Paper #2: Sexually Transmitted Infections and Violence against Women

ABSTRACT:

Childhood sexual abuse (CSA) and adult intimate partner violence (IPV) have both been found to be associated with sexually transmitted infections (STIs), but studies have rarely looked at victimization during childhood and adulthood simultaneously despite the fact that women who experience child abuse are more likely to be victimized as adults. This paper examines the relationship between CSA, IPV and STIs using data from a case-control study of 309 women. Overall, 37.3% of women experienced no violence, 10.3% experienced CSA only, 27.3% experienced IPV only, and 25.0% experienced both CSA and IPV. More abused women had a history of CSA than non abused women (47.8% vs. 21.7%, $p<0.001$). Overall, 28.6% of women had ever been diagnosed with an STI, and 10.3% had been diagnosed with an STI during their current relationship. Having ever been diagnosed with an STI was associated with violence (CSA only, OR: 2.8, 95% CI: 1.0-7.5; IPV only, OR: 2.2, 95% CI: 1.0-4.9; CSA and IPV: OR: 4.0, 95% CI: 1.7-9.4), controlling for demographic characteristics. Women who experienced CSA were also younger when they were first diagnosed and women who experienced IPV in the last 12 months were more likely to have contracted an STI during their current relationship. Understanding how both childhood and adult victimization are associated with diagnosis of STIs is important to reducing the incidence and prevalence of STIs, as well as the associated consequences of STIs, including pelvic inflammatory disease and infertility.

INTRODUCTION

Sexually transmitted infections (STIs) are fairly prevalent in the United States. An estimated 18.9 million new cases occurred in 2000, and approximately half of those occurred among adolescents 15-24 years old (Weinstock et al. 2004). There are several negative health consequences of STIs. Untreated STIs can lead to pelvic inflammatory disease (PID), which can lead to chronic pelvic pain, ectopic pregnancies, and infertility (Ness & Brooks-Nelson 2000). Women who have an STI during pregnancy risk infecting their baby before, during, or after the birth. STIs can also result in negative outcomes such as preterm delivery, low birthweight, and infant mortality (Hynes & Rompalo 2000). Finally, having an STI, such as syphilis or genital herpes, can increase a woman's susceptibility to HIV infection (Fleming & Wasserheit 1999).

Several studies have linked violence against women and STIs worldwide (Heise 1994; Heise et al. 2002; Krug et al. 2002). Violence against women is a significant problem in the United States. A national survey found that 25% of women had ever been physically assaulted and/or raped by a current or former intimate partner, and 1.5% of women were assaulted and/or raped by a current or former intimate partner in the last year (Tjaden & Thoennes 1998). Among women aged 18-44, emotional abuse but not physical or sexual assault was significantly associated with ever having had an STI (Smith et al. 2002). In a study of women accessing prenatal care in the United States, women who had ever experienced physical or sexual abuse were more likely to have tested positive for an STI, and women with a history of sexual abuse only or physical and sexual abuse were more than twice as likely to test positive for a current STI (Johnson & Hellerstedt 2002). Another study was conducted among abused women seeking

protection orders; 68% of women reported their abuser had sexually assaulted them on one or more occasions and 15% of the women in the study reported one or more STIs after sexual assault (McFarlane et al. 2005). In a study of urban women, almost 95% of whom were African American or Latina, women who were currently being abused were more likely to have had more than one partner in the last year, to have had an STI, and to be more worried about contracting HIV than women who were not being abused (Wu et al. 2003).

Abuse experiences occurring during childhood have been found to be associated with adult health status, including STIs. Almost one million children were the victims of abuse or neglect in 2001 (Arias 2004), and an estimated 12-22% of adult women experienced childhood sexual abuse (Gorey & Leslie 1997). Women with a history of childhood maltreatment have been found to report fair or poor overall health, to have a greater number of distressing physical symptoms (such as nausea, dizziness, insomnia, chest pain), to engage in more health risk behaviors (not exercising, driving while intoxicated, having sex without knowing partners' sexual history), and to have an increased number of physician-coded diagnoses (Walker et al. 1999). Women who reported any history of child abuse were more likely to report frequent gynecological problems and vaginal infections (Moeller et al. 1993). Women who experienced childhood sexual abuse were more likely to have ever been diagnosed with an STI (Hillis et al. 2000). This finding was replicated in a study of inner city women in the United Kingdom attending a sexual health clinic, where women with a history of any child abuse were more likely to have had a previous STI and to have had more than one STI compared to women who had not experienced any child abuse (Petrak et al. 2000).

Women who experienced child or adolescent sexual abuse were also more likely to engage in risky sexual behaviors as adults, including trading sex for money or drugs, having multiple sexual partners in the last 30 days, and engaging in more unprotected sex (Parillo et al. 2001).

Both childhood sexual abuse and adult victimization need to be taken into account when considering adult health outcomes. Child abuse and neglect may be directly related to negative health outcomes as adults, but it is also indirectly related by increasing the risk of being victimized as an adult, which has direct negative health consequences (Heise et al. 2002; Arias 2004). Because of these associations, having information on abuse during both childhood and adulthood is important to understanding the relationship with STIs. Child sexual abuse has been associated with increased use of alcohol and drugs during adolescence (Bailey & McCloskey 2005), which may lead to sexual risk-taking behaviors. Sexually abused adolescents attending alternative schools were more likely to have first had intercourse before age 14, to have had three or more sexual partners in the last three months, and to have ever had an STI, compared to their non-abused classmates (Buzi et al. 2003). Having first intercourse before age 15, not using birth control at last intercourse and having more than one sexual partner were also associated with childhood sexual abuse in a larger sample of adolescents attending conventional schools (Stock et al. 1997). In a study of college women, women with a history of childhood sexual abuse were more likely to report sexual violence as adults than non-abused women. Women who were abused as children were also more likely to perceive themselves as being at higher risk of being exposed to HIV, to report high-risk behaviors, and to be less likely to use HIV-prevention strategies (Johnsen & Harlow

1996). In a study of women with HIV or at risk for HIV infection, approximately 30% had a history of childhood sexual abuse and 66% of women had a history of intimate partner violence (Cohen 2000). Women with a history of childhood sexual abuse were more likely to have experienced lifetime, but not recent, domestic violence. In a random sample of the Swedish population, childhood or adolescent sexual abuse was associated with several negative outcomes including, younger age at first intercourse, younger age at first STI diagnosis, unintended pregnancy, and adult physical and sexual assault (Steel & Herlitz 2005).

Some studies have explored the relationship between child abuse and adult intimate partner violence (IPV) in relation to other outcomes. Both childhood physical and sexual abuse were associated with women's reports of negative health outcomes, including perceived poor health, chronic mental health condition, and recent drug use, even when controlling for adult victimization (Thompson et al. 2002). Women attending a gastroenterology clinic with histories of physical or sexual abuse either as children or adults were found to have worse health outcomes than women who were not abused, but the contribution of co-occurring child and adult abuse could not be examined (Leserman et al. 1996). Women who experienced both child abuse and adult IPV (OR=5.9) and women who experienced adult IPV only (OR=3.3) were more likely to report six or more chronic physical symptoms (such as pelvic pain, chest pain, and dizziness) compared to women who had not experienced any violence, but women who only experienced child abuse were not significantly different than non-abused women (Nicolaidis et al. 2004).

Research Hypotheses

The aim of this research is to investigate how different forms of violence experienced by women across the lifespan are associated with STIs, building on prior literature by considering childhood sexual abuse (CSA) and adult victimization simultaneously. In addition, the timing of first diagnosed STI in relation to childhood sexual abuse is explored. The specific aims of the study are: 1) to examine the association of abuse during childhood and adulthood and STI history; 2) to determine whether CSA is associated with contracting an STI at a younger age; and 3) to consider whether IPV in the last 12 months is associated with contracting an STI during the current relationship. The hypothesis is that both CSA and adult IPV are associated with having been diagnosed with an STI, and that there would be an interaction between violence in childhood and adulthood, such that women who experienced both types of violence would be more likely to have had an STI than would women who had experience violence only at one time point or not at all.

METHODS

Study Design

This was a case-control study of 309 women. Women were asked to complete a brief survey of women's stress and health at various medical sites including four emergency departments, five OB/GYN, two pediatrics, two primary care and one addiction recovery unit at hospitals in the greater Boston area; 2,465 women completed written surveys (see McCloskey et al. 2005 for additional details). Women were able to provide contact information if they were interested in further participation. Overall, 156 women who provided contact information had a male partner in the past year and reported that they had experienced physical or sexual violence in the past year based on

10 items. These items included six questions from the Severity of Violence Against Women Scale (SVAWS) (Marshall 1992), two questions from the Abuse Assessment Scale (McFarlane et al. 1995), and two questions from another screening instrument validated in emergency departments (Abbott et al. 1995) (Appendix A). These women were contacted by phone and invited to participate in a follow-up interview; 57.7% (n=90) were successfully contacted and completed the in-depth interview.

In addition, to augment the sample size of abuse cases, posters were placed throughout the hospital settings and other community agencies to recruit specifically women with recent abuse. Seventy-eight women were recruited through this method.

After data were collected from index women, a control group of women (n=141) who had a male partner in the last 12 months but who had never experienced any domestic violence was selected from the pool of those who had provided contact information. Nine women (3%) with missing data were excluded from analysis, resulting in a sample size of 300.

This study was conducted with the Institutional Review Board approval of the Harvard School of Public Health and all affiliated health care settings. Women were interviewed for approximately two hours at a private office away from the health care settings. Transportation was provided to and from the interviews and the women were offered $25 as compensation for their time.

Measures

Childhood Sexual Abuse

There are few standardized questionnaires available to measure sexual abuse in childhood or adolescence, and the approach adopted here combines a selection of two

items from a standardized questionnaire used in national surveys (Bernstein et al., 1994); one question derived from another standardized questionnaire (Koss and Oros, 1982); and one question designed for this study yielding an open-ended and qualitative response. Specifically, two yes/no questions from the Childhood Trauma Questionnaire (Bernstein et al., 1994), which asked about things that happened in childhood before age 11, were asked ("Someone in the family molested me (touched or felt your genitals when you did not want them to)", and "I was raped by someone in the family (someone had sexual intercourse with you when you did not want to by threatening you or using some degree of force)"). Women were asked one question about lifetime unwanted sexual experiences (Koss & Oros, 1982): "Has a man (excluding your current partner) forced you to have sexual intercourse when you did not want to by using some degree of physical force like twisting your arm or holding you down?" Two follow-up questions were asked: the number of times this had happened during her lifetime, and the age at which it happened for the first time. If the episode of forced sexual intercourse occurred before age 17, it was considered childhood sexual abuse. In separate questions, women were also asked to report any traumatic events that had occurred before age 18. Any woman reporting a sexual assault before age 17 was classified as having been sexually abused as a child.

Intimate Partner Violence

Women were classified as abused if they indicated *any one* of the following (see Appendix A for items): one of the minor Conflict Tactics Scale (CTS; Strauss, 1996) items happened at least 3 times in the past 12 months; one of the severe CTS items happened at least once in the past 12 months; any injury as a result of IPV in the past 12 months; or a score of at least 18 on the Women's Experience with Battering (WEB)

Scale, which is a measure of emotional abuse (Smith et al., 1999) (see Appendix A for items). The designations "minor" and "major" items of the CTS were indicated by the original authors of the measure. Reliability was high for the three measures (CTS alpha=0.93; WEB alpha=0.96; Injury alpha=0.89).

Sexually Transmitted Infections

Women were asked if a physician had ever diagnosed them with the following STIs: HIV/AIDS; gonorrhea; chlamydia; syphilis; genital warts; and genital herpes. Women were then coded as having had any diagnosed STI. Women who were unsure if they were diagnosed with a condition were coded as not having that STI. Follow-up questions were then asked about the number of times each condition occurred, age at first diagnosis, and age at last diagnosis. Women had been asked how long they had been with their current partner, and this information was used to categorize women by whether they had been diagnosed with an STI during their current relationship. For women with more than one diagnosis, the earliest age reported was used for the age at first STI and all ages provided were used when establishing whether an STI was diagnosed during the current relationship.

Demographics

Women were asked several demographic questions, including age, race/ethnicity, immigrant status, education, and relationship status. As part of the study criteria, women were required to have had a male partner in the 12 months prior to interview, so relationship status was categorized as not married to or living with, living together but not married to, or married to their current partner.

Sexual Health History

Women were asked the age at which they first had sexual intercourse, if they had used condoms in the past 12 months and if their partner had other sexual partners during their relationship. Women were also asked if they had a usual source of health care and if they had a pelvic exam in the last 12 months.

Relationship Control

Women completed a shortened form of the Relationship Control Scale, a subscale of the Sexual Relationship Power Scale about their current partner. This measure was developed in order to look at relationship power dynamics, and has been found to be associated with IPV and consistent condom use (Pulerwitz et al, 2000; Pulerwitz et al. 2002). The eight items were scored on a 4-point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree); a higher score indicates a high level of partner control in the relationship. Reliability was high (alpha=0.87). Sample items include: My partner has more say than I do about important decisions that affect us; If I asked my partner to use a condom, he would get violent; If I asked my partner to use a condom, he would think I'm having sex with other people; I feel trapped or stuck in our relationship; and I am more committed to our relationship than my partner is.

Statistical Analysis

The associations between demographic characteristics, CSA and IPV were measured using Pearson X^2 tests. Pearson X^2 tests were also used to examine the relationship between demographic characteristics, CSA, IPV, and STI history. Unadjusted odds ratios (OR) and 95% confidence intervals (CI) of each independent variable and having a diagnosed STI were estimated using logistic regression analysis. The associations between IPV, STI history and the Relationship Control Scale were

measured using t-tests. A multiple logistic regression model predicting STI history was estimated and included the demographic characteristics significant at $p<0.10$ and violence variables. An indicator of whether a woman was recruited by posters was also included to adjust for unmeasured confounding associated with the recruitment strategy. The associations between demographic characteristics, IPV and whether an STI was diagnosed during the current relationship were measured using Pearson X^2 tests. Unadjusted and adjusted odds ratios (OR) and 95% confidence intervals (CI) of having an STI and the demographic characteristics significant at $p<0.10$ and adult IPV were estimated using logistic regression analysis.

Kaplan–Meier survival curves were used to compare the age at which women were first diagnosed with an STI by experiences of CSA and age at first intercourse. Associations between age at first STI, violence, and demographics were estimated with Cox proportional hazard models. All analyses were conducted using SAS Statistical Software (Version 9, Cary, NC: SAS Institute Inc., 2003).

RESULTS

The proportion of women reporting childhood sexual abuse and intimate partner violence based on each measure is presented in Table 1. Overall, 35.3% of women reported some form of CSA, with the prevalence of CSA from each measure ranging from 17.3%-23.7%. Most of the women (84%) who experienced adult IPV reported physical violence on the CSA. Fewer reported emotional abuse or injuries resulting from physical violence.

Overall, 37.3% of women experienced no violence, 10.3% experienced CSA only, 27.3% experienced IPV only, and 25.0% experienced both CSA and IPV. Childhood

sexual abuse and adult IPV were highly associated. More abused women had a history of CSA than non abused women (47.8% vs. 21.7%, $p<0.001$). The demographic characteristics of women by experiences with violence are presented in Table 2. Age, race, immigrant status, education, age at first intercourse, and having a partner with other sexual partners during the relationship were significantly associated with CSA and IPV. Women who experienced any form of violence were more likely to be older, born in the United States, younger at first intercourse and were less likely to have attended any college or have a monogamous partner. Because of the strong association between age at first intercourse and childhood sexual abuse and because it is unknown whether the reports of age at first intercourse were based on voluntary or involuntary experiences, age at first intercourse was excluded from further analysis.

Distribution of Sexually Transmitted Infections

The distribution of STIs among all women is shown in Figure 1. Overall, 28.7% (n=86) of women had ever been diagnosed with an STI. The most common STI was chlamydia (15.7%), followed by gonorrhea (9.3%). Of women with at least one STI, 64.0% had one STI, 30.2% had two STIs, and 5.8% had three or more STIs. The most common combination among women with more than one STI was gonorrhea and chlamydia.

Violence against Women and Sexually Transmitted Infections

When considering exposure to CSA and IPV as a four-category variable, the proportion of women who had ever had an STI varied significantly by violence exposure: 15.2% who never experienced violence, 32.3% of women who experienced only CSA, 30.5% of women who experienced only IPV, and 45.3% who experienced both CSA and

IPV had ever had an STI. In unadjusted analysis, women who experienced CSA only (OR: 2.7, 95% CI: 1.1-6.6), IPV only (OR: 2.5, 95% CI: 1.2-4.9) and CSA and IPV (OR: 4.6, 95% CI: 2.3-9.2) were all more likely to have been diagnosed with an STI than women who had never experienced violence (Table 3). In unadjusted analysis, race, being born in the US, and relationship status were also significantly associated with having been diagnosed with an STI. Black women, women who were born in the US, and unmarried women were more likely to have had an STI.

The Relationship Control scale, which is scored from 8 to 32, was associated with adult intimate partner violence, with abused women scoring 6.7 points higher than non-abused women ($p<0.001$). However, this scale was not associated with ever having been diagnosed with an STI (difference=1.2 points, $p=0.14$) and was excluded from further analyses.

In adjusted analysis, having ever been diagnosed with an STI was associated with violence (CSA only, OR: 2.8, 95% CI: 1.0-7.5; IPV only, OR: 2.2, 95% CI: 1.0-4.9; CSA and IPV: OR: 4.0, 95% CI: 1.7-9.4). Women who were living with their partners were also more likely than married women to have been diagnosed with an STI (OR: 3.3, 95% CI: 1.3-8.0).

Age at First STI Diagnosis

Figure 2 presents the survival curves of age at first STI by experiences with childhood sexual abuse and age at first intercourse. Overall, women who experienced childhood sexual abuse were more likely to be diagnosed with their first STI at a younger age than those who were not victimized as children ($p=0.0008$) (Figure 2).

Hazard ratios (HR) and 95% CI from Cox proportional hazards models are presented in Table 4. In unadjusted analyses, violence, age, and being born in the US were associated with age at first STI. In the adjusted analyses, experiencing CSA only (HR=2.6), IPV only (HR=2.4), and both CSA and IPV (HR=4.0) were associated with age at first STI, controlling for demographics.

STI Diagnosed Within Current Relationship

Overall, 10.3% of the sample and 36% of the women who had ever been diagnosed with an STI were diagnosed during their current relationship. Women who experienced both CSA and IPV were more likely to have being diagnosed during the current relationship (OR: 6.9, 95% CI: 2.4-19.8) (Table 5). Age was also significant, with women 18-24 years old being more likely to have been diagnosed while with their current partner than women over 40 (OR: 5.8, 95% CI: 1.7-19.9).

Access to Health Care

Approximately 93% of the sample reported that they had a usual source of health care, and there were no differences in access to health care by reported CSA or IPV. Almost 90% of the sample reported having a pelvic exam in the last 12 months, and again there were no differences by abuse. Women with a history of an STI and those who were diagnosed with an STI during their current relationship were no more likely to have had a recent pelvic exam.

DISCUSSION

Almost 30% of women in this study had ever been diagnosed with an STI. As expected, having an STI was associated with experiencing both childhood sexual abuse and adult intimate partner violence. Women who experienced both CSA and IPV were

much more likely to have been diagnosed with an STI compared to non-abused women. Although there has been debate about screening for IPV in medical settings (Ramsey et al. 2002; US Preventive Services Task Force 2004), having information about both CSA and IPV may help health care providers offer the level of care and follow-up that victims of violence require.

Two additional hypotheses were examined due to the information that was collected about the ages at which STIs were diagnosed: 1) that girls who experience childhood sexual abuse would be younger when they were first diagnosed with an STI and 2) that women currently in abusive relationships would be more likely to be diagnosed with an STI. Both of these hypotheses were supported. Women who experienced childhood sexual abuse were significantly younger when they were first diagnosed with an STI. Girls who are sexually abused need to be counseled about sexual risk behaviors during adolescence and adulthood to prevent them from engaging in risk behavior and reduce the likelihood of contracting an STI.

Women who were diagnosed with an STI during the course of their current relationship were more likely to report being abused in the last 12 months and were more likely to be younger (18-24 years old). These two groups represent populations that are vulnerable and may not be able to protect themselves adequately against STIs. Women who experience violence need to be evaluated regularly for STIs to ensure timely diagnosis and treatment in order to reduce the negative consequences.

Different legal, clinical and research definitions have been applied to identifying child sexual abuse. For purposes of this research different forms and ages of sexual abuse were combined including: (1) sexual contact with family members, from

molestation to forced intercourse, before the age of 11 years; and (2) forced sexual intercourse by anyone – inside or outside the family – before the age of 17. This definition of childhood sexual abuse includes more severe forms of abuse. However, the prevalence of childhood sexual abuse among non-abused women (22%) is similar to findings from national studies on the prevalence of childhood sexual abuse (Felitti et al., 1998).

Strengths and Limitations

This study ascertained information about violence throughout the lifespan, which allowed for the relationship between both childhood and adult victimization and STIs to be determined.

There are a few limitations to this study. First, data on sexually transmitted infections is based on self-report rather than biological samples or medical records, and may be subject to recall bias. However, biological samples would only provide information on current STI status, rather than on a woman's cumulative STI history. Medical records may also be incomplete, particularly linking adolescent and adult health records, which may yield incorrect data on the age at first STI diagnosis. The prevalence of genital herpes in this study is lower than expected based on national estimates, as almost 45 million Americans are believed to be infected with herpes simplex virus type 2 (HSV-2). However, less than ten percent of those who tested positive for HSV-2 reported a history of genital herpes infection (Fleming et al. 1997). The low rate in this study is likely because only information on genital herpes, rather than HSV-2, was ascertained.

Second, in relation to the findings about having been diagnosed with an STI during the current relationship, the assumption is that the STI was contracted from the current partner, but the STI could have been contracted from a previous partner or another concurrent sexual partner and not diagnosed. Given how many women reported receiving annual pelvic exams and data on length of the current relationship, this is unlikely, although information on women's other sexual partners during the course of the relationship was not collected.

Finally, the data on sexual violence during childhood and adolescence is based on retrospective reporting, which is subject to recall bias. Although experiences of childhood sexual abuse are likely underestimated, the prevalence of CSA among women who did not experience IPV is in line with national prevalence estimates.

Conclusion

In this sample, women who experienced any form of violence (CSA and/or IPV) were more likely to have ever been diagnosed with an STI. Women both CSA and IPV were four times more likely to have been diagnosed with an STI compared to non-abused women. Women who experienced CSA were also younger when they were first diagnosed with an STI. Understanding how childhood and adult victimization are associated with diagnosis of STIs, including the timing of first STI, is important to reducing the incidence and prevalence of STIs, and the associated consequences of STIs, including PID and infertility. Physicians need to be aware of how a history of child sexual abuse, as well as current experiences of IPV, can make women more vulnerable to STIs and provide appropriate medical care in response to this elevated risk.

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Table 1. Measurement of Childhood Sexual Abuse and Adult Intimate Partner Violence (N=300)				
Childhood Sexual Abuse	Traumatic Events Questionnaire	Unwanted Sexual Experiences	Childhood Trauma Questionnaire	***Overall***
No	80.7 (242)	82.7 (248)	76.3 (229)	64.7 (194)
Yes	19.3 (58)	17.3 (52)	23.7 (71)	35.3 (106)
Adult Intimate Partner Violence	Conflict Tactics Scale	Women's Experiences with Battering	Any Injury	***Overall***
No	56.0 (168)	60.5 (178)	66.7 (200)	47.7 (143)
Yes	44.0 (132)	39.5 (116)	33.3 (100)	52.3 (157)

Table 2. Demographic characteristics by experiences of Childhood Sexual Abuse (CSA) and Adult Intimate Partner Violence (IPV) (N=300),					
	None (%)	CSA only (%)	IPV only (%)	CSA and IPV (%)	p-value[1]
Total	37.3	10.3	27.3	25.0	
Age (years)					
18-24	34.8	16.1	31.7	16.0	0.006
25-29	26.8	35.5	12.2	20.0	
30-39	23.2	25.8	26.8	32.0	
40 +	15.2	22.6	29.3	32.0	
Race					
White	58.0	48.4	37.8	26.7	<0.001
Black	26.8	38.7	52.4	31.5	
Other	15.2	12.9	9.8	21.3	
Born in the United States					
No	30.4	16.1	19.5	13.3	0.032
Yes	69.6	83.9	80.5	86.7	
Education					
Less than 12th Grade	7.1	22.6	22.0	32.0	<0.001
High School	34.8	41.9	47.6	42.7	
College or more	58.0	35.5	30.5	25.3	
Relationship Status					
Not Married or Living Together	44.6	48.4	72.0	52.0	0.004
Living Together	22.3	16.1	14.6	26.7	
Married	33.0	35.5	13.4	21.3	
Age at first intercourse					
<17 years old	30.9	51.6	42.7	73.3	<0.001
17-19	40.9	32.3	36.6	22.7	
20+	28.2	16.1	20.7	4.0	
Used condom in last 12 months					
No	43.8	41.9	40.2	44.0	0.958
Yes	56.3	58.1	59.8	56.0	
Partner had other sexual partners during relationship					
No	93.7	74.2	68.3	66.2	<0.001
Yes	6.3	25.8	31.7	33.8	
Total Sample Size (n)	112	31	82	75	

[1]Pearson χ^2 test

Figure 1. Prevalence of Sexually Transmitted Infections (N=300).

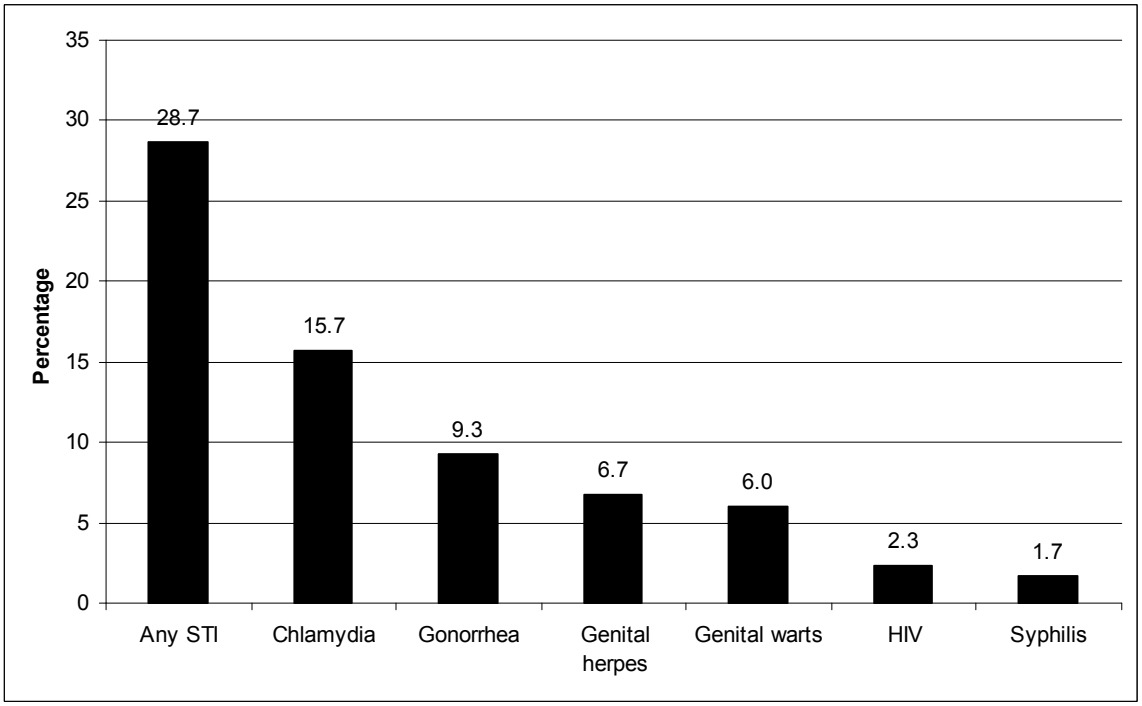

Table 3. Sample characteristics, unadjusted and adjusted logistic regression models of sexually transmitted infections (STI) ever diagnosed (N=300)						
Variable	**Overall (%)**	**STI Ever Diagnosed**		**p-value[1]**	**Unadjusted OR (95% CI)[2]**	**Adjusted OR (95% CI)[2]**
		No (%)	**Yes (%)**			
Total		71.3	28.7			
Experiences of Violence						
No CSA or IPV	37.3	44.4	19.8	<0.001	REF	REF
CSA only	10.3	9.8	11.6		2.7 (1.1-6.6)	2.8 (1.0-7.5)
IPV only	37.3	26.6	29.1		2.5 (1.2-4.9)	2.2 (1.0-4.9)
CSA and IPV	25.0	19.2	39.5		4.6 (2.3-9.2)	4.0 (1.7-9.4)
Age (years)						
18-24	27.3	27.6	26.7	0.990	1.0 (0.5-2.1)	1.5 (0.6-3.5)
25-29	22.0	22.0	22.1		1.1 (0.5-2.2)	1.5 (0.6-3.7)
30-39	26.7	26.2	27.9		1.1 (0.6-2.3)	1.3 (0.6-2.8)
40 +	24.0	24.3	23.3		REF	REF
Race						
White	43.7	47.2	34.9	0.049	REF	REF
Black	41.3	36.9	52.3		1.9 (1.1-3.3)	1.6 (0.9-3.1)
Other	15.0	15.9	12.8		1.1 (0.5-2.4)	1.1 (0.4-2.8)
Born in the United States						
No	21.7	25.7	11.6	0.008	REF	REF
Yes	78.3	74.3	88.4		2.6 (1.3-5.4)	2.1 (0.9-4.5)
Education						
Less than 12th Grade	19.0	15.9	26.7	0.083	1.8 (0.9-3.5)	0.9 (0.4-1.9)
High School	41.0	43.5	34.9		0.9 (0.5-1.5)	0.6 (0.3-1.1)
College or more	40.0	40.7	38.4		REF	REF
Relationship Status						
Not Married or Living Together	54.3	52.8	58.1	<0.001	2.6 (1.3-5.3)	2.0 (0.9 -4.4)
Living Together	20.7	17.3	29.1		3.9 (1.7-8.9)	3.3 (1.3-8.0)
Married	25.0	29.9	12.8		REF	REF
Used condom in last 12 months						
No	42.7	44.4	38.4	0.340	REF	
Yes	57.3	55.6	61.6		1.3 (0.8-2.1)	
Partner had other sexual partners during relationship						
No	77.8	79.2	74.4	0.363	REF	
Yes	22.2	20.8	25.6		1.3 (0.7-2.4)	
Recruited by Poster						
No	75.7	79.9	65.1	0.007	REF	REF
Yes	24.3	20.1	34.9		2.1 (1.2-3.7)	1.2 (0.5-2.5)
Total Sample Size (n)		214	86			

[1]Pearson χ^2 test; [2] OR: Odds ratio; CI: confidence interval

Figure 2. Survival curves of age at first sexually transmitted infection (STI) by experiences of childhood sexual abuse (CSA)

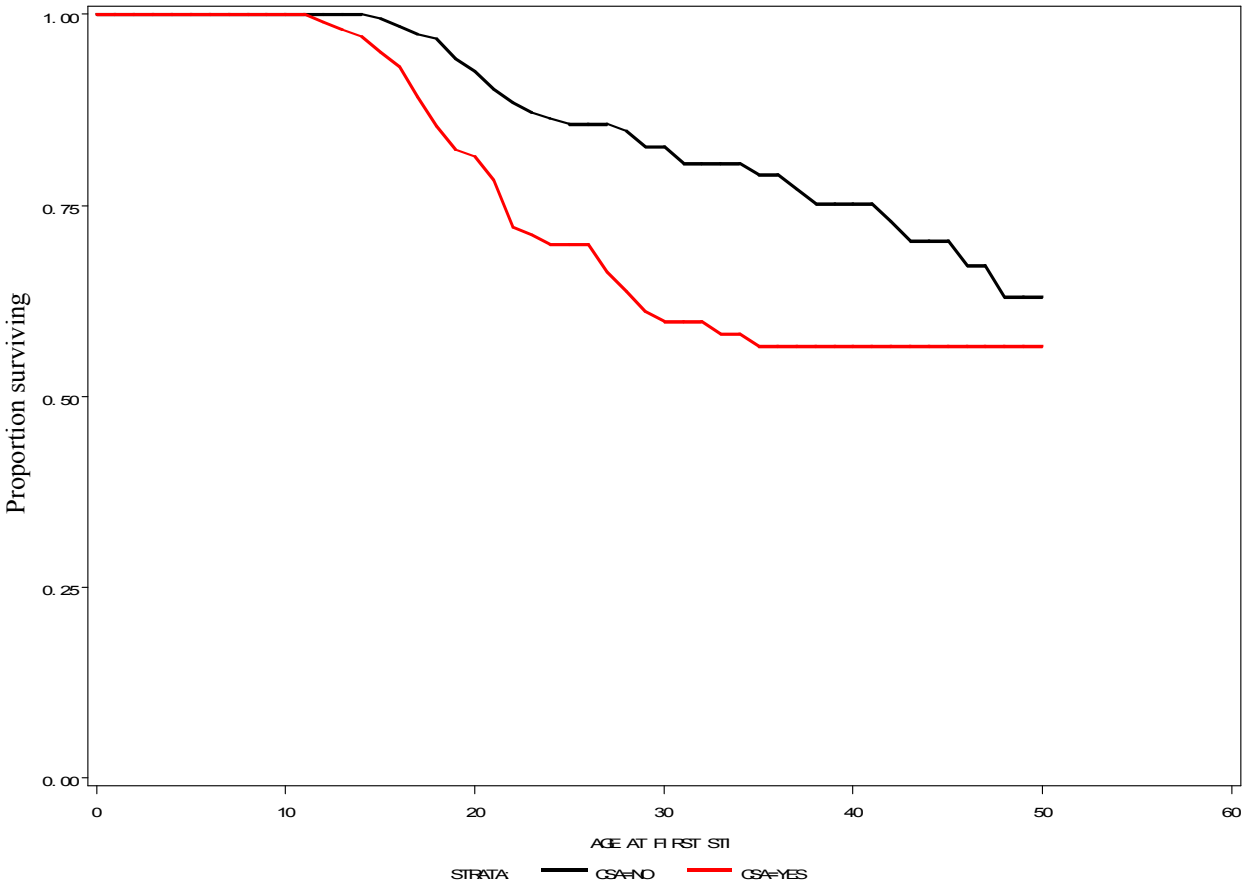

Table 4. Unadjusted and Adjusted Cox Proportional Hazard Models of Age at First Sexually Transmitted Infections (N=291)		
Variable	**Unadjusted HR (95% CI)[1]**	**Adjusted HR (95% CI)[1]**
Experiences of Violence		
No CSA or IPV	REF	REF
CSA only	2.4 (1.1-5.4)	2.6 (1.1-5.9)
IPV only	2.1 (1.1-4.0)	2.4 (1.2-4.8)
CSA and IPV	3.3 (1.8-6.2)	4.0 (2.0-8.1)
Age (years)		
18-24	4.8 (2.1-10.8)	7.4 (3.2-17.4)
25-29	3.4 (1.5-7.6)	5.3 (2.2-12.8)
30-39	2.4 (1.1-5.1)	2.9 (1.4-6.1)
40 +	REF	REF
Race		
White	REF	
Black	1.5 (0.9-2.5)	
Other	1.1 (0.5-2.3)	
Born in the United States		
No	REF	REF
Yes	2.3 (1.2-4.7)	2.3 (1.1-4.7)
Education		
Less than 12th Grade	1.5 (0.8-2.5)	
High School	0.8 (0.5-1.4)	
College or more	REF	
Recruited by Poster		
No	REF	REF
Yes	1.3 (0.8-2.2)	1.0 (0.6-1.9)
[1] HR: hazard ratio; CI: confidence interval		

Table 5. Sample characteristics, unadjusted and adjusted logistic regression models of whether a sexually transmitted infection (STI) diagnosed during current relationship (N=300)					
Variable	**STI diagnosed during current relationship**		**p-value**	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**
	No	Yes			
Total	89.7 (269)	10.3 (31)			
Experiences of Violence					
No CSA or IPV	39.4	19.4	0.013	REF	REF
CSA only	10.4	9.7		1.9 (0.4-8.0)	2.5 (0.6-11.1)
IPV only	27.9	22.6		1.6 (0.5-5.1)	1.9 (0.6-6.1)
CSA and IPV	22.3	48.4		4.4 (1.6-12.0)	6.9 (2.4-19.8)
Age (years)					
18-24	25.3	45.2	0.090	3.5 (1.1-11.2)	5.8 (1.7-19.9)
25-29	21.9	22.6		2.0 (0.6-7.2	2.6 (0.7-9.9)
30-39	27.5	19.4		1.4 (0.4-5.1)	1.5 (0.4-57)
40 +	25.3	12.9		REF	REF
Race					
White	44.2	38.7	0.728		
Black	41.3	41.9			
Other	14.5	19.4			
Born in the United States					
No	22.7	12.9	0.211		
Yes	77.3	87.1			
Education					
Less than 12th Grade	19.0	19.3	0.783		
High School	41.6	35.5			
College or more	39.4	45.2			
Relationship Status					
Not Married or Living Together	53.9	58.1	0.445		
Living Together	20.1	25.8			
Married	26.0	16.1			
Used condom in last 12 months					
No	42.4	45.2	0.767		
Yes	57.6	54.8			
Partner had other sexual partners during relationship					
No	78.7	71.0	0.329		
Yes	21.4	29.0			