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HIV Disclosure and Sexual Transmission Behaviors among an Internet Sample of HIV-positive Men Who Have Sex with Men in Asia: Implications for Prevention with Positives

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Abstract

The relationship between HIV disclosure and sexual transmission behaviors, and factors that influence disclosure are unknown among HIV-positive men who have sex with men (MSM) in Asia. We describe disclosure practices and sexual transmission behaviors, and correlates of disclosure among this group of MSM in Asia. A cross-sectional multi-country online survey was conducted among 416 HIV-positive MSM. Data on disclosure status, HIV-related risk behaviors, disease status, and other characteristics were collected. Multivariable logistic regression was used to identify significant correlates of disclosure. Only 7.0% reported having disclosed their HIV status to all partners while 67.3% did not disclose to any. The majority (86.5%) of non-disclosing participants had multiple partners and unprotected insertive or receptive anal intercourse with their partners (67.5%). Non-disclosure was significantly associated with non-disclosure from partners (AOR = 37.13, 95% CI: 17.22, 80.07), having casual partners only (AOR = 1.91, 95% CI: 1.03, 3.53), drug use before sex on a weekly basis (AOR: 6.48, 95% CI: 0.99, 42.50), being diagnosed with HIV between 1–5 years ago (AOR = 2.23, 95% CI: 1.05, 4.74), and not knowing one's viral load (AOR = 2.80, 95% CI: 1.00, 7.83). Given the high HIV prevalence and incidence among MSM in Asia, it is imperative to include Prevention with Positives for MSM. Interventions on disclosure should not solely focus on HIV-positive men but also need to include their sexual partners and HIV-negative men.

Keywords

Disclosure; men who have sex with men; HIV/AIDS; prevention with positives; Asia

Introduction

The HIV epidemic is escalating quickly among men who have sex with men (MSM) in some countries in Asia. HIV prevalence ranges from single digit to as high as the hardest hit areas in Western countries [1]. For example, 4.2% in Singapore, 8.5% in Taiwan, 16.8% in China

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(Chongqing) and 30.7% in Thailand (Bangkok) [2–5]. Estimates of HIV incidence are perhaps even more disturbing, 5.1% (Nanjing) and 7.8% (Chongqing) in China, and 7.7% (Bangkok) in Thailand [5–7]. To date, most published studies on MSM in Asia focused on identifying risk factors for HIV infection, and a few tested interventions for HIV-negative MSM [8]. Yet, while all new cases of HIV transmission must involve risk of an HIV-positive person, little is known about HIV-related risk behaviors among HIV-positive MSM in Asian countries. Only two studies examined sexual transmission behaviors among HIV-positive MSM in Japan and Thailand, and found high levels of inconsistent condom use or unprotected anal intercourse with male partners of unknown or HIV-negative status [9, 10].

The high HIV incidence rates and limited available data on HIV-positive MSM suggest that sexual risk behaviors between potentially serodiscordant partners are common among MSM in Asia. While this could be due to high levels of unrecognized infection, low HIV testing uptake, and sustained high rates of unprotected anal intercourse among general MSM, the lack of effective interventions for HIV-positive MSM (e.g., reduction of sexual transmission behaviors with serodiscordant partners and linkage to care) may very well be another contributing factor for the high HIV incidence rates among MSM in Asia [11–16]. Prevention with positives (PWP) has become an integral and important part of HIV prevention as HIV-infected people are living longer, healthier, and are presumably more sexually active [17–20]. One of the PWP components focuses on HIV status disclosure. Research on HIV-positive MSM in Western countries suggests that disclosure of HIV-positive status is associated with safe sex with casual partners whose HIV status is negative or unknown [21–23]. In addition, it has been reported that seroadaptive behaviors (e.g. serosorting, sero-positioning) are highly prevalent among MSM, but HIV status disclosure is critical for such harm reduction strategies to be effective in preventing HIV acquisition and transmission [24–27]. However, it was found that among a small sample ($N = 78$) of HIV-positive Thai MSM, only 36% of them disclosed their HIV status to steady male partners [10].

To our knowledge, little data exists on correlates of HIV disclosure among HIV-positive MSM in Asian countries. The relationship between disclosure and sexual transmission behaviors, and factors that influence disclosure behaviors are thus unknown among HIV-positive MSM within the Asian context. Elucidating on such relationships and factors is critical to improve our understanding of this group of MSM and is essential to intervention design, given the potentially important role of disclosure in PWP. In this paper, we describe HIV disclosure and sexual transmission behaviors, and correlates of disclosure status among a large-scale online sample of HIV-positive MSM in Asia.

Methods

Study Design and Participants

A cross-sectional online survey (Asian Internet MSM Sex Survey, www.2010aimss.com) was conducted among MSM between January 1st and February 28th, 2010. Participants were recruited primarily from a popular gay-oriented website in Asia (www.Fridae.com) in collaboration with over 40 community partners from 12 different countries. Banner advertisements were posted on the website, pop-up advertisements were posted in gay chat-rooms, and emails were sent to listserv members by the community partners to invite participation in the survey. After clicking on a link in the advertisement or in the email, participants were directed to the online survey. Informed consent was requested before completing the survey. To be eligible, participants had to be at least 18 years old. To ensure participation from a diverse group of MSM, the survey was available in English and 9 Asian languages and dialects including simplified and traditional Chinese Mandarin, Cantonese, Japanese, Thai, Tagalog, Bahasa Malaysia, Bahasa Indonesia, and Vietnamese. No personal

identifying information or IP address was collected from participants. Participation was voluntary and no incentives were provided. During the two-month period, 24,742 participants entered the survey and 13,883 (56.1%) completed the entire online questionnaire.

Measures

Socio-demographic characteristics of the participants included country of residence, age, employment status, educational level, sexual orientation, and relationship status.

Measures of sexual transmission behaviors in the past 6 months included number of male sex partners, main way/venue of meeting sex partners, any unprotected insertive anal intercourse (UIAI) with or without internal ejaculation, any unprotected receptive anal intercourse (URAI) with or without internal ejaculation, and frequencies of drug and alcohol use before sex. For example, each participant was asked if he “fucked his male partners *with* a condom.” Those who responded “Never,” “Sometimes,” or “Most of the time” (vs. “All the time”) were defined as having engaged in any UIAI. Each participant was also asked if he “fucked his male partners *without* a condom and came inside.” Those who responded “Sometimes,” “Most of the time,” or “All the time” (vs. “Never”) were defined as having engaged in any UIAI with internal ejaculation.

HIV disclosure *to* partners was measured by asking, “How many of your sex partners did you tell your HIV status before sex in the past 6 months?” Disclosure *from* partners was measured by asking, “How many of your sex partners told you their HIV status before sex?” Response options included “None,” “Some,” and “All.” For the bivariate and multivariable analyses, we dichotomized these variables into “None” vs. “Some/All.”

Participants self-reported their HIV status, time of their HIV diagnosis, whether or not they are currently on antiretroviral therapy (ART), and their viral load (“Undetectable,” “Detectable,” or “Don’t know/unsure”). They were also asked about their main source of social and emotional support following the HIV diagnosis.

Statistical Analysis

We restricted our analysis to sexually active participants who self-reported being HIV-positive (13,426 self-reported being HIV-negative or unknown), were biologically and currently male (3 identified themselves as intersex or female-to-male transgender), and have had one or more male sex partners in the past 6 months (38 reported no male sex partners). This left a final analytical sample of 416 self-identified HIV-positive MSM.

First, frequencies were conducted to describe socio-demographic characteristics, sexual transmission behaviors and disclosure status of the sample. Then HIV-positive MSM who did not disclose their HIV status to any of their partners were compared with those who disclosed to some or all of their partners in terms of socio-demographics, sexual transmission behaviors, and factors related to HIV disclosure in the literature using Pearson’s chi-square tests. Finally, to identify independent correlates of participants’ disclosure status, variables that were associated with disclosure status in the bivariate analysis ($p < 0.1$) were entered into a multivariable logistic regression model after adjusting for socio-demographic characteristics including country of residence, age, education, employment status, and sexual orientation. All analyses were conducted in STATA version 9.0. The data analysis was approved by the University of Pittsburgh Institutional Review Board.

Results

Socio-demographics, Sexual Transmission Behaviors, and HIV Disclosure

Participants were mostly from Southeast and East Asia, including Taiwan (20.2%), Thailand (15.9%), Singapore (14.9%), Malaysia (11.1%) and mainland China (10.1%) (Table 1). About one third (27.5%) were under the age of 30 while almost half (44.0%) were between the ages of 30 and 39. Overall, participants were well educated, 60.4% having a college or postgraduate degree. Almost all (92.6%) self-identified as gay. In terms of relationship status, 38.9% reported having a regular partner.

Sexual transmission behaviors were highly prevalent among this sample of HIV-positive MSM. A majority of them (86.5%) reported having 2 or more male partners in the past 6 months and almost a quarter (24.5%) reported having over 11 partners. About two-thirds (67.6%) reported having engaged in any UIAI or URAI with male partners in the past 6 months. Prevalence of unprotected anal intercourse with internal ejaculation was lower. UIAI with internal ejaculation was reported by 31.5% of the sample. Disclosing HIV status to partners was uncommon. Only 7.0% of participants reported having disclosed their HIV status to all partners while 67.3% did not disclose to any of their partners.

Bivariate Analysis: Disclosed vs. Non-disclosed

Prevalence of non-disclosure was highest among HIV-positive MSM residing in mainland China (88.1%), Japan (74.4%), and Singapore (69.4%) while lowest among those living in the Philippines (47.1%), although the difference was marginally significant ($\chi^2 = 16.44$, $p = 0.06$) (Table 2). Disclosure status was not associated with other socio-demographic characteristics including age, employment status, educational level, and sexual orientation.

Significantly higher rate of non-disclosure was reported by those who only had casual male partners versus those who had regular male partners (74.4% vs. 56.2%, $\chi^2 = 14.95$, $p < 0.01$). Compared to those who met partners at bars, dance parties, gyms, or through friends, those who met partners mainly at public cruising spots, sex parties, or gay saunas were least likely to disclose (77.5% vs. 48.5%, $\chi^2 = 11.60$, $p < 0.01$). Non-disclosure was not significantly associated with UIAI (with or without internal ejaculation) or URAI (with or without internal ejaculation), but was marginally associated with number of partners and drug use before sex.

Disclosure *from* partners was strongly associated with participants' disclosure status. When their partners did not disclose at all, participants were also least likely to disclose (82.5% vs. 15.8%, $\chi^2 = 148.50$, $p < 0.01$). At borderline significance, those who received social or emotional support mainly from their doctors were more likely to disclose compared to those who received such support from government HIV clinics (54.6% vs. 19.7%, $\chi^2 = 8.46$, $p = 0.08$).

Multivariable Correlates of Non-disclosure

In the multivariable analysis (Table 3), non-disclosure was significantly associated with non-disclosure *from* partners (AOR = 37.13, 95% CI: 17.22, 80.07), having casual partners only (AOR = 1.91, 95% CI: 1.03, 3.53), and using drugs before sex on a weekly basis (AOR = 6.48, 95% CI: 0.99, 42.50). Non-disclosure was also independently associated with participants' disease status. Those who were diagnosed between 1–5 years ago and those who did not know or were unsure of their viral load were more likely to not disclose (AOR = 2.23, 95% CI: 1.05, 4.74, & AOR = 2.80, 95% CI: 1.00, 7.83, respectively).

Discussion

In this paper, we examined sexual transmission behaviors, HIV disclosure and its correlates among HIV-positive MSM in Asia. We found that disclosure was rarely practiced by participants. Only about 33% reported disclosing their HIV-positive status to all or some of their partners. This rate is much lower than that among HIV-positive MSM in the Western countries, where about 75% disclosed to all or some of their partners [28, 29]. Of further concern is that the majority (86.5%) of non-disclosing participants had multiple partners and unprotected anal intercourse with their partners (67.5%). Given the critical role of disclosure, especially in the context of unprotected anal intercourse, the low reported disclosure rate in conjunction with high rates of sexual transmission behaviors found in our sample of HIV-positive MSM is concerning.

The decision to disclose one's HIV-positive status can be affected by a range of psychosocial, interpersonal, and structural factors, and the relationship between disclosure and sexual transmission behavior varies by person-, partner- and situational-level factors [23, 30]. One of the biggest hypothesized barriers to disclosure is HIV-related stigma and discrimination [30]. Indeed, studies of the general population and MSM in some Asian countries have documented high levels of stigma towards and discrimination against people living with HIV/AIDS (PLWHA) as well as AIDS phobia [31–36]. This could possibly explain the very low reported disclosure rate found among this sample of HIV-positive MSM, compared with HIV-positive MSM in the West where HIV-related stigma is less severe. Structural-level discrimination against PLWHA, such as lack of laws protecting the rights of PLWHA (e.g. employment) and criminalization of HIV transmission and exposure, may also play an important role. Notably in our data, several countries with the highest reported non-disclosure rates, including China, Singapore, Thailand, and Taiwan, have enacted or proposed laws to criminalize HIV transmission and exposure [37, 38]. Such discrimination can create an environment where disclosing one's HIV-positive status is perceived as a risky act to the individual.

At the interpersonal or partner-level, we found that reported disclosure rates of participants with their casual partners and when their partners also did not disclose to be lower. These findings are consistent with the existing literature on MSM in the West, which suggests that disclosure with casual partners may be particularly difficult due to fear of rejection or social isolation and that disclosure reflects mutual communication and trust [19, 20, 39]. As a result, assumptions of a partner's HIV status are often made during casual encounters or when there is lack of mutual disclosure [20]. When asked, "If a casual sex partner does not tell you his HIV status, and wants, or allows you to have unprotected anal intercourse with him, what do you assume is his HIV status?" 79% of the HIV-negative MSM in our sample assumed that their partners were HIV-negative/unknown while 32% of the HIV-positive men assumed that their partners were HIV-positive. This is especially troublesome considering that less than half of the HIV-negative MSM ever got tested for HIV.

At the situational-level, non-disclosure was associated with meeting partners at public cruising spots, sex parties or gay saunas, places where there is a decreased expectation for verbal or direct communication because of the casual or anonymous nature of the sexual encounters [30]. Drug use could affect decision-making and hamper communication as well. We found that non-disclosure was associated with increased frequency of drug use before sex. Finally, at the individual-level, those who were diagnosed with HIV more recently or did not know their viral load were less likely to disclose. It takes time for individuals recently diagnosed with HIV to accept or deal with their positive status and thus they may not be prepared to disclose it to others. It is plausible that those who did not know their viral load were not linked to medical care, where the very first risk reduction education was likely

to take place. Furthermore, it was suggested that changes in disease progression (e.g. viral load from detectable to undetectable) may impact disclosure by modifying beliefs of transmissibility and perceptions of responsibility [28, 40].

This study has several limitations. First, participants self-selected themselves to participate in an online survey either through a gay-oriented website or MSM community organizations. Our findings may not be generalizable to MSM who do not have Internet access or do not use the website. Second, all data, including participants' HIV status and disease status, were self-reported and could not be verified. However, since the survey was self-administered online and without incentives, we believe that false reporting is minimal. Third, this was a sample of self-identified HIV-positive MSM (~3% of all participants). Some HIV-positive participants might have chosen not to identify their HIV-positive status. And considering the low testing uptake, some might not know their HIV status accurately. Thus, our sample might have underrepresented HIV-positive MSM in the region. Moreover, we did not collect data on sexual partner's HIV status, which can have a direct impact on participants' disclosure behavior as well as the types of sexual behaviors they choose to engage in. But we suspect that even if the survey asked for partner's HIV status, participants would not be able to accurately assess or answer it as 77% of them reported that none of their partners disclosed their HIV status. Finally, disclosure itself is a behavior within a context that is framed by various social and cultural factors throughout one's life course [41]. While we attempted to include as many relevant factors in our analysis, other socially and culturally relevant variables were not available.

With that said, this is the first study that has taken a closer examination of HIV disclosure among HIV-positive MSM in Asia. Given the high HIV prevalence and incidence among MSM in Asia, our findings suggest that it is imperative to include PWP for MSM in the Asian context. First of all, HIV testing uptake should be increased among MSM to identify HIV-infected but unaware cases, so that they can be linked to early care and receive treatment. Second, PWP should focus on creating services that attract and benefit HIV-positive men, such as providing support for treatment and care, and helping them deal with positive status and stigma, which will raise their mental health status and social functioning. Third, interventions on disclosure should not solely focus on HIV-positive men but also need to include their sexual partners and HIV-negative men because the sexual responsibility to avoid HIV transmission lies in both parties. Specifically, for HIV-negative MSM, campaigns can encourage them to take the initiative in disclosing as disclosing an HIV-negative status does not take on stigma and risk. For high-risk HIV-positive MSM, interventions should be designed to improve their self-efficacy in disclosure and provide tools and skills for them to communicate issues around HIV-positivity with their partners. Special attention should also be given to those who were recently diagnosed with HIV as disclosure may be more difficult during the initial period of diagnosis and they may also have higher viral load. Future studies should measure the impact of structural-level discrimination and HIV-related stigma on disclosure among HIV-positive MSM in Asian countries. In addition, qualitative studies are needed to better understand important contextual factors that can influence HIV-positive MSM's disclosure behaviors.

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Table 1

Socio-demographic characteristics, sexual transmission behaviors, and disclosure status among HIV-positive MSM in Asia (N = 416)

	HIV-positive MSM N (%)
Country	
China	42 (10.1%)
Hongkong	37 (8.9%)
Indonesia	15 (3.6%)
Japan	39 (9.4%)
Malaysia	46 (11.1%)
Philippines	17 (4.1%)
Singapore	62 (14.9%)
Taiwan	84 (20.2%)
Thailand	66 (15.9%)
Other	8 (1.9%)
Age	
18–29	115 (27.6%)
30–39	183 (44.0%)
40+	118 (28.4%)
Employment	
Fulltime/Student	339 (81.5%)
Unemployed/Social Security	35 (8.4%)
Other	42 (10.1%)
Education	
High school or less	48 (11.5%)
Tech/some college	117 (28.1%)
College/postgraduate	251 (60.4%)
Sexual orientation	
Gay	385 (92.6%)
Bi/Hetero/Other	31 (7.4%)
Relationship status	
Regular partner	162 (38.9%)
Non-regular partner	254 (61.1%)
Number of partners	
One	56 (13.5%)
2–5	181 (43.5%)
6–10	77 (18.5%)
More than 11	102 (24.5%)
UIAI	
Yes	281 (67.6%)
No	135 (32.4%)
URAI	

	HIV-positive MSM N (%)
Yes	281 (67.6%)
No	135 (32.4%)
UIAI with internal ejaculation	
Yes	131 (31.5%)
No	285 (68.5%)
URAI with internal ejaculation	
Yes	179 (43.0%)
No	237 (67.0%)
Disclosure status	
To all	29 (7.0%)
To some	107 (25.7%)
To none	280 (67.3%)

Bivariate associations between HIV disclosure and socio-demographics, sexual transmission behaviors, disease status and other characteristics among HIV-positive MSM in Asia (N = 416)

Table 2

Country	Disclosed (N = 136)	Non-disclosed (N = 280)	χ^2	p
Philippines	9/17 (52.9%)	8/17 (47.1%)	16.44	0.06
Hong Kong	16/37 (43.2%)	21/37 (56.8%)		
Malaysia	19/46 (41.3%)	27/46 (58.7%)		
Indonesia	6/15 (40.0%)	9/15 (60.0%)		
Taiwan	28/84 (33.3%)	56/84 (66.7%)		
Thailand	22/66 (33.3%)	44/66 (66.7%)		
Singapore	19/62 (30.7%)	43/62 (69.4%)		
Japan	10/39 (25.6%)	29/39 (74.4%)		
China	5/42 (11.9%)	37/42 (88.1%)		
Other	2/8 (25.0%)	6/8 (75.0%)		
Age				
18–29	37/115 (31.2%)	78/115 (67.8%)	0.23	0.89
30–39	62/183 (33.9%)	121/183 (66.1%)		
40+	37/118 (31.4%)	81/118 (68.6%)		
Employment				
Fulltime/Student	113/339 (33.3%)	226/339 (66.7%)	0.41	0.81
Unemployed/Social Security	11/35 (31.4%)	24/35 (68.6%)		
Other	12/42 (28.6%)	30/42 (71.4%)		
Education				
College/postgraduate	85/251 (33.9%)	166/251 (66.1%)	1.73	0.42
Tech/some college	33/117 (28.2%)	84/117 (71.8%)		
High school or less	18/48 (37.5%)	30/48 (62.5%)		
Sexual orientation				
Gay	125/385 (32.5%)	260/385 (67.5%)	0.12	0.73
Bisexual/Heterosexual/Other	11/31 (35.5%)	20/31 (64.5%)		
Relationship status				

	Disclosed (N = 136)	Non-disclosed (N = 280)	χ^2	p
Regular partner	71/162 (43.8%)	91/162 (56.2%)	14.95	<0.01
Non-regular partner	65/254 (25.6%)	189/254 (74.4%)		
Main way meeting partner				
Internet	92/263 (35.0%)	171/263 (65.0%)	11.60	<0.01
Bar/Dance party/Gym/Friend	17/33 (51.5%)	16/33 (48.5%)		
Public cruising/Sex party/Gay sauna	27/120 (22.5%)	93/120 (77.5%)		
Number of partners				
One	26/56 (46.4%)	30/56 (53.6%)	6.35	0.09
2–5	59/181 (32.6%)	122/181 (67.4%)		
6–10	23/77 (29.9%)	54/77 (70.1%)		
More than 11	28/102 (27.5%)	74/102 (72.5%)		
HIV disclosure from partner				
All/Some	80/95 (84.2%)	15/95 (15.8%)	148.50	<0.01
None	56/321 (17.5%)	265/321 (82.5%)		
UIAI				
No	41/135 (30.4%)	94/135 (69.6%)	0.49	0.48
Yes	95/281 (33.8%)	186/281 (66.2%)		
URAI				
No	39/135 (28.9%)	96/135 (71.1%)	1.31	0.25
Yes	97/281 (34.5%)	184/281 (65.5%)		
UIAI with internal ejaculation				
No	87/285 (30.5%)	198/285 (69.5%)	1.92	0.16
Yes	49/131 (37.4%)	82/131 (62.6%)		
URAI with internal ejaculation				
No	75/237 (31.6%)	162/237 (68.4%)	0.27	0.60
Yes	61/179 (34.1%)	118/179 (65.9%)		
Drug before sex				
Never	72/249 (28.9%)	177/249 (71.1%)	7.31	0.06
Once or a few times	37/104 (35.6%)	67/104 (64.4%)		
At least monthly	23/48 (47.9%)	25/48 (52.1%)		
Every week	4/15 (26.7%)	11/15 (73.3%)		

	Disclosed (N = 136)	Non-disclosed (N = 280)	χ^2	p
Alcohol before sex				
Never	71/246 (28.9%)	175/246 (71.1%)	4.60	0.20
Once or a few times	48/127 (37.8%)	79/127 (62.2%)		
At least monthly	11/25 (44.0%)	14/25 (56.0%)		
Every week	6/18 (33.3%)	12/18 (66.7%)		
Time of diagnosis				
>=5 years ago	43/106 (40.6%)	63/106 (59.4%)	4.02	0.13
Between 1–5 years ago	58/192 (30.2%)	134/192 (69.8%)		
Within the past 12 months	35/118 (29.7%)	83/118 (70.3%)		
On ART				
Yes	80/235 (34.0%)	155/235 (66.0%)	0.45	0.50
No	56/181 (30.9%)	125/181 (69.1%)		
Viral load				
Undetectable	63/177 (35.6%)	114/177 (64.4%)	4.88	0.09
Detectable	56/162 (34.6%)	106/162 (65.4%)		
DK/Unsure	17/77 (22.1%)	60/77 (77.9%)		
Main source of support				
Government HIV clinic	14/71 (19.7%)	57/71 (80.3%)	8.46	0.08
Family/friends/partner	83/238 (34.9%)	155/238 (65.1%)		
Social services/support group/NGO	16/47 (34.0%)	31/47 (66.0%)		
Doctor	6/11 (54.6%)	5/11 (45.4%)		
Other	17/49 (34.7%)	32/49 (65.3%)		

Note: UIAI = unprotected insertive anal intercourse; URAI = unprotected receptive anal intercourse; ART = antiretroviral treatment.

Table 3

Multivariable correlates of HIV disclosure among HIV-positive MSM in Asia (N = 416)

Non-disclosed vs. Disclosed		
	OR (95% CI)	AOR (95% CI) ^a
Relationship status		
Regular partner	1	1
Non-regular partner	2.27 (1.49, 3.45) **	1.91 (1.03, 3.53) *
Main way meeting partner		
Internet	1	1
Bar/Dance party/Gym/Friend	0.51 (0.24, 1.05)	0.73 (0.27, 1.96)
Public cruising/Sex party/Gay sauna	1.85 (1.13, 3.05) *	1.09 (0.54, 2.19)
Number of partners		
One	1	1
2–5	1.79 (0.97, 3.30)	1.84 (0.77, 4.38)
6–10	2.03 (0.99, 4.17)	1.70 (0.59, 4.96)
More than 11	2.29 (1.16, 4.53) *	2.33 (0.82, 6.64)
HIV disclosure from partner		
All/Some	1	1
None	25.24 (13.55, 47.02) **	37.13 (17.22, 80.07) **
Drug before sex		
Never	1	1
Once or a few times	0.74 (0.45, 1.20)	1.36 (0.64, 2.89)
At least monthly	0.44 (0.23, 0.83) *	0.93 (0.34, 2.55)
Every week	1.12 (0.34, 3.63)	6.48 (0.99, 42.50) *
Time of diagnosis		
>=5 years ago	1	1
Between 1–5 years ago	1.58 (0.96, 2.59)	2.23 (1.05, 4.74) *
Within the past 12 months	1.62 (0.93, 2.81)	1.92 (0.79, 4.63)
Viral load		
Undetectable	1	1
Detectable	1.05 (0.67, 1.64)	0.99 (0.51, 1.93)
DK/Unsure	1.95 (1.05, 3.63) *	2.80 (1.00, 7.83) *
Main source of support		
Government HIV clinic	1	1
Family/friends/partner	0.46 (0.24, 0.87) *	0.52 (0.21, 1.26)
Social services/support group/NGO	0.48 (0.21, 1.10)	0.56 (0.16, 1.93)
Doctor	0.20 (0.05, 0.77) *	0.31 (0.05, 2.11)
Other	0.46 (0.20, 1.06)	0.46 (0.14, 1.47)

Note:

* $p < .05$;

**
 $p < .01$.

^aAdjusted for country of residence, age, educational level, employment status, and sexual orientation.