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Intimate Partner Violence and Correlates with Risk Behaviors and HIV/STI Diagnoses Among Men Who Have Sex With Men and Men Who Have Sex with Men and Women in China: A Hidden Epidemic

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Abstract

Background—Intimate partner violence (IPV) research has primarily focused on heterosexual couples, but has largely ignored IPV among men who have sex with men (MSM). We examined IPV prevalence among MSM and men who have sex with men and women (MSMW) in China.

Methods—MSM over the age of 16 were recruited through three MSM-focused websites in China. An online survey containing items on sociodemographics, risk behaviors, IPV, and self-

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reported HIV or STI diagnosis was completed. Multivariate regression was used to examine associations between IPV and risk behaviors and an HIV or STI diagnosis.

Results—Among 610 participants, 182 (29.8%) reported experiencing at least one type of IPV. MSMW were at significantly greater risk for IPV (adjusted odds ratio (AOR) 1.65, 95% CI [1.08–2.53]) compared to MSM. Men who had experienced IPV were more likely to have participated in group sex (AOR 1.86, 95% CI [1.08–3.21]), to have had sex in exchange for gifts or money (AOR 5.06, 95% CI [2.47–10.35]), and to report a positive HIV diagnosis (AOR 2.59, 95% CI [1.22–5.51]).

Conclusions—There is a hidden epidemic of IPV among MSM in China, especially among MSMW. The hidden nature of MSM and MSMW suggests the need for a clinical environment more conducive to disclosure. Research is needed to understand the pathways linking IPV and HIV risk among MSM in order to optimize the design of effective interventions.

Background

Intimate partner violence (IPV) is a significant public health concern that has been linked with higher levels of sexual risk behaviors, including lower levels of condom use, increased substance use, and increased participation in transactional sex.^{1–4} Studies have shown that individuals more likely to perpetrate IPV are also more likely to have multiple sex partners and less likely to use condoms, thus putting victims of IPV at increased risk for HIV and STIs.⁵ Exact definitions of IPV vary from study to study. However, studies on IPV commonly include measures of physical violence (eg. pushing, hitting, shoving, kicking, throwing objects, choking), sexual violence (eg. rape, forced sexual contact, fondling, unwanted sexual touching), and emotional violence (eg.. destroying property, verbal abuse, threats to harm the individual or loved ones).⁶ Compared with the extensive research on heterosexual IPV, there is a paucity of studies on IPV among men who have sex with men (MSM), but existing studies from Western countries suggest MSM have IPV rates similar to those of heterosexual women.^{7, 8} Furthermore, a US Centers for Disease Control and Prevention report indicated gay and bisexual men are much more likely to be victims of IPV than heterosexual men.⁹

In China, MSM are considered a key population for HIV acquisition,¹⁰ and existing studies indicate that they engage in high levels of risky sexual behavior, including multiple sex partners, condomless anal sex, sex while intoxicated, and intercourse with sex workers.^{11, 12} Despite this, research on MSM and IPV specific to Chinese populations is extremely limited. One study conducted among MSM in Shanghai reported an IPV prevalence of 51%.¹³ However, this study population contained a large sample of ‘money boys’ (eg. men who sell sex to other men), who are likely at greater risk of IPV than other MSM due to their profession. To our knowledge, no studies have been conducted examining IPV among the general Chinese MSM population. Given the connection of IPV with increased sexual risk behaviors, greater priority should be placed on researching IPV among MSM in China.

Furthermore, studies from Western countries have indicated that men who have sex with both men and women (MSMW) experience higher rates of IPV victimization than MSM.¹⁴ Some studies have also indicated that MSMW are more likely than MSM to engage in

multiple high risk behaviors, including transactional sex and injecting drug use.^{15–18} Though the reasons for this disparity are unclear, some researchers hypothesize that MSMW's increased rates of IPV victimization and risk behaviors may be a result of the “double stigma” they experience from both heterosexual and gay individuals.^{19, 20} A study by Dodge et al. found that MSMW frequently had difficulty navigating between heterosexual and gay communities and often felt they did not belong to any community.²¹ Although this study was conducted among a US population, MSMW in China may feel a greater sense of isolation due to their relative invisibility in society compared to MSM.²²

MSMW are especially important in the context of China, where many gay men are socially compelled to marry women and start families, but still engage in sex with men.²³ Existing studies indicate that a high proportion of MSM in China also have sex with women.²⁴ One meta-analysis estimated that over 30% of Chinese MSM have had sex with a woman in their lifetime.²⁵ High levels of bisexual behavior among MSM has important implications for sexual health research in China, as it creates a situation where an individual's sexual self-identity is often incongruent with their sexual behaviors. Though some gay men who enter heterosexual marriages may not be engaging in sexual intercourse with their wives, many do because of high expectations to conceive children. Furthermore, men who self-identify as bisexual and are in heterosexual relationships may be engaging in extra-marital sexual acts with men, or they may only be engaging in sex with women for fear of the stigma associated with same-sex sexual behaviors. Thus, sexual self-identification tells us little about actual sexual behaviors.^{26–29} This poses a challenge for researchers, who are faced with the decision of classifying participants based on their sexual self-identification or based on their reported sexual behaviors. In terms of HIV and STI risk, classifying participants based on sexual behaviors is generally more useful, as sexual behaviors are considered more salient factors for risk than sexual identification.³⁰ In medical settings, it is recommended that clinicians avoid assumptions about client risk for HIV and STIs based on sexual identity. Instead, it is recommended that a thorough behavioral history is gathered to determine HIV/STI testing, treatment, and harm reduction guidelines for each individual.³⁰

Given the high levels of bisexual behavior among Chinese MSM and increased vulnerability for IPV and risk behaviors among MSMW, it is therefore not only important to examine IPV among MSM in general, but also to look at MSMW as a separate group from MSM. The aims of this study were to 1) examine the prevalence of IPV among MSM and MSMW, and 2) identify correlations between IPV and risk behaviors and HIV/STI positivity.

Methods

Sampling and Recruitment

This study was part of a larger study focused on risk factors and HIV testing among MSM and included a diverse sample of MSM recruited from 31 provinces and other autonomous and administrative regions in China. Recruitment occurred through three different MSM specific websites: one based in Northern China, one in Southern China, and one in Eastern China. These websites are used for education, networking, partner seeking, and LGBT-specific news. Participants were recruited through a banner link on the web pages and an announcement was sent to registered users. Those who clicked on the link were directed to

eligibility screening and informed consent procedures. Participants must have been assigned male at birth, engaged in anal sex with another man at least once in their life, and be at least 16 years old (the age of consent in China) in order to participate in the study. Biologically born men who currently identify as a woman or transgender were eligible to participate. Data from transgender individuals have been described in a separate paper (in draft), and were therefore excluded from this analysis.

Consenting participants completed an online survey in Mandarin Chinese. Individuals did not receive an inducement for survey completion. All protocols for the study were approved by institutional review boards at the Guangdong Provincial Center for Skin Diseases & STI Control, the University of California-San Francisco, and the University of North Carolina at Chapel Hill.

Measures

Survey questions were based on existing IPV measures that have previously been used among MSM in China.¹³ To evaluate male-to-male intimate partner violence, participants were asked if their current male sexual partner had ever threatened to stop helping with money or housing, hit or thrown objects at them, threatened to hurt them or someone they loved, threatened to reveal their sexual orientation to others, or destroyed their property.¹³ Data were also gathered describing risk behaviors in the past year, such as whether participants had ever used recreational drugs, used drugs before having sex, used a condom during their last sexual encounter, had group sex, or had transactional sex. Participants were asked if they had ever tested positive for HIV or other STIs. Since all participants had to have a history of anal sex with a man, in order to determine MSMW status, respondents were asked “Have you ever had vaginal or anal sex with a woman?” Participants who responded “yes” to this question were coded as MSMW. Given the frequent incongruences of sexual self-identity labels and sexual behaviors and the high rates of bisexual behavior among gay-identified men in China, sexual behaviors were determined to be a better measure of risk than self-identified sexual orientation.^{25, 31} Demographic variables such as age, province, education, income and ethnicity were gathered.

Statistical Analyses

A total of 1,424 men participated in the larger study, but only men with current male sexual partners were asked questions about IPV. A total of 610 men reported having current male sexual partners and were included in this analysis. Missing data was low. Three participants had no response on the ethnicity question, and were therefore automatically removed from all multivariate logistic regression analyses. Eighty-one participants had no response to the question on condom use, and were excluded from regression analyses specific to that variable. Descriptive statistics were used to characterize the sample. Prevalence of IPV was calculated overall and by type of sexual behaviors (MSMW vs. strictly MSM). Chi-square tests were used to calculate significant differences in categorical variables between the two groups. Univariate and multivariate logistic regression analyses were conducted and odds ratios computed to explore the relationship between MSMW and IPV and the relationship between IPV and risk behaviors and reported HIV/STI positivity. A stratified analysis between IPV and risk behaviors by MSMW and MSM was also conducted. Common

demographic variables (age, urban vs. rural location, region, education, income and ethnicity) were adjusted for in the multivariate models. All analyses were conducted using SPSS version 22 (Durham, North Carolina).

Results

Of 610 participants, the median age was 24 years (interquartile range [IQR]=21–29), with a range from 16 to 55 years old. Participants were from 31 provinces and autonomous and administrative regions in China, with the highest number of participants coming from Jiangsu (17.5%), Yunnan (10%), and Guangdong (7%) provinces and Beijing (6.7%). Table 1 provides information on the main demographic characteristics of the sample.

The majority of participants (67.7%, n=413) reported only having sex with men, but 32.3% (n=197) reported a history of sex with both men and women. The sample as a whole was highly educated, predominately Han Chinese, and lived in urban areas. MSMW were significantly older, had higher levels of monthly income, were more likely to self-identify as bisexual or straight, and less likely to disclose their sexual orientation than MSM (Table 1).

The prevalence of IPV is shown in Table 2. Overall, nearly 30% of the sample reported experiencing any type of IPV from their current male sex partner. The most commonly reported form of IPV was the threat of disclosing sexual orientation (18.9%), followed by physical violence (16.1%). Fewer respondents reported receiving financial threats from intimate partners (6.7%). A significantly higher proportion of MSMW reported being a victim of IPV overall and for each category of violence, except for being hit or having objects thrown at them, than MSM. Potential differences in IPV prevalence between gay-identified and bisexual-identified men were also examined (data not shown). However, no significant differences in IPV were found between these two groups.

After adjusting for demographic variables categorized in Table 1 (age, urban vs. rural location, region, education, income and ethnicity), multivariate analysis (Table 3) revealed that MSMW were at significantly greater risk for IPV overall (adjusted odds ratio [AOR] 1.56, 95% CI [1.04–2.32]) and for having an intimate partner threaten to stop financial support (AOR 2.42, 95% CI [1.20–4.91]) and threaten to reveal their sexual orientation to others (AOR 1.70, 95% CI [1.07–2.69]). Threats to harm the individual or loved ones and destruction of property approached, but did not reach, significance after controlling for demographic variables. No significant differences between groups were found for having an intimate partner hit them or throw objects at them.

Demographic characteristics were compared between participants who had experienced IPV and those who had not. Participants who had experienced IPV were more likely to be older than the median age ($p=.026$), but no other significant demographic differences were found. We also examined the relationship between experiencing IPV and risk behaviors and HIV/STI positivity. As illustrated in Table 4, univariate analysis indicated differences were not significant for drug related risk behaviors or reporting a history of STI diagnosis, but they were significantly different for risky sexual behaviors and a positive HIV diagnosis. After adjusting for age, urban vs. rural location, region, bisexual behavior, education,

income and ethnicity, multivariate analysis showed that drug related risk behaviors were still non-significant. Participation in risky sexual behaviors was still significantly higher for men who had experienced IPV than for men who had not, however, differences in condom use were no longer significant. Men who had experienced any type of IPV were more likely to have participated in group sex (adjusted odds ratio [AOR] 1.84, 95% CI [1.07–3.18]) and to have had sex in exchange for gifts or money in the last 12 months (AOR 5.43, 95% CI [2.63–11.23]). Men who had experienced IPV were still more likely to report a positive HIV diagnosis (AOR 2.79, 95% CI [1.31–5.95]), but differences in reporting a positive STI diagnosis remained non-significant.

We also conducted multivariate regression analysis by subgroup (Table 5). Experiencing IPV and having had sex in exchange for gifts or money in the last 12 months was found to be significant for both MSM (AOR 6.02, 95% CI [2.11–17.20]) and MSMW (AOR 7.54, 95% CI [2.13–26.61]). Relationships between IPV and participating in group sex in the last 12 months (AOR 3.11, 95% CI [1.45–6.68]), not using a condom during last sexual encounter (AOR 2.78, 95% CI [1.45–5.34]) and a positive HIV diagnosis (AOR 5.90, 95% CI [1.47–23.69]) were found to be significant among MSMW.

Discussion

Our study examined rates of IPV among MSM and MSMW across a broad geographic area in China. Studies on IPV have been primarily concentrated among heterosexual women, and few studies have focused on IPV among MSM in China. This study extends the existing literature by illustrating differences in IPV prevalence rates between MSM and MSMW and by demonstrating links between IPV and sexual risk behaviors and HIV positivity among MSM and MSMW in China. Particular strengths of this study include its large sample size, recruitment from a broad geographic area and low levels of missing data. Unlike most other studies focused on MSM in China,^{13, 22, 32} our study recruited participants from almost every province and administrative region in China.

Our results indicate that IPV is common among MSM in China. Though overall rates were not as high as those found in a previous study in Shanghai,¹³ our study contained a more general population of MSM from a broad geographic region and did not recruit ‘money boys’. Even though our sample is lower-risk than ‘money boys’, almost a third of our sample reported being a victim of IPV. We found that MSMW were significantly more likely to experience IPV overall, withdrawal of financial support, and threats to disclose their sexual orientation. Though studies comparing IPV rates among MSM and MSMW are few, our results are consistent with US data showing that MSMW have higher rates of IPV than MSM.⁹ The reasons for these differences are unclear, but it may be a result of minority stress and the stigma and discrimination MSMW feel from both heterosexual and gay communities.^{19, 20} A lack of social support has been correlated with IPV outcomes,³³ and it may be that MSMW’s isolation contributes to their increased prevalence of IPV. Further research needs to be conducted to determine the underlying causes for differences in IPV rates between MSM and MSMW.

Consistent with data from other studies,^{1, 34} IPV had a strong association with risky sexual behaviors. IPV was also associated with a positive HIV diagnosis. Other studies have indicated increased levels of IPV among HIV positive individuals.^{2, 35} Not only does IPV increase the risk of HIV infection, HIV positive individuals are also more likely to be victims of IPV.² Men who are HIV positive often have limited financial resources, which may increase dependency on their sexual partner.³⁶ Furthermore, HIV positive men often lack social support and face a substantial amount of stigma, making it difficult for them to find and maintain intimate relationships.³⁷ Thus, HIV positive individuals may be less likely to leave an abusive intimate relationship because they lack adequate financial resources and fear they may not be able to find another intimate relationship. Interestingly, unlike other studies, our study did not find an association between IPV and an STI diagnosis. This may be because our study relied on self-reported STI diagnoses, and rates of STI testing were much lower than rates of HIV testing. Had we been able to test all participants for STIs, we may have found a significant association with IPV.

Our study has several limitations. First, our findings are limited by the fact that this was a cross-sectional study, and thus, causal relationships between IPV, risk behaviors and HIV could not be established. Second, because the majority of our sample participants tended to be younger and urban, their experiences may not be generalizable to older or rural MSM. Furthermore, data on the number of current sexual partners, the duration of partnerships and types of partnerships were not gathered, so the role of these factors is unclear. Furthermore, questions about IPV were asked only in relation to participants' current male partner, not over the life course, therefore, estimates of IPV in this study are likely conservative.

Our study design used a lifetime measure of bisexual behavior rather than a 12 month period in order to reduce confounding by number of sexual partners.³⁸ However, a lifetime measure of bisexual behavior could also result in misclassification bias, particularly among older participants who may have had sex with a woman in their youth, but have only had sex with men since then. There may be factors inherently different about men who did not immediately recognize their orientation, but came to that conclusion later in life, that lead to increased vulnerability for IPV. However, there is no single best approach to studying bisexuality since each measure (self-identity, behaviors in the last 12-months or behaviors over a lifetime) carries its own limitations. MSM who had sex with a woman more than a year before the study would change classification if a 12 month cut-off were used. Given the social pressure for marriage in China, these men may be in a non-sexual relationship with a woman, but that status could change if reproduction becomes a goal. Thus, the decision was made to use the most inclusive definition (lifetime behavior). As a result our MSMW population is somewhat larger than if we had limited the definition to behaviors within the last 12 months. However, if these men classified as MSMW really belong in the MSM group, then the bias would tend toward the null and thus any significant results identified in this study are robust estimates. As mentioned earlier, the decision to use behaviors rather than self-identity was driven by the social-contextual factors related to men's lives in China. Though we did examine IPV between gay-identified and bisexual-identified individuals, no significant differences were found. It is not clear why significant differences existed between behavior-based instead of identity-based categorizations, but it may be possible that in this cultural context, the labels of "gay" or "bisexual" may be less reflective of

participants' experiences, since self-identity was often incongruent with participants' reported sexual behaviors.

Our findings indicate that there is a hidden epidemic of IPV among MSM and MSMW. These findings have important implications for violence prevention and intervention programs. Currently, IPV programs in China primarily focus on women and there are no specific interventions targeting MSM and MSMW.³² However, based on the high levels of IPV found among these populations, the development of such programs is needed to help mitigate the impact of IPV on risk behaviors and HIV. Given the higher rates of IPV among MSMW, targeted interventions specific to MSMW may be necessary, and may need to include content specific to MSMW, such as developing resilience against stigma from gay and heterosexual communities and establishing social support outside of these communities. Special attention should also be given to HIV positive MSM and MSMW, as they appear to have an increased vulnerability for IPV. Further research is needed to understand the pathways linking IPV and HIV risk among MSM in order to optimize the design of effective interventions. Additional research is also needed to elucidate the underlying causes in IPV prevalence differences between MSM and MSMW. The development of supportive clinical environments will be crucial to the establishment of programs aimed at reducing the high burden of IPV among MSM and MSMW in China.

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Table 1

Comparison of Demographic Characteristics between MSM and MSMW in China (N=610), 2014

	Overall N (%)	MSMW N (%)	MSM N (%)	P
Age				.000
24 and below	307 (50.3%)	54 (27.4%)	253 (61.3%)	
25 and above	303 (49.7%)	143 (72.6%)	160 (38.7%)	
Education				.831
High School or Less	159 (26.1%)	52 (26.4%)	107 (25.9%)	
College	405 (66.4%)	132 (67%)	273 (66.1%)	
Graduate School	46 (7.5%)	13 (6.6%)	33 (8%)	
Income (per month)				.000
<1500 RMB (\$250)	127 (20.8%)	16 (8.1%)	111 (26.9%)	
1500–3000 RMB	170 (27.9%)	37 (18.8%)	133 (32.2%)	
3001–5000 RMB	191 (31.3%)	83 (42.1%)	108 (26.2%)	
5001–8000 RMB	83 (13.6%)	45 (22.8%)	38 (9.2%)	
>8000 RMB (\$1333)	39 (6.4%)	16 (8.1%)	23 (5.6%)	
Ethnicity				.106
Han Chinese	561 (92.4%)	187 (94.9%)	374 (91.2%)	
Ethnic minority	46 (7.6%)	10 (5.1%)	36 (8.8%)	
Sexual Orientation				.000
Gay	476 (78%)	114 (57.9%)	362 (87.7%)	
Bisexual	128 (21%)	79 (40.1%)	49 (11.9%)	
Straight	6 (1%)	4 (2%)	2 (0.5%)	
Living Location				.893
Urban	556 (91.1%)	180 (91.4%)	376 (91%)	
Rural	54 (8.9%)	17 (8.6%)	37 (9%)	
Region				.011
North	129 (21.1%)	33 (16.8%)	96 (23.2%)	
East	206 (33.8%)	84 (42.6%)	122 (29.5%)	
South	125 (20.5%)	34 (17.3%)	91 (22%)	
West	150 (24.6%)	46 (23.4%)	104 (25.2%)	
Total	610 (100%)	197 (32.3%)	413 (67.7%)	-

Table 2

Prevalence of Intimate Partner Violence among Chinese MSM and MSMW

Type of Intimate Partner Violence	Overall N(%)	MSMW N(%)	MSM N(%)	P
Any type of violence	182 (29.8%)	74 (37.6%)	108 (26.2%)	.004**
Threatened to stop helping you with money or housing	41 (6.7%)	22 (11.2%)	19 (4.6%)	.002**
Threatened to harm you or someone you care for	47 (7.7%)	23 (11.7%)	24 (5.8%)	.011*
Threatened to reveal your sexual orientation to others	115 (18.9%)	52 (26.4%)	63 (15.3%)	.001**
Destroyed your property	51 (8.4%)	25 (12.7%)	26 (6.3%)	.008**
Hit you or thrown objects at you	98 (16.1%)	39 (19.8%)	59 (14.3%)	.083

* p<.05.

** p<.01

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Table 3

Adjusted Odds Ratios for MSMW and Intimate Partner Violence from a Current Male Sexual Partner

Type of Intimate Partner Violence	MSMW	AOR	95% CI	P
Any type of violence	No	1.00	Reference	.031*
	Yes	1.56	1.04–2.32	
Threatened to stop helping you with money or housing	No	1.00	Reference	.014*
	Yes	2.42	1.20–4.91	
Threatened to harm you or someone you care for	No	1.00	Reference	.059
	Yes	1.88	.98–3.63	
Threatened to reveal your sexual orientation to others	No	1.00	Reference	.024*
	Yes	1.70	1.07–2.69	
Destroyed your property	No	1.00	Reference	.088
	Yes	1.73	.92–3.26	
Hit you or thrown objects at you	No	1.00	Reference	.181
	Yes	1.34	.86–2.29	

* p < 0.05;

Adjusted for Age, Urban vs Rural Location, Region, Education, Income and Ethnicity

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Table 4
 Univariate and Adjusted Odds Ratios for Experience of Violence from a Current Male Sexual Partner and Risk Behaviors, STD Diagnosis, and HIV Positivity

Outcome	OR	95% CI	P	AOR	95% CI	P
In the last year, have you ever consumed recreational drugs?	No	Reference		1.00	Reference	
	Yes	.94–2.04	.099	1.48	.98–2.19	.062
In the last year, have you ever consumed recreational drugs before having sex?	No	Reference		1.00	Reference	
	Yes	.89–2.04	.162	1.43	.93–2.20	.106
In the last year, have you ever participated in group sex?	No	Reference		1.00	Reference	
	Yes	1.34–3.74	.002**	1.84	1.07–3.18	.027*
In the last year, have you ever had sex in exchange for gifts or money?	No	Reference		1.00	Reference	
	Yes	2.49–9.26	.000**	5.43	2.63–11.23	.000**
In your last sexual encounter, did you use a condom?	Yes	Reference		1.00	Reference	
	No	1.15–2.43	.008**	1.49	.994–2.23	.054
Have you ever been diagnosed with an STD?	No	Reference		1.00	Reference	
	Yes	.86–2.53	.159	1.35	.77–2.36	.297
Have you ever been diagnosed with HIV?	No	Reference		1.00	Reference	
	Yes	1.28–5.49	.009**	2.79	1.31–5.95	.008**

* p 0.05,

** p 0.01;

Adjusted for Age, Urban vs Rural Location, Region, Bisexual Behavior, Education, Income and Ethnicity

Table 5
Adjusted Odds Ratios for Experience of Violence from a Current Male Sexual Partner and Risk Behaviors, STD Diagnosis, and HIV Positivity – MSMW and MSM

Outcome	MSMW		MSM		P
	AOR	95% CI	AOR	95% CI	
In the last year, have you ever consumed recreational drugs?	No	Reference	1.00	Reference	294
	Yes	.89–3.61	1.32	.79–2.21	
In the last year, have you ever consumed recreational drugs before having sex?	No	Reference	1.00	Reference	557
	Yes	.98–4.44	1.18	.68–2.07	
In the last year, have you ever participated in group sex?	No	Reference	1.00	Reference	732
	Yes	3.11	1.45–6.68	0.85	
In the last year, have you ever had sex in exchange for gifts or money?	No	Reference	1.00	Reference	.001**
	Yes	7.54	2.13–26.61	6.02	
In your last sexual encounter, did you use a condom?	Yes	1.00	Reference	1.00	Reference
	No	2.78	1.45–5.34	0.95	.54–1.67
Have you ever been diagnosed with an STD?	No	1.00	Reference	1.00	Reference
	Yes	1.88	.77–4.58	1.01	.48–2.16
Have you ever been diagnosed with HIV?	No	1.00	Reference	1.00	Reference
	Yes	5.90	1.47–23.69	2.27	.82–6.26

* p 0.05,

** p 0.01;

Adjusted for Age, Urban vs Rural Location, Region, Education, Income and Ethnicity