05, 0.50	0.016
Number of times had anal sex, if had anal sex	72	-0.48	-1.10, 0.15	0.133
Percent condom use during anal sex, if had anal sex	72	0.05	-0.17, 0.27	0.643
Number of male oral sex partners, if had oral sex	326	0.61	-0.09, 1.30	0.086
Number of times had oral sex, if had oral sex	326	1.29	-0.80, 3.39	0.226

Logistic Regression Models				
Outcome	n	AOR*	95% CI	p-value
Percent condom use during oral sex, if had oral sex [†]	325	-0.11	-0.19, -0.03	0.006
Number of times high/ drunk during sex, if >0 [†]	215	3.22	0.88, 5.57	0.007
Number of times partner high/ drunk during sex, if >0	280	0.06	-2.10, 2.22	0.955
Psychosocial Constructs Associated With Sexual Risk Behavior				
Fear of consequences of condom negotiation	653	0.52	-0.31, 1.35	0.219
Partner sexual communication self-efficacy [†]	653	-0.56	-1.09, -0.02	0.042
Partner sexual communication frequency	653	-0.70	-1.42, 0.02	0.058
Perceived peer norms supporting risky sexual behavior	606	0.60	-0.17, 1.37	0.129
Refusal self-efficacy [†]	653	-1.07	-1.95, -0.19	0.017

AOR: adjusted odds ratio; CI: confidence interval; B: adjusted linear coefficient

* All models adjusted for age, treatment assignment and corresponding baseline measure

[†] p 0.05

[‡] p 0.001

[§] Assessed only for participants ≥ 18 years of age at baseline