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Glob Public Health. 2017 January ; 12(1): 31–44. doi:10.1080/17441692.2015.1134612.**HIV test uptake among MSM in China: Implications for enhanced HIV test promotion campaigns among key populations****Larry Han^{a,b}, Chongyi Wei^c, Kathryn E. Muessig^{a,d}, Cedric H. Bien^{a,e}, Gang Meng^f, Michael E. Emch^g, and Joseph D. Tucker^{a,h}**^aUniversity of North Carolina Project – China, Guangzhou, People's Republic of China^bDepartment of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA^cDepartment of Epidemiology and Biostatistics & Global Health Sciences, University of California – San Francisco, San Francisco, CA, USA^dDepartment of Health Behavior, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA^eIcahn School of Medicine at Mount Sinai, New York, NY, USA^fGuangdong – Lingnan MSM Community Support Center, Guangzhou, People's Republic of China^gDepartment of Geography, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA^hSchool of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA**Abstract**

Despite global efforts to increase HIV test uptake among men who have sex with men (MSM), social stigma and negative attitudes toward homosexuality hinder the effectiveness of traditional test promotion campaigns. Increasing HIV test uptake requires greater understanding of the conditions that facilitate decisions to get tested. We conducted an online survey hosted by two of the most highly frequented MSM web portals in China. A generalised ordered logistic regression analysis was conducted to determine factors associated with HIV testing behaviour. Compared to men who had never tested for HIV, men who had tested in the past year were more likely to have never engaged in sex with women, have multiple male sex partners in the past 3 months and have disclosed their sexual orientation to others. MSM found testing at local Chinese Centers for Disease Control and Prevention (80.7%), gay men's community-based organisations (80.2%) and public hospitals (70.9%) to be acceptable, while saunas (50.5%) and gay bars (41.8%) were found to be unacceptable testing venues. Our study shows that MSM in China prefer to test at venues that guarantee confidentiality, quality and quick results. Our study also suggests that self-testing may be a feasible approach to increase test uptake.

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Keywords

MSM; HIV; rapid testing; acceptability; China

Introduction

In May of 2013, the World Health Organization (WHO) issued an inaugural report addressing the growing number of health challenges facing lesbian, gay, bisexual and transgender (LGBT) individuals. It noted that LGBT persons generally experience poorer health outcomes due to a variety of factors beyond risky behaviour, including social exclusion, institutional discrimination and physical and psychological violence (WHO, 2013). Men who have sex with men (MSM) in particular face barriers to high-quality health care (Beyrer et al., 2012). Widespread stigma associated with homosexuality and social condemnation of MSM behaviours have contributed to a disproportionately high HIV prevalence rate among this key population (Beyrer et al., 2013). A recent meta-analysis of low- and middle-income countries (LMICs) in Asia, Africa and the Americas showed that MSM are 19.3 times more likely than the general population to be infected by HIV (Baral, Sifakis, Cleghorn, & Beyrer, 2007).

Early diagnosis of HIV serostatus is vital to achieving positive treatment outcomes and preventing secondary transmission (Charlebois, Das, Porco, & Havlir, 2011; Granich, Gilks, Dye, De Cock, & Williams, 2009). Despite an extensive number of interventions that seek to increase knowledge of HIV serostatus among MSM, global test uptake remains low (Arreola, Hebert, Makofane, Beck, & Ayala, 2012). Barriers to accessing HIV services at traditional health care settings are numerous (Krause, Subklew-Sehume, Kenyon, & Colebunders, 2013; Myers, El-Sadr, Zerbe, & Branson, 2013; Song et al., 2011; Tucker, Bien, & Peeling, 2013) and have led to a significant increase in alternative programmes that offer rapid, point-of-care HIV testing in community-based settings (Bowles et al., 2008; Fernandez-Lopez et al., 2010). Globally, rapid tests for HIV have been used for almost a decade, but the need to attend a health facility has severely impeded test uptake among key populations (Tucker et al., 2013). In China, the government has worked to increase rates of MSM seeking voluntary counselling and testing (Zou, Hu, Xin, & Beck, 2012), yet in 2011 barely one-half of MSM had tested for HIV in the past year (Puskas et al., 2011). The Chinese Centers for Disease Control and Prevention (CDC) provide free facility-based HIV testing at voluntary counselling and testing sites, in addition to free Western Blot confirmatory services at select CDC sites (Tucker, Wong, Nehl, & Zhang, 2012). Although a few CDC locations have piloted HIV self-testing programmes, most CDCs do not have official HIV self-testing platforms or policy recommendations (Tao et al., 2014).

An understanding of the factors and modalities that facilitate HIV testing is a first step toward eliminating barriers to test uptake. Many studies have assessed correlates of HIV testing among MSM in China, including socio-economic status, number of sexual partners, sexual orientation and perception of risk, among other factors (Huang et al., 2012; Li et al., 2012; Song et al., 2011). However, few studies, in China or globally, have taken a quantitative assessment of HIV testing acceptability from the MSM perspective. More

information regarding MSM testing preferences is needed to design effective interventions that can overcome barriers to testing in China. Our survey examined HIV testing history, acceptability toward various HIV testing venues, and factors and modalities considered important by MSM in deciding to test for HIV.

Methods

In 2013, we examined attitudes towards HIV testing based on an online survey conducted among MSM in China. Prior to drafting the survey instrument, 2 team members conducted 97 interviews with MSM, stakeholders and key informants to inform survey development. In order to improve survey completion rates and ensure consistency with our written survey content, a draft survey was reviewed by 6 MSM in Guangzhou with prior experience in completing online surveys, 4 local community-based organisation (CBO) staff members, 2 Chinese gender studies sociologists and 5 public health experts and physicians with experience in MSM sexually transmitted infections (STI) prevention programming.

Our partners, 2 of the largest MSM CBOs in Guangdong and Chongqing, provide sexual health services such as HIV and syphilis diagnostic testing, counselling and accompaniment to clinical services for infected individuals. We piloted the online survey and received 201 responses from MSM. We also conducted focus group interviews to get feedback on survey usability and functionality. The survey was then launched on the two CBO web portals.

Eligibility and recruitment

We implemented an online survey with two of the largest MSM CBOs through their respective web portals: [gztz.org](http://www.gztz.org) (<http://www.gztz.org>) in Guangzhou and [ManBF.net](http://www.manbf.net) in Chongqing. Participants were recruited exclusively through banner links on the web portal home pages. Interested participants who clicked on the link were then taken to the survey with a description of its contents and an online informed consent form. To be eligible for the online survey, participants must have stated that they were born biologically male, had anal sex with men at least once during their lifetime, and were at least 16 years of age (age of consent in China). MSM who completed the survey via [gztz.org](http://www.gztz.org) were awarded 500 online credits and 50 'loyalty points' to access social media features of the website. MSM recruited through the Chongqing web portal ([ManBF.net](http://www.manbf.net)) did not receive any incentives for completion of the survey. Ineligible participants were redirected to their respective web portal homepages. No personal identifying information or IP addresses were collected from participants.

Measures

Socio-demographic characteristics included participants' age, highest level of education completed, current employment status, income, marital status, sexual orientation and sexual orientation disclosure. Behavioural variables included history of HIV testing, number of male anal sex partners in the past 3 months, history of sex with women, and condomless sex in the past 3 months. Participants rated their acceptance toward eight different HIV testing venues: public hospital, CDC, private medical clinic, gay men's CBO, HIV/AIDS CBO, gay

bar, sauna, home. MSM were told to mark each testing venue as one of four options: not at all acceptable, somewhat acceptable, moderately acceptable or highly acceptable. Not at all acceptable was defined as a venue that one would not get tested under any circumstances, somewhat acceptable was defined as a venue that one would get tested if there were no other options, moderately acceptable as a venue that one would feel comfortable getting tested, and highly acceptable as the top choice that one would want to get tested. From previous studies of other key populations (Pan, Parish, & Huang, 2011; Zhang, Parish, Huang, & Pan, 2012), our team developed eight factors considered important by MSM when deciding to test for HIV: guarantee of confidentiality, ability to test at home, oral rather than blood test, convenient location, comfortable testing environment, low cost, fast results, guarantee of test quality. Participants rated each factor as one of four options: not at all important, somewhat important, quite important or very important. All percentages were calculated by considering the number of respondents for each particular question rather than the total number of eligible MSM.

Statistical analysis

Frequencies were collected to describe MSM socio-demographic characteristics, HIV testing history, sexual identity, disclosure of sexual orientation and HIV sexual transmission behaviours. We used Pearson χ^2 tests to compare socio-demographic and HIV-related behavioural characteristics among three groups based on testing behaviour (never tested for HIV, tested over one year ago, tested in past year). These analyses were performed using IBM SPSS software (Version 21.0; SPSS Inc, Chicago, IL). A generalised ordered logistic regression analysis for ordinal response variables was carried out to determine independent factors associated with HIV testing behaviour. MSM were divided into three groups based on testing behaviour (never tested for HIV, tested over one year ago, tested in past year). The reference category used in the analysis was MSM who had never tested for HIV. Stata software (Version 13; StataCorp, College Station, TX) was used to conduct the analysis.

Ethical review

The Institutional Review Boards of the Guangdong Provincial Center for STI Prevention and Control and the University of North Carolina at Chapel Hill IRB approved this study.

Results

Among 1935 eligible MSM, 1342 (69.4%) completed our online survey. Of those who completed the survey, 1195 (89%) answered the question of whether they had ever tested for HIV. Among individuals who replied to this question, 723 (60.5%) MSM reported having tested for HIV at least once in their lifetime. Most men were between 21 and 30 years old (54.4%), had at least a college degree (53.2%) and were not married (82.6%). A large portion of MSM self-identified as gay (72.9%), reported having had anal sex with between 1 and 5 male partners in the past 3 months (76.2%) and having never engaged in sex with women (66.4%). Close to half of MSM (48.5%) had disclosed their sexual identity to at least one person and more than one-third of MSM (37.2%) had engaged in condomless sex with another man in the past three months (Table 1).

Acceptability of various HIV testing venues

MSM found HIV testing at a local CDC, gay men's CBO or public hospital (Table 2) to be acceptable. Most MSM (80.7%) reported testing at a CDC as highly preferable or very acceptable, and 80.2% of MSM either highly preferred or felt that testing at a gay men's CBO was very acceptable. In-home testing was highly preferred or acknowledged as very acceptable by 56.6% of respondents, while 24.9% of MSM found in-home testing not at all acceptable. Saunas (50.5%) and gay bars (41.8%) were found not at all acceptable by a substantial portion of respondents. Men who found gay bars and saunas to be acceptable as HIV testing sites were 2.29 (95% confidence interval [CI]: 1.38–3.78) times more likely to drink during or prior to engaging in sexual activities. These MSM were drunk during or before sex 14.1% of the time, compared to 6.7% of the time for men who found gay bars and saunas to be unacceptable as HIV testing sites (data not shown).

Factors considered by MSM when deciding to test for HIV

A guarantee of confidentiality, a guarantee of test quality and quick results were the most important factors considered by MSM when testing for HIV (Table 3). A guarantee of confidentiality (89.7%) and a guarantee of test quality (87.5%) were labelled very important factors by MSM. Further, 83.0% of men reported that quick results were either very important or quite important, and 75.8% of men stated that a low cost was a very important or quite important factor. The ability to test for HIV at home was labelled very important or quite important by 75.4% of men. Using an oral test rather a finger-prick or blood-drawn test was considered very important or quite important by 55.8% of MSM, while 44.2% of men stated that the type of test had only slight importance or no importance at all.

MSM characteristics and HIV testing behaviour

Results of the χ^2 tests regarding HIV testing behaviour are given in Table 4. Annual income ($P < .001$), sexual orientation (.001), number of male anal sex partners in the past 3 months ($< .001$) and disclosure of sexual orientation to others (.007) were factors significantly correlated with HIV testing behaviour (never tested, tested more than one year ago, tested in the past year).

Generalised ordered logistic regression analysis of HIV testing behaviour

Compared to MSM who had never tested for HIV, men who had tested more than 1 year ago were 1.34 (95% confidence interval [CI]: 1.12, 1.60, $P < .01$) times more likely to have a higher income, 1.48 (1.26, 1.74, $P < .01$) times more likely to have had male anal sex partners in the past three months and 1.38 times more likely to have disclosed their sexual orientation to others (1.08, 1.76, $P < .01$). Compared to MSM who had never tested for HIV, men who had tested for HIV in the past year were 1.36 times more likely to have never had sex with women (1.00, 1.85, $P = .05$), 1.50 times more likely to have had male anal sex partners in the past 3 months (1.28, 1.76, $P < .01$) and 1.34 times more likely to have disclosed their sexual orientation to others (1.05, 1.71, $P = .02$). The full model is presented in Table 5.

Discussion

Limited resources continue to hinder efforts to provide key populations with essential HIV services (UNAIDS, 2013). Global funding for MSM is inadequate, with two-thirds of MSM not receiving HIV prevention services (Adam et al., 2009). China has been especially hard-hit, as low domestic public spending on prevention services (Tucker, 2013) has been compounded by international donors, including The Global Fund to Fight AIDS, Tuberculosis and Malaria, pulling funds from the region (UNAIDS, 2013). MSM in China are in need of more effectively designed interventions to increase HIV test uptake. Our study examines HIV testing history among MSM to better understand factors related to HIV testing. Further, our study assesses MSM testing characteristics in anticipation of designing interventions that MSM find acceptable. Existing qualitative literature has described barriers to HIV testing (Lorenc et al., 2011), but few studies, in China or elsewhere, have examined testing acceptability in a quantitative analysis. Our research extends current literature by including acceptability data for testing venues that will be useful for structuring public health campaigns.

Our study demonstrates that MSM accept HIV testing at gay men's CBOs, CDCs, and public hospitals. HIV testing at CBOs, CDCs, and hospitals all have unique advantages and disadvantages. CBO testing is generally trusted by the community and often more community-responsive, but some individuals do not trust these services. CDC services are organised by public health authorities and generally have competent staff, but the environment may be less welcoming to LGBT individuals. Hospital-based testing is similar to CDC in regard to reputation, though some CDC organisations have collaborated with CBOs to create more community-responsive and trusted services platforms. Quality and accuracy remain important to MSM and concerns regarding rapid tests administered in non-clinical settings (Bien et al., 2015) may drive MSM's acceptance of HIV testing at CDCs and public hospitals. Among non-clinical testing sites, CBOs were found to be more acceptable testing sites than gay bars and saunas. These findings are consistent with the results of a systematic review of 17 countries that MSM prefer testing services that were community-based, gay-positive and offered a high degree of confidentiality (Hoyos et al., 2013; Lorenc et al., 2011). These observations are also consistent with our qualitative research findings in South China (Tucker, 2013). Saunas and gay bars were found *not at all acceptable* by a substantial portion of respondents. Studies have shown that MSM question whether saunas and gay bars could provide follow-up services or maintain confidentiality. A qualitative study of UK MSM showed that men felt that HIV testing was 'too serious' an event to be hosted at social venues such as saunas or gay clubs (Prost et al., 2007). A meta-analysis in China suggested that men who seek sex partners at gay bars and saunas are also at an increased risk of contracting HIV and syphilis (Parvanta, Roth, & Keller, 2013). Our research shows that MSM who accepted gay bars and saunas as HIV testing venues were 2.29 times more likely to drink during or prior to engaging in sex, which could impair judgment and lead to risky behaviours (Tang et al., 2013).

Our data suggest that HIV self-testing may be feasible among MSM in China. Many individuals choose not to test at facilities due to inconvenience (Song et al., 2011), lack of privacy and confidentiality (Krause et al., 2013), and stigma associated with HIV testing

(Myers et al., 2013; Tucker et al., 2013). In China, as well as in many other Asian nations, HIV self-tests are sold over-the-counter without government restriction (Mavedzenge, Baggaley, Lo, & Corbett, 2011). The official Chinese public health response to HIV self-testing has been to neither formally discourage nor promote the practice. In our survey, over half of respondents stated that in-home testing was highly preferred or very acceptable. This relatively high acceptance of in-home testing suggests that self-testing could be an effective method of reaching high-risk MSM who are unwilling to test at facility-based settings. This acceptance rate is higher than rates found in France (Greacen et al., 2012) and other countries. Our same research survey found that among MSM in China who had previously tested for HIV, 32.6% (236/723) had self-tested (Han et al., 2014; Tucker, 2013). Further, the ability to test at home was considered very important to almost 70% of MSM in China. Self-testing may also be useful in reaching MSM who have not disclosed their sexual orientation, who comprise a majority of MSM in China.

In the generalised ordered logistic regression, a few key differences were observed among MSM who had never tested for HIV, tested more than 1 year ago, and tested in the past year. In comparison to MSM who had never tested for HIV, men who had tested more than 1 year ago were more likely to have a higher income, have had male anal sex partners in the past 3 months, and have disclosed their sexual orientation to others (Table 5). In comparison to MSM who had never tested for HIV, men who had tested for HIV in the past year were more likely to have never had sex with women, have had male anal sex partners in the past 3 months, and more likely to have disclosed their sexual orientation to others (Table 5). Previous studies have shown that higher education and self-perceived risk for HIV are positively correlated with history of HIV testing (Han et al., 2014; Xun et al., 2013). Further, in China close to one-half of MSM are likely to be married (Chen et al., 2012). Married MSM are more likely to have had sex with women and may be more reluctant than single MSM to access HIV testing due to fear of sexuality disclosure (Bien et al., 2013).

Our study has several limitations. First, self-reporting of all information, much of which was sexual in nature, may have lead to reporting bias. Second, the survey captured only an online convenience sample of the MSM populations mostly from Guangzhou and Chongqing, but included participants from all over China. Online MSM in China tend to be younger, more educated, and may have fewer sexual partners compared to non-online MSM in China (Zhang, Bi, Lv, Zhang, & Hiller, 2008). In 2013, China had 591 million people access the Internet regularly via computers or smart phones, representing 44.1% of the country's total population. Internet use among MSM may be much higher than that of the general population in China. A three-city study in 2010 found that as high as 82.6% of MSM survey respondents stated that they had used computers or smart phones to access the web to make new friends and find sexual partners (Jing & Zhou, 2012). Third, while our study assessed MSM testing acceptance, it did not evaluate the feasibility of expanding testing to venues such as gay bars or saunas. Further, participants who accessed both websites may have been more likely to have knowledge about HIV/AIDS and of testing, since both sites are predominantly geared toward the MSM population. Finally, it is important to note the inherent limitations of a descriptive epidemiological study in drawing inferences related to causative behavioural choices.

It has been over a decade since China responded to the HIV epidemic by introducing its now well-known ‘Four Frees and One Care’ policy (Ministry of Health of China, UN, & WHO, 2011; Sun et al., 2010). While the policy has undoubtedly increased the number of individuals being tested for HIV and the number of HIV-infected individuals receiving free treatment (Sun et al., 2010), a growing body of epidemiologic information suggests that more nuanced efforts are needed to further improve testing rates, increase serostatus knowledge, and achieve universal access to HIV health services. In late 2010, China’s State Council began implementing the ‘Five Expands, Six Strengthens’ programme. Its aim was to expand information, education, and counselling (IEC), surveillance and testing, interventions, preventing mother-to-child transmission, and coverage of antiretroviral drugs while strengthening blood safety management, care and support, health insurance, rights protection, organisational leadership, and response teams (Ministry of Health of the People’s Republic of China, 2012). Even today though, half of individuals living with HIV/AIDS in China are unaware of their HIV serostatus (Ministry of Health of China, UN, & WHO, 2011). Our study shows that MSM have different acceptance levels toward HIV testing scenarios. By examining HIV testing history, testing venue acceptability and factors considered important in deciding to test for HIV, we aim to inform the development of targeted interventions and policies that increase positive health outcomes. To expand upon our current research, future studies may consider the use of discrete choice experiments to assess the cost feasibility of preference-based testing interventions (Hsieh et al., 2011; Llewellyn, Sakal, Lagarde, Pollard, & Miners, 2013). Tailored HIV testing among key populations will be vital in China and globally in identifying newly infected individuals, controlling secondary transmission and providing proper treatment and care services.

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Table 1

Socio-demographic and behavioural characteristics of MSM who answered the question on having tested for HIV ($n = 1195$).

Characteristic	Frequency	Proportion (%)
Tested for HIV		
Yes	723	60.5
No	472	39.5
Age (years)		
16–20	25	2.1
21–30	644	54.4
31–40	409	34.5
41	106	9.0
Highest education completed		
High school or less	178	15.0
Vocational/technical school	377	31.8
College or higher	632	53.2
Current employment		
Student	94	8.0
Part time or unemployed	117	9.9
Full time	970	82.1
Annual income (USD)		
6000	298	25.0
6000–16000	627	52.6
> 16000	268	22.5
Marital status		
Single	977	82.6
Married	206	17.4
Sexual identity		
Homosexual	867	72.9
Bisexual	315	26.5
History of anal or vaginal sex with women		
Yes	400	33.6
No	790	66.4
No. of male sex partners in past 3 months		
None	235	19.8
One	479	40.3
Multiple	474	39.9
Out to anyone *		
Yes	580	48.5
No	613	51.3
Main sexual partner currently		
Yes	625	52.4

Characteristic	Frequency	Proportion (%)
No	567	47.6
Condomless sex with men in past 3 months **		
Yes	330	37.2
No	557	62.8
Self-reported HIV serostatus of testers		
Positive	49	6.1
Negative	736	91.4
Unknown	20	2.5
Hukou (residential status)		
Guangdong	871	65.0
Other cities in China ***	442	33.0
Overseas	27	2.0

* Asked as, 'Have you told anyone about your sexual orientation or that you have sex with other men?'

** Asked as, 'In the past 3 months, have you had anal sex with another man (insertive or receptive) in which you did not wear a condom?'

*** Includes Chongqing, Hong Kong, Macao, and other Chinese cities.

Table 2MSM acceptance level toward HIV testing venues ($n = 1195$).

Venue	Highly preferred	Very acceptable	Somewhat acceptable	Not at all acceptable	Total responses
Public hospital	423 (43.4)	268 (27.5)	161 (16.5)	123 (12.6)	975
CDC	437 (46.9)	315 (33.8)	124 (13.3)	55 (5.9)	931
Private medical clinic	127 (15.2)	205 (24.5)	254 (30.4)	250 (29.9)	836
Gay men's CBO	436 (46.0)	324 (34.2)	129 (13.6)	58 (6.1)	947
HIV/AIDS CBO	226 (26.5)	247 (28.9)	230 (26.9)	151 (17.7)	854
Gay bar	91 (11.1)	133 (16.2)	254 (30.9)	343 (41.8)	821
Sauna	64 (7.8)	103 (12.6)	239 (29.1)	414 (50.5)	820
Home	275 (32.1)	210 (24.5)	159 (18.5)	214 (24.9)	858

Note: Percentages are calculated as row percentages (for each venue separately).

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Table 3Factors considered by MSM when deciding to test for HIV ($n = 1195$).

Factor	Very important	Quite important	Slightly important	Not at all important	Total responses
Guarantee of confidentiality	953 (89.7)	104 (10.9)	2 (0.2)	4 (0.4)	1063
Ability to test at home	401 (43.5)	294 (31.9)	189 (20.5)	37 (4.0)	921
Oral rather than blood	231 (26.4)	257 (29.4)	294 (34.0)	91 (10.4)	873
Convenient location	443 (48.3)	376 (41.0)	77 (8.4)	21 (2.3)	917
Comfortable testing environment	441 (49.1)	328 (36.5)	98 (10.9)	31 (3.5)	898
Low cost	349 (39.1)	328 (36.7)	157 (17.6)	59 (6.6)	893
Fast results	435 (47.6)	323 (35.4)	116 (12.7)	39 (4.3)	913
Guarantee of test quality	850 (87.5)	99 (10.2)	13 (1.3)	9 (0.9)	971

Note: Percentages are calculated as row percentages (for each factor separately).

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Table 4 χ^2 test of MSM characteristics and time since last HIV test in China, 2013 ($n = 1195$).

Characteristic	Never tested (%)	Tested over one year ago (%)	Tested in past year (%)	P-value
Age (years)				
30	279 (41.7)	107 (16.0)	283 (42.3)	.34
> 30	188 (36.5)	110 (21.4)	217 (42.1)	
Highest education completed				
High school	70 (39.3)	25 (14.0)	83 (46.6)	.09
Vocational/technical	159 (42.2)	62 (16.4)	156 (41.4)	
College or higher	240 (38.0)	130 (20.6)	262 (41.5)	
Current employment				
Student	44 (46.8)	11 (11.7)	39 (41.5)	.13
Part time or unemployed	380 (39.2)	191 (19.7)	399 (41.1)	
Full time	43 (36.8)	17 (14.5)	57 (48.7)	
Annual income (USD)				
6000	136 (45.6)	43 (14.4)	119 (39.9)	<.001
6000–16000	249 (39.7)	108 (17.2)	270 (43.1)	
> 16000	86 (32.1)	68 (25.4)	114 (42.5)	
Marital status				
Single	400 (40.0)	183 (18.3)	416 (41.6)	.80
Married	69 (37.5)	36 (19.6)	79 (42.9)	
Sexual identity				
Homosexual	326 (37.6)	180 (20.8)	361 (41.6)	.001
Bisexual	143 (45.4)	38 (12.1)	134 (42.5)	
History of anal or vaginal sex with women				
Yes	167 (41.8)	74 (18.5)	159 (39.8)	.45
No	303 (38.4)	144 (18.2)	343 (43.4)	
No. of male anal sex partners in last 3 months				
None	117 (49.8)	49 (20.9)	69 (29.4)	<.001
One	206 (43.0)	80 (16.7)	193 (40.3)	
Multiple	146 (30.8)	88 (18.6)	240 (50.6)	
Out to anyone*				
Yes	203 (35.0)	110 (19.0)	267 (46.0)	.007
No	268 (43.7)	109 (17.8)	236 (38.5)	
Main sexual partner currently				
Yes	236 (37.8)	121 (19.4)	268 (42.9)	.39
No	235 (41.4)	98 (17.3)	234 (41.3)	
Condomless sex with men in past 3 months**				
Yes	176 (53.3)	65 (19.7)	89 (27.0)	.08
No	260 (46.7)	125 (22.4)	172 (30.9)	

* Asked as, 'Have you told anyone about your sexual orientation or that you have sex with other men?'

** Asked as, 'In the past 3 months, have you had anal sex with another man (insertive or receptive) in which you did not wear a condom?'

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Table 5Generalised ordered logistic regression of HIV testing behaviour, 2013 ($n = 1195$).

	Characteristic	P-value	Odds ratio [95% CI]
Tested over one year ago	Age (years)		
	30	.30	1.00
	> 30		1.15 [0.88, 1.52]
	Annual income (USD)		
	6000	.002	1.34 [1.12, 1.60]
	6000–16000		
	> 16000		
	Marital status		
	Single	.09	1.00
	Married		1.40 (0.95, 2.07)
	Sexual identity		
	Homosexual	.07	1.31 [0.98, 1.76]
	Bisexual		1.00
	History of anal or vaginal sex with women		
	Yes	.12	1.27 [0.94, 1.72]
	No		1.00
	Number of male anal sex partners in last 3 months		
	None	<.001	1.48 [1.26, 1.74]
	One		
	Multiple		
Out to anyone*			
Yes	.01	1.38 [1.08, 1.76]	
No		1.00	
Main sexual partner currently			
Yes	.66	1.08 [0.85, 1.38]	
No		1.00	
Tested in past year	Age (years)		
	30	.94	1.01 [0.77, 1.33]
	> 30		1.00
	Annual income (USD)		
	6000	.50	1.06 [0.89, 1.27]
	6000–16000		
	> 16000		
	Marital status		
	Single	.10	1.00
	Married		1.39 [0.94, 2.05]
Sexual identity			
Homosexual	.24	1.00	
Bisexual		1.19 [0.89, 1.60]	

Characteristic	P-value	Odds ratio [95% CI]
History of anal or vaginal sex with women		
Yes	.05	1.00
No		1.36 [1.00, 1.85]
Number of male anal sex partners in last 3 months		
None	< .001	1.50 [1.28, 1.76]
One		
Multiple		
Out to anyone*		
Yes	.02	1.34 [1.05, 1.71]
No		1.00
Main sexual partner currently		
Yes	.70	1.05 [0.82, 1.10]
No		1.00

Note: Reference category: MSM who had never tested for HIV.

* Asked as, 'Have you told anyone about your sexual orientation or that you have sex with other men?'