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Receiving HIV Serostatus Disclosure from Partners Before Sex: Results from an Online Survey of Chinese Men Who Have Sex with Men

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Abstract

Background—HIV serostatus disclosure before sex can facilitate serosorting, condom use and potentially decrease the risk of HIV acquisition. However, few studies have evaluated HIV serostatus disclosure from partners before sex. We examined the rate and correlates of receiving HIV serostatus disclosure from regular and casual male partners before sex among an online sample of men who have sex with men (MSM) in China.

Methods—An online cross-sectional study was conducted among MSM in eight Chinese cities in July 2016. Participants completed questions covering sociodemographic information, sexual behaviors, HIV testing (including HIV self-testing) history, self-reported HIV status, and post-test violence. In addition, participants were asked whether they received HIV serostatus disclosure from their most recent partners before sex.

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Disclosure statement

The authors declare no competing interests.

Results—Overall, 2105 men completed the survey. Among them, 85.9% were never married, and 35.4% had high school or less education. A minority (20.6%, 346/1678; 17.8%, 287/1608) of men received HIV serostatus disclosure from their most recent regular and casual male partners, respectively. Multivariate analysis indicated that participants who ever self-tested for HIV were more likely to have received HIV status disclosure from regular [adjusted OR (aOR)=1.92, 95% CI: 1.50–2.44] and casual (aOR=2.34, 95% CI: 1.80–3.04) male partners compared to never self-tested participants. Compared to participants who had not received HIV status disclosure from regular partners, participants who received disclosure from regular male partners had higher likelihood in experiencing post-test violence (aOR =5.18, 95% CI: 1.53–17.58). Similar results were also found for receiving HIV serostatus disclosure from casual partners.

Conclusion—This study showed that HIV serostatus disclosure from partners was uncommon among Chinese MSM. Interventions and further implementation research to facilitate safe disclosure are urgently needed for MSM.

Keywords

Disclosure; Male Partner; Men Who Have Sex with Men; Self-testing; Violence

Introduction

HIV remains prevalent worldwide, especially among men who have sex with men (MSM): Despite global efforts to control HIV among key populations, HIV persists as a major public health threat among MSM around the world.(1–3) For example, in the United States (US), HIV prevalence among MSM reached levels as high as 14.5% in 2015.(3, 4) In China, data from 107 surveillance sites indicated that HIV prevalence among MSM increased from 0.9% in 2003 to 8.0% in 2015.(5, 6) In addition, alarmingly high HIV incidence rates have been observed among MSM in several cities in China. A previous study conducted by members of our research team found that the HIV incidence in two cities in Jiangsu Province was as high as 13.0/100 person-years (PYs) in 2011.(7) Control of the HIV epidemic among MSM is a global public health priority, and promotion HIV serostatus disclosure and partner testing is an important HIV prevention and control strategy. (8)

HIV serostatus disclosure remains an uncommon practice among men who have sex with men (MSM) in low- and middle- income countries (LMICs).(9, 10) For example, a study conducted in India revealed that only about one-quarter of Indian MSM disclosed their HIV status to their male partners.(11) Lack of HIV serostatus disclosure among MSM in LMICs may be due to fear of discrimination and violence(12), lack of social and psychological support(13, 14), and low HIV testing rate.(15) For example, due to feared discrimination and social isolation, and feared relationship broken-up, people in LMICs are less likely to disclose their serostatus to partners.(16) Fear of violence from partners was also a strong concern for MSM, especially for those who have multiple partners.(16) These barriers may reduce the benefits of HIV serostatus disclosure, and lead to further transmission of HIV among this key population. HIV serostatus disclosure could facilitate serosorting and seropositioning, promote condom use, improve uptake to HIV prevention and treatment programs, and increase HIV test uptake.(12, 17–19)

Worldwide, previous studies on HIV serostatus disclosure mainly focused on whether an index HIV case disclosed their serostatus to their partner(s), and mainly focused on heterosexual couples. These studies usually reported on the patterns(20) and processes(21) of HIV serostatus disclosure, evaluated barriers and benefits of HIV serostatus disclosure(22), and assessed factors associated with HIV positive test results disclosure.(19) Several studies among MSM also have focused on knowledge of sexual partner's HIV status(18, 23), but very few report the conditions of receiving HIV serostatus disclosure from partners, regardless of the testing results. And very few of them explored the association between coerced HIV testing history and history of post-test violence, while these two are considered to be highly correlated with HIV serostatus disclosure. We defined receiving HIV serostatus disclosure as the partner of a participant actively disclosing their HIV serostatus to the participant.

To decrease the risk of HIV acquisition, HIV serostatus disclosure should be promoted from both sides of the sexual partnership, as HIV status disclosure can lead to HIV transmission risk reduction.(24–26) However, few studies have evaluated receiving HIV serostatus disclosure from partners, and we do not know whether HIV serostatus disclosure from partners is lower than HIV serostatus disclosure to partners. In addition, previous studies on providing HIV serostatus disclosure were usually based on the face-to-face interview, which tends to have report bias and social desirability. A computer-assisted online survey could be another good choice, even we cannot completely prevent social desirability bias(27), as no face-to-face interview is involved. To answer these questions, we conducted secondary data analysis of a randomized control trial, with the aims of accessing the proportion of men who had received HIV serostatus disclosure from partners before sex, and evaluating factors associated with receiving HIV serostatus disclosure from their most recent regular and casual male partner.

Methods

This study used the data from an online cross-sectional study among MSM in eight Chinese cities (Guangzhou, Jiangmen, Shenzhen and Zhuhai in Guangdong Province, Jinan, Jining, Qingdao and Yantai in Shandong Province, China), which was conducted in July of 2016. These cities were chosen for two reasons: 1), the selected sites have the heaviest burden of HIV in the two provinces; 2), each city had existing infrastructure for MSM HIV surveillance led by the local center for diseases prevention and control (CDC) and capacity to deliver new HIV testing services. This was the baseline survey of a randomized control trial to evaluate promoting HIV testing among MSM in China (The study is registered in the [Clinical Trials.gov](https://www.clinicaltrials.gov/ct2/show/study?term=NCT02796963) database, NCT02796963).

Participants recruitment

The anonymous survey was conducted by the University of North Carolina Project-China. The inclusion criteria of this study included: born as a male, at least 16 years old, ever engaged in anal sex with another man, currently living in one of the designated cities, and electronically signed the online written informed consent form. To recruit participants, our study team collaborated with a gay partner seeking smart-phone based application called

Blued.(28) For the recruitment, banner advertisements linking to the online survey were sent to registered users of the social media application in the eight cities. Participants could forward the survey link to friends. Participants who clicked the survey link on the social media application were directed to the online survey that was hosted by Sojump (Shanghai, China). After study eligibility was determined, eligible participants were required to give informed consent prior to beginning the survey, by signing the inform consent form electronically. Participants were asked to provide their cell phone number in order to receive an incentive (\$7.20 USD). Participants could take the survey on a cell phone, tablet, laptop or desktop computer, and the survey took the participants about 14.6 (IQR 11.3–19.8) minutes to finish.

Measures

Participants completed questions covering socio-demographic information, sexual behaviors, HIV/STI testing history, self-reported HIV status, and whether or not HIV test results were disclosed between them and their most recent partners.

For the socio-demographic information, we collected data on age (as a continuous variable and further categorized into four groups: less than 20, 20–29, 30–39, and 40 or above), residency status (residence in the sampled city, residence in other cities within the sampled province, and other provinces), marital status (never married, currently married, and divorced or widowed), educational level (high school or below, some college, or college or above), and annual income (\$2500 USD or below, \$2501–8500 USD, \$8501–14000 USD, or more than \$14000 USD). For reference, the average household net income in 2012 in China was approximately 7000 USD, and approximately increased to 8500 USD in 2016. Participants were asked to report their self-identified sexual orientation (gay, bisexual, and heterosexual or unsure). In addition, participants were asked to report their current self-identified gender (male, transgender or unsure).

Regarding sexual behaviors, participants were asked if they had used a condom with their last male partner (Yes or no), and if their last male partner was a regular or casual partner. Casual male partner was defined as any sexual partner that the participant did not consider to be his regular partner, while regular partner was defined as boyfriends or any sexual-relationship that last for more than three months.(29)

Participants were asked if they had ever tested for HIV (including HIV self-test, Yes or no), what the most recent testing results were (positive or negative), and whether their first test was an HIV self-test (HIVST). Information on coerced HIV testing history, and history of post-test violence (Yes or no) was also collected. We defined coerced HIV testing as the partners of the index participants who forced him to take an HIV test. We defined post-test violence as the HIV testing leading to a violent confrontation (physical assault) to the participants.

HIV testing social norm was measured by six validated items asking participants about the social norms of HIV testing.(30) HIV testing self-efficacy was also measured using a validated six-item scale.(31) Answers were given in a 4-point Likert format: Strongly agree (4), agree (3), disagree (2), strongly disagree (1). Each item was then scored between 1 and

4, based on the answers provided by the participants. And the mean scores for all the sex items of social norm and self-efficacy were then calculated (ranged between 1 to 4). The Cronbach's alphas for social norm and self-efficacy are 0.762 and 0.485, respectively.

For the outcome measure, participants were first asked whether they ever had a regular male, casual male, regular female, and casual female partner, and if they knew the HIV status of their most recent regular male, casual male, regular female, and casual female partner (HIV positive, HIV negative, no idea/never tested, and I never had a stable/casual partner). Hence, each participant was able to report HIV partner statuses for a maximum of four partners. If the HIV status of a partner was known, then the participant was asked how they knew the results by checking the response options [1=He told me some time ago / I had known for some time, 2=He told me (online or in person) before sex, 3=I knew it from his profile on the Internet, 4=He made it clear without actually telling me, 5=Someone else told me, 6=We were at an event where everyone was HIV negative, 7=We were at an event where everyone was HIV positive, 8=I guessed, 9=Other reason]). We defined receiving HIV serostatus disclosure as the partner of a participant actively disclosing their HIV serostatus to the participant.. Providing disclosure of HIV status from the participant to partners was assessed analogously. In our study, the regular male partner was defined as “boyfriends”, or those who were in a stable relationship (over three months) that did not involve transactional sex. (32)

Statistical Analysis

Descriptive analysis was used to describe the distribution of the socio-demographic characteristics and behaviors of participants. Univariate and multivariate logistic regression were used to evaluate factors associated with receiving HIV status disclosure from the most recent male regular partner of the participants. We analyzed the factors associated with receiving HIV status disclosure from the most recent male regular partners as well as the most recent male casual partners (Table 1). Factors that were adjusted in the multivariate analyses included age (continuous), education level, marital status, annual income and city of recruitment. Model building and confounder selection was informed by the results of a literature search and prior knowledge from previous work of the study group and collaborators.(33) All data analyses were completed using SAS 9.4 (SAS int. Cary, NC, USA).

Ethical Statement

Ethical approval was obtained from the ethics review committees at the Guangdong Provincial Center for Skin Diseases and STI Control (Guangzhou, China), University of North Carolina at Chapel Hill (Chapel Hill, North Carolina), and the University of California, San Francisco (San Francisco, California) prior to the launch of the survey.

Results

Overall, the survey link was clicked 36,863 times from 25,141 independent IP addresses, and a total of 2,112 eligible participants finished the questionnaire (many people clicked the survey link but withdrew before the eligible screening). Among these 2,112 participants,

seven records were removed after de-duplication of redundant mobile phone numbers. The final analytic sample included 2,105 participants.

Socio-demographic characteristics

The age of the 2,105 participants ranged between 16 and 64, with a mean age of 26 ± 6 , and over three-fourths (76.7%) were less than 30 years old. About two-thirds of the participants (68.5%) are registered residences of the sampling province, most (85.9%) have a marital status of never married, and over sixty percent (64.6%) with an educational attained level of some college education or above. In addition, over seventy percent of participants (71.6%) reported annual income less than \$8,500USD (Table 1), and 67 people self-reported that they are transgender individuals.

Overall, 1,678 (79.7%) participants reported that they ever had regular male partners, 1,608 (76.4%) ever had casual male partners, 383 (18.2%) ever had regular female partners, and 286 (13.6%) ever had casual female partners (Table 1). In addition, 67 (3.2%) participants self-identified as transgender, while 39 (1.9%) participants were not sure about their gender. The mean social norm score on HIV testing of the participants was 2.82 ± 0.37 , and the mean self-efficacy score for HIV testing of the participants was 3.16 ± 0.48 .

HIV testing history

Overall, 1125 participants (53.4%) reported that they ever tested for HIV, but only 1063 (50.5%) of participants knew their HIV status, and the main reason for the discrepancy between ever testing and knowing their status is the participants refuse to get the testing results. Of these 1063 people who know their HIV status, 62 (5.8%) of them were self-reported as HIV positive. In addition, 685 (32.5%) participants reported that they ever self-tested for HIV, and 371 (17.6%) of the participants reported that HIVST was their first-time HIV testing experience (data were not shown in tables).

A total of 64 (5.7%) men who ever tested for HIV experienced HIV testing related coercion, and 14 (1.2%) participants who ever tested for HIV experienced post-test violence.

Receiving HIV status disclosure from partners

Among the 1678 people who reported have regular male partners, only 346 (20.6%, 162 for he told me some time ago, 126 for he told me before sex, 12 for I knew it from his profile online, and 46 for he made it clear without actually telling me) participants received HIV serostatus disclosure from their most recent regular male partners. HIV serostatus disclosure rates from other different kinds of partners were: 287 people (17.8%, out of 1608) got HIV serostatus disclosure from their casual male partner, 62 people (16.2%, out of 383) got HIV serostatus disclosure from a regular female partner, and 48 people (16.8%, out of 286) got HIV serostatus disclosure from their casual female partner (Table 2).

Providing HIV status disclosure to partners

The overall disclosure rate from participants to their regular male partners was relatively high (704/1678, 42.0%). Among the 62 HIV positive participants, 37 (59.7%) disclosed their HIV testing results to their regular partner, 15 (24.2%) participants did not disclose their

HIV testing results to their regular partner, and 10 (16.1%) did not have a regular male partner. Among the 1001 HIV negative participants, 639 (63.8%) disclosed their HIV testing results to their regular partner, 179 (17.9%) participants did not disclose their HIV testing results to their regular partner, and 183 (18.3%) did not have a regular male partner (data were not shown in tables). All of these were based on self-reporting.

Factors associated with receiving HIV serostatus disclosure from most recent regular and casual male partners

Multivariate analysis indicated that, compared to people with HIV negative testing results, participants who never tested for HIV or whose HIV status was unknown were less likely to receive disclosure of HIV status from their most recent regular partners, with an adjusted Odds Ratio (aOR) of 0.43 (95% CI: 0.33–0.56). Self-reported HIV positive and HIV negative partners had similar likelihood of receiving HIV status disclosure from their most recent regular male partners. Compared with people who never tested for syphilis, participants who ever tested for syphilis had higher odds of receiving HIV status disclosure from regular partners, with an aOR of 1.78 (95% CI: 1.39–2.27) (Table 3).

We found that post-test violence was positively associated with test results disclosure from regular male partners, with aOR of 5.18 (95% CI: 1.53–17.58). In addition, with the increase of HIV testing related self-efficacy, the likelihood of receiving HIV serostatus disclosure from regular male partners also increased, with an aOR of 1.77 (95% CI: 2.37–2.29). Compared to people who never self-tested for HIV, participants who ever self-tested for HIV had greater odds of receiving HIV status disclosure from regular male partners (aOR=1.92, 95% CI: 1.50–2.44).

Similar results were found for factors associated with receiving HIV serostatus disclosure from their most recent casual male partners (Table 4). For example, compared to people with HIV negative testing results, participants who never tested for HIV or whose HIV status was unknown were less likely to receive disclosure of HIV status from their most recent casual partners, with an aOR of 0.45 (95% CI: 0.34–0.60).

Discussion

HIV serostatus disclosure before sex can facilitate serosorting, seropositioning, condom use and potentially decrease the risk of HIV acquisition. (12, 17–19) Many existing studies focus on disclosure of HIV-positive status to partners among people living with HIV in different settings. (34–36) This study adds to the current literature by assessing receiving HIV serostatus disclosure from different kinds of partners and identifying correlates of HIV serostatus disclosure from their most recent regular and casual male partners. Our findings indicated that disclosure of HIV status from recent regular male partners was positively associated with post-test violence, HIV self-testing (HIVST) and HIV testing related self-efficacy.

We found that only about one-quarter of regular partners disclosed their HIV serostatus to the participants. This partner disclosure rate and partner status knowledge rate was much lower than the findings of one study conducted among MSM in Nanjing (74.5%, awareness

rate), China.(37) They were also much lower than a previous study among MSM in California, USA, while the California study only included MSM who knew their HIV serostatus (86%, knowledge rate).(18) The literature also indicated that these two rates were also much lower than the HIV serostatus disclosure rate among rural people living with HIV in China(38), MSM living with HIV in the US(39), and HIV negative MSM in the US, while we realized that it is much easier for HIV negative people to disclose their HIV serostatus. (40) Low rates of HIV serostatus disclosure from regular partners among MSM in China may be due to insufficient social and psychological support, stigmatization(18) and lack of communication skills.(41) To promote HIV serostatus disclosure among Chinese MSM, policies that aimed to deal with these sociocultural and structural barriers could be important. In addition, qualitative studies that aim to identify other reasons that may impede HIV serostatus disclosure among Chinese MSM would be essential for developing targeted interventions. In our study, the disclosure rate from participants to their partners was relatively high compared to the disclosure rate from partners to the participants. Report bias and disparity of HIV status disclosure from different partners could be two potential reasons for this phenomenon.

Our study indicated that HIV testing, HIVST, as well as HIVST as first-time HIV testing of the participants were all positively associated with HIV serostatus disclosure from both regular and casual male partners. These findings demonstrated that the lack of HIV testing (around 50% of Chinese MSM never tested for HIV(42)) was one of the main reasons for low HIV serostatus disclosure among Chinese MSM. Previous studies indicated that promoting HIV testing, especially couples-based HIV testing, was essential for facilitating HIV serostatus disclosure across diverse settings.(16) In addition, HIVST also provided an important opportunity to increase test uptake, and our previous study indicated that HIV self-testing kits are widely available online, and over 30% of Chinese MSM have ever been self-tested.(43, 44) Thus, promoting HIV testing and HIV serostatus disclosure jointly could be a promising route. Importantly, policies on promoting HIV testing, HIV serostatus disclosure and partner service jointly, especially among newly identified HIV positive cases are needed.

Previous studies indicated that post-violence is one potential barrier to HIV serostatus disclosure(45, 46), and our study found corroborating results. However, post-test violence is very rarely reported among Chinese MSM. For example, only 14 men (1.2% of the testers) in our study self-reported that they ever experienced any post-test violence. Future studies that further to confirm this finding in China are needed, as this finding was only based on 14 men (the 95% confidence interval for adjusted OR is very wide), and our results may be biased from selection bias. Interventions and further implementation research to facilitate safe disclosure are still urgently needed for MSM.

Our study has several limitations. First, as an online study conducted on the mobile application, our study was prone to selection bias. Participants would at least have a smart phone, which led our sample to tend to be young and well educated(43), and many potential participants who clicked the survey link withdrew before the eligibility screening. Second, the cross-sectional design precluded us to identify any causal relationships. Third, as all data (socio-demographic, behaviors, and HIV testing results) were collected through self-report,

our study may suffer from information bias. Fourth, recall bias might have occurred when we collected information on HIV serostatus disclosure. Our recruitment advertisement used “Men’s Health Survey” to attract potential participants, which may preclude those transgender women who identified as female. Fifth, even the total sample size for our study is large, only a few people experienced rare outcomes, such as post-test violence. Also, even we have used a validated scale, the Cronbach's alphas for self-efficacy was only 0.485, which makes this measure unreliable.

Conclusion

HIV serostatus disclosure from partners was uncommon among the participants, while HIV testing is highly related to HIV serostatus disclosure. Policies that focus on dealing with the sociocultural and structural barriers of HIV serostatus disclosure, and to promote HIV testing and HIV serostatus disclosure jointly are essential. In addition, policies and strategies that aim to increase accessibility of facility-based HIV testing, expand HIVST, facilitate safe disclosure, and increase social and psychological support for HIV testing and testing results disclosure may improve rates of HIV serostatus disclosure among Chinese MSM. In addition, qualitative and quantitative research should elucidate unexplored barriers to HIV status disclosure, develop and evaluate new intervention methods for promoting HIV status disclosure, among Chinese MSM and transgender individuals.

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Table 1

Demographic characteristics of the men who have sex with men (MSM) and transgender individuals in China, 2016 (N=2105)

		Frequency	Percent (%)
Age group (years)	<20	259	12.3
	20–29	1355	64.4
	30–39	397	18.9
	40	94	4.5
Hukou	<i>The sampling city</i>	652	31.0
	<i>Other cities in the sampling province</i>	790	37.5
	<i>Other provinces</i>	663	31.5
Gender	<i>Male</i>	1999	95.0
	<i>Transgender</i>	67	3.2
	<i>Unsure/other</i>	39	1.8
Marital Status	<i>Never married</i>	1809	85.9
	<i>Currently married</i>	187	8.9
	<i>Divorced or widowed</i>	109	5.2
Educational level attained	<i>High school or below</i>	746	35.4
	<i>Some College</i>	583	27.7
	<i>College or above</i>	776	36.9
Annual income (USD)	<i>2,500 or below</i>	391	18.6
	<i>2,501–8,500</i>	1115	53.0
	<i>8,501–14,000</i>	384	18.2
	<i>>14,000</i>	215	10.2
Ever had regular male partner	<i>No</i>	427	20.3
	<i>Yes</i>	1678	79.7
Ever had casual male partner	<i>No</i>	497	23.6
	<i>Yes</i>	1608	76.4
Ever had regular female partner	<i>No</i>	1722	81.8
	<i>Yes</i>	383	18.2
Ever had casual female partner	<i>No</i>	1819	86.4
	<i>Yes</i>	286	13.6
HIV status	<i>HIV positive</i>	62	3.0
	<i>HIV negative</i>	1001	47.6
	<i>Untested or unknown*</i>	1042	49.5

Note:

* 980 participants never tested for HIV, and 62 ever tested for HIV but with unknown testing results.

Table 2

Associations between men who self-reported HIV status and who received HIV status disclosure from different types of partners (N=2105)

Type of partner	Source	Overall		HIV status of partners			
		Number	%	HIV positive		HIV Negative	
				Number	%	Number	%
Regular male partner[*] (n=1678)	<i>Received disclosure from the partner</i>	346	20.6	31	1.8	315	18.8
	<i>Knew the status from other sources</i>	297	17.7	10	0.6	287	17.1
	Overall awareness rate	643	38.3	41	2.4	602	35.9
Casual male partner[#] (n=1608)	<i>Received disclosure from the partner</i>	287	17.9	22	1.4	265	16.5
	<i>Knew the status from other sources</i>	200	12.4	16	1	184	11.4
	Overall awareness rate	487	30.3	38	2.4	449	27.9
Regular female partner (n=383)	<i>Received disclosure from the partner</i>	62	16.2	6	1.6	56	14.6
	<i>Knew the status from other sources</i>	71	18.5	1	0.2	70	18.3
	Overall awareness rate	133	34.7	7	1.8	126	32.9
Casual female Partner (n=286)	<i>Received disclosure from the partner</i>	48	16.8	5	1.8	43	15
	<i>Knew the status from other sources</i>	40	14	3	1	37	13
	Overall awareness rate	88	30.8	8	2.8	80	28

^{*} Regular male partner was defined as "boyfriends", or those who were in a stable relationship (over three months) that did not involve transactional sex.

[#] Casual male partner was defined as any sexual partner that the participant did not consider to be his regular partner.

Table 3

Factors associated with men who received HIV serostatus disclosure from their most recent regular male partner (N=1678)

Variables	Crude OR	95% CLs	Adjusted OR [£]	95% CLs
Overall				
Transgender	No	Ref	Ref	
	Not sure	0.64	0.72	0.31 1.65
	Yes	0.98	0.91	0.48 1.72
Sexual Orientation	Homosexual	Ref	Ref	
	Bisexual	0.81	0.86	0.64 1.16
	Unsure	0.86	0.84	0.43 1.65
	HIV negative	Ref	Ref	
HIV status	HIV positive	1.32	1.51	0.82 2.78
	Untested or unknown [*]	0.44	0.56	0.33 0.56
	Yes	Ref	Ref	
Used condom with last male partner in the last month[¶]	No	0.83	0.83	0.59 1.16
	Casual partner	Ref	Ref	
Partner type of last male partner	Regular partner	2.54	2.59	2.05 3.29
	No	Ref	Ref	
Coercion of HIV testing⁺	Yes	1.26	1.33	0.68 2.60
	No	Ref	Ref	
HIV testing related violence	Yes	4.68	5.18	1.53 17.58
	No	Ref	Ref	
Ever self-tested	Yes	1.93	1.92	1.50 2.44
	No	Ref	Ref	
HIVST as first time HIV testing	Yes	1.72	1.73	1.30 2.30
	No	Ref	Ref	
HIV testing social efficacy	Yes	1.75	1.77	1.37 2.29
	No	Ref	Ref	
HIV testing social norm		1.19	1.25	0.90 1.74

Note:

^{*} 980 participants never tested for HIV, and 62 ever tested for HIV but with unknown testing results;

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75 participants did not have male partners;
85 participants reported HIV self-testing. Among them, 5.7% (39/685) reported coercion of HIV self-testing,
Adjusted for age (continuous), education level (high school or below, some college, or college or above), marital status (Never married, married, or divorced or widowed), annual income (\$2500 USD or below, \$2501–8500USD, \$8501–14000 USD, or more than \$14000 USD) and city or recruitment.

Table 4
Factors associated with men who received HIV serostatus disclosure from their most recent casual male partner (N=1608)

		Crude OR	95% CLs		Adjusted OR [£]	95% CLs	
Transgender	No	Ref			Ref		
	Not sure	0.30	0.07	1.27	0.34	0.08	1.42
	Yes	0.88	0.41	1.90	0.97	0.45	2.11
Sexual Orientation	Homosexual	Ref			Ref		
	Bisexual	0.96	0.71	1.31	1.03	0.75	1.40
	Unsure	0.89	0.44	1.78	0.88	0.44	1.77
HIV status	HIV negative	Ref			Ref		
	HIV positive	1.12	0.58	2.14	1.32	0.68	2.56
	Untested or unknown	0.49	0.37	0.64	0.45	0.34	0.60
	Yes	Ref			Ref		
Used condom with last male partner in the last month	No	0.72	0.49	1.05	0.71	0.48	1.04
	Casual partner	Ref			Ref		
Partner type of last male partner	Regular partner	2.66	1.98	3.60	2.72	2.01	3.68
	No	Ref			Ref		
	Yes	4.01	1.34	12.02	5.01	1.61	15.55
Ever self-tested	No	Ref			Ref		
	Yes	2.31	1.78	2.99	2.34	1.80	3.04
HIVST as first time HIV testing	No	Ref			Ref		
	Yes	1.83	1.34	2.46	1.84	1.36	2.49
HIV testing social efficacy		1.83	1.40	2.40	1.85	1.40	2.44
HIV testing social norm		1.28	0.91	1.80	1.31	0.92	1.85

Note:

[£]Adjusted for age (continuous), education level (high school or below, some college, or college or above), marital status (Never married, married, or divorced or widowed), annual income (\$2500 USD or below, \$2501–\$8500USD, \$8501–\$14000 USD)