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Risk behaviours, HIV/STI testing and HIV/STI prevalence between men who have sex with men and men who have sex with both men and women in China

Alissa Davis[1,2,3], **John Best**[2,4], **Juhua Luo**[1], **Barbara Van Der Pol**[5], **Brian Dodge**[6], **Beth Meyerson**[3,7], **Matthew Aalsma**[8], **Chongyi Wei**[9], **Joseph D Tucker**[2,10], and **Social Entrepreneurship for Sexual Health Research Group**[11]

[1]Department of Epidemiology & Biostatistics, Indiana University School of Public Health, Bloomington, IN, USA

[2]UNC-Project China, Guangzhou, China

[3]Rural Center for AIDS/STD Prevention, Indiana University School of Public Health, Bloomington, IN, USA

[4]School of Medicine, University of California, San Francisco, CA, USA

[5]School of Medicine, University of Alabama, Birmingham, AL, USA

[6]Center for Sexual Health Promotion, Indiana University School of Public Health, Bloomington, IN, USA

[7]Department of Applied Health Science, Indiana University School of Public Health, Bloomington, IN, USA

[8]Section of Adolescent Medicine, Indiana University School of Medicine, Indianapolis, IN, USA

[9]Department of Epidemiology & Biostatistics and Global Health Sciences, University of California, San Francisco, CA, USA

[10]School of Medicine, University of North Carolina-Chapel Hill, NC, USA

[11]Social Entrepreneurship for Sexual Health Research Group, University of North Carolina and the Guangdong Provincial Center for Skin Diseases & STI Control: Ye Zhang, Weiming Tang, Bin Yang, Fengying Liu, Larry Han and Ligang Yang

Abstract

Background—Differences in risk behaviours between men who have sex with men and men who have sex with both men and women have important implications for HIV and STI transmission. We examined differences in risk behaviours, HIV/STI testing, self-reported HIV/STI

Corresponding author: Joseph Tucker, Guangdong Provincial STD Control Center, 2 Lujing Road, 11th Floor, Guangzhou 510095, China. jdtucker@med.unc.edu.

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diagnoses, and linkage to HIV care between men who have sex with men and men who have sex with both men and women across China.

Methods—Participants were recruited through three men who have sex with men-focused websites in China. An online survey containing items on socio-demographics, risk behaviours, testing history, self-reported HIV/STI diagnosis, and linkage to and retention in HIV care was completed from September to October 2014. Chi square tests and logistic regression analyses were conducted.

Results—Men who have sex with both men and women were less likely to use a condom during last anal sex ($p \leq 0.01$) and more likely to engage in group sex ($p \leq 0.01$) and transactional sex ($p \leq 0.01$) compared to men who have sex with men. Self-reported HIV/STI testing and positivity rates between men who have sex with men and men who have sex with both men and women were similar. Among HIV-infected men who have sex with men, there was no difference in rates of linkage to or retention in antiretroviral therapy when comparing men who have sex with men and men who have sex with both men and women.

Conclusions—Chinese men who have sex with men and men who have sex with both men and women may benefit from different HIV and STI intervention and prevention strategies. Achieving a successful decrease in HIV/STI epidemics among Chinese men who have sex with men and men who have sex with both men and women will depend on the ability of targeted and culturally congruent HIV/STI control programmes to facilitate a reduction in risk behaviours.

Keywords

HIV; STI; men who have sex with men; men who have sex with both men and women; condom use; risk behaviours

Background

Societal expectations for men who have sex with other men in China create a challenging environment for HIV and STI control. Though homosexuality is becoming more tolerated in Chinese society, high levels of stigma remain,[1] and the Chinese focus on filial piety makes it particularly difficult for parents to tolerate non-heterosexuality in the family context.[2,3] Familial pressure to marry and have children is often so strong in China that many men who have sex with other men may hide their sexual orientation from their families and participate in ‘formality marriages’ with women.[4] An estimated 14–16 million Chinese men who have sex with men will marry women.[5-8] These marriages have their own unique challenges and result in increased difficulties for HIV and STI control.[5,9] For example, the wives in such marriages usually do not know that their husbands are engaging in sex with other men outside their married relationship.[10] These perceptions of fidelity and the desire to have children often result in condomless sex.[11] Multiple sex partners compounded with lack of condom use results in increased probability that men who have sex with both men and women (MSMW) may serve as a bridge population for HIV and STI transmission to the general population.[4,12]

The development of effective HIV and STI prevention and intervention programmes requires careful consideration of the unique needs and risk factors of each target population. Most

research conducted in China combines MSMW with men who have sex exclusively with men (MSM) under the category of 'MSM'.[13,14] One of the main reasons that the classification of 'MSM' has become problematic in the United States and other global contexts is that, although originally developed to supplant the notion that all men who have sex with other men are 'gay-identified' or are connected to the gay community, the acronym of 'MSM' gradually became a proxy for recruiting samples of participants solely from 'gay-identified' venues; thus, men who engage in concurrent sex with women and/or who had limited or no affiliation with the gay community remained relatively invisible in public health research.[14,15] However, social and behavioural science research has demonstrated that bisexual individuals, both behaviourally and self-identified, tend to report the highest rates of a wide range of adverse physical, mental, and sexual health outcomes.[16] This may be due to a wide range of factors, including the 'double discrimination' bisexual individuals face from both heterosexual and gay communities.[17]

Research exploring issues related to bisexual health in China has been very limited. However, in studies that compare Chinese MSM to MSMW, the results are conflicted. Some Chinese studies indicate that there are no group differences in risk behaviours, such as condomless anal sex, having multiple sex partners, engaging in transactional sex, or substance use,[18,19] while other studies indicate that there are differences in sexual and drug-related risk behaviours between MSM and MSMW.[20,21] Furthermore, some studies do not indicate differences between MSM and MSMW in HIV/STI prevalence rates,[19,21] while other studies indicate significant group differences.[18] Thus, further research needs to be conducted across a broader geographic area in order to better determine whether differences in risk exist between Chinese MSM and MSMW.

In addition to risk behaviours, it is important to examine testing behaviours and HIV/STI prevalence among these populations in order to understand their access to and uptake of routine sexual health care services, as well as burden of infection. Finally, because adherence to HIV treatment regimens can decrease the transmission of HIV, examining treatment uptake by HIV-positive individuals is an essential component to reducing HIV incidence rates. Early linkage to care enables individuals to receive timely treatment that will improve their quality of life and reduce costs associated with later stages of HIV and AIDS progression.[22] Such research could yield valuable insights into how effectively the Chinese health system is linking people to care and retaining HIV-positive individuals in care. The aims of this study were to (1) examine differences in risk behaviours between MSM and MSMW, (2) identify differences in HIV/STI testing between MSM and MSMW, (3) estimate the HIV/STI prevalence rates among MSM and MSMW, and (4) examine indicators of linkage to and retention in antiretroviral therapy (ART) among HIV-positive MSM and MSMW.

Methods

Sampling and recruitment

This study included an online sample of Chinese MSM and MSMW. Participants were recruited in October 2014. Recruitment occurred through three different MSM-targeted 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. The websites are able to determine the IP address and location of the user. Due to the hidden nature of the population, online surveys have been used for recruitment of MSM and MSMW in the past. 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. In order to be included in the study, participants must have been born biologically male, engaged in anal sex with another man at least once in their life, and be at least 16 years old. Participants were required to input their cellphone number to prevent repeated surveys. Data from transgender individuals were excluded from this analysis and are described elsewhere.

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

Data were gathered on risk behaviours in the past year, such as whether participants had used recreational drugs, used drugs before having sex, had group sex, had transactional sex (sex in exchange for gifts or money), had sex with partners in a public venue (e.g. hotel, sauna, public bathroom, park), or used a condom during their last anal sex encounter. This time frame was chosen to reduce recall bias. Participants were also asked if they had ever been tested for HIV or other STIs and if they had been given a positive diagnosis, but the dates of last testing were not obtained. Information was gathered on whether participants had disclosed their sexual orientation, and, if yes, to whom they had disclosed. HIV-positive individuals were asked when they were diagnosed with HIV, how long it took them to first see a doctor, whether their doctor recommended ART, whether they were still taking ART, and if not, why they stopped. Since all participants had to have a history of anal sex with a man, in order to be classified as MSMW, 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. Because of frequent incongruences between sexual self-identity labels and sexual behaviours, and because of high rates of bisexual behaviour among men who have sex with other men in China, sexual behaviours were determined to be a better measure of risk than self-identified sexual orientation.[23,24] Demographic variables such as age, province, self-identified sexual orientation, marriage status, education, income, and ethnicity were also gathered.

Statistical analyses

Descriptive statistics were used to characterise the sample. Estimates of frequency of risk behaviours, HIV/STI testing, and positive HIV/STI diagnoses were calculated overall and by sexual behaviour status (MSMW vs. MSM). Participants had high levels of survey completion rates, and variables used in the analyses were answered by all participants, with the exception of ethnicity, to which three participants did not respond. Chi square tests were run to assess differences between groups. Multivariate logistic regression was conducted,

and adjusted odds ratios were computed to determine whether MSMW remained significantly different from MSM. 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

A total of 1424 men completed the survey; 1723 additional individuals responded to the survey request but were excluded because they did not meet eligibility criteria. After excluding 61 participants who identified as transgender, a total of 1363 men were included in the analyses. Of 1363 participants, the median age was 24 years (IQR = 21–29), with a range from 16 to 72 years old. Participants were recruited from 31 provinces and autonomous and administrative regions in China, with the highest number of participants coming from Jiangsu (17.3%), Yunnan (10.2%), and Guangdong (7.3%) provinces and Beijing (6.7%). Table 1 provides information on the main demographic characteristics of the sample.

The majority of participants (71.5%, $n = 975$) reported only having sex with men, but 28.5% ($n = 388$) reported having 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, and were more likely to be married, identify as bisexual or straight and live in eastern China than MSM (Table 1).

A comparison of risk factors for HIV and STIs revealed that MSMW were significantly more likely to have had sex with a male partner in a public venue in the past six months ($p \leq 0.01$), to have had group sex in the past 12 months ($p \leq 0.01$), to have had transactional sex in the past 12 months ($p \leq 0.01$), to have their main source of income through sex work ($p \leq 0.05$), to have had their first sexual experience be non-consensual ($p \leq 0.01$), and less likely to have used a condom during their last anal sex act ($p \leq 0.01$) than MSM (Table 2). These differences remained significant in the multivariate logistic regression model, except for having a main source of income through sex work. MSM were significantly more likely to use poppers ($p \leq 0.01$), to prefer receptive anal intercourse ($p \leq 0.01$), and to have had their first anal sex experience at a younger age ($p \leq 0.01$) than MSMW, and these differences remained significant after controlling for demographic variables. A Chi square test revealed that MSMW were significantly more likely to have ever received an HIV test ($p \leq 0.05$) and STI test ($p \leq 0.01$) than MSM. However, after controlling for demographic variables, no significant differences in testing rates were found between MSM and MSMW.

Of 619 participants who were tested for HIV and received their results, 10.2% were diagnosed HIV positive, but differences in HIV rates between MSMW and MSM were not significant (13.4% MSMW vs. 8.8% MSM, $p = 0.084$) (Table 3). Among 436 participants who were tested for STIs, genital warts were the most frequently reported (14.4%), followed by syphilis (12.6%). Significantly higher rates of genital herpes (6.6% vs. 0.4%) were reported by MSMW than by MSM.

Among HIV-infected MSM (n = 63), 76.2% of HIV-positive individuals were diagnosed with HIV in 2012 or later (Table 4). The majority of participants (74.6%) saw a doctor within six months of their diagnosis, but 25.4% of participants took over six months to be linked to care. ART was recommended to 69.8% of HIV-positive individuals and 52.4% are currently taking ART. Among those who stopped taking ART, 87.5% had stopped within six months of starting ART. The two most common reasons for stopping ART were that it was too expensive (37.5%) and too difficult to take (37.5%). No significant differences in linkage to care or retention in care were found between MSM and MSMW.

Discussion

Our study examined risk behaviours among MSM and MSMW across China. Previous research in China primarily relied on venue-based samples or samples recruited through snowball sampling or respondent driven sampling.[18-21] Our study expands the current literature by recruiting an online sample of men who may not present to facility-based services and disclose their sexual behaviours for fear of stigma or discrimination.[25] This research indicates key differences in prevalence of risky behaviours between Chinese MSM and MSMW, which may necessitate the development of different HIV/STI prevention and intervention approaches for the two groups. Our study also examined differences in linkage to and retention in ART among MSM and MSMW.

We found MSMW had more frequent condomless anal sex compared to MSM. This contrasts with the majority of studies that have compared condomless anal sex in Chinese men.[18,20,26] The global literature on condom use between MSM and MSMW is mixed. Literature from the US suggests that MSMW are less likely to use condoms than MSM,[27,28] but studies from Thailand, India, and South Korea suggest that MSMW are more likely to use condoms during anal sex than MSM.[29-31] These differences may be partially attributed to cultural or social differences, such as attitudes about condom use.[29,32] The reasons for discrepancies in condom use between our study and other Chinese studies may be due to sampling methodology. Our study used online sampling, which is more conducive to recruiting populations that may be uncomfortable disclosing their sexual risk behaviours. However, other Chinese studies examining condom use between MSM and MSMW used respondent-driven sampling, snowball sampling, or venue-based sampling,[18-21] which may have resulted in recruitment bias or social desirability bias in reporting condom use. Low rates of condom use among MSMW suggest that they may have the potential to transmit HIV and STIs to other populations.

Our results indicate that MSM and MSMW had similar rates of HIV and STI testing, though our sample size may have been too small to detect differences. Testing rates were low among the study population overall. Only half of the sample had been tested for HIV and only a third had been tested for an STI. These rates are slightly lower than HIV testing rates found in other studies among MSM in China,[33,34] Asia,[35] the US,[36,37] and Europe,[35] but higher than rates found in Africa or the Caribbean.[35] These results indicate a continued need to promote increased HIV and STI testing among Chinese MSM and MSMW.

MSM and MSMW had similar rates of self-reported HIV and STIs. Among those who were tested, over 10% of the sample was HIV positive. Sensitivity analyses were conducted to determine predictors for testing. Results revealed that individuals who engage in high-risk behaviours, such as drug use or group sex, were significantly more likely to be tested. Thus, HIV and STI prevalence found among this sample may be overestimates of the true prevalence among men who have sex with men in general. However, our results indicate that a significant proportion of Chinese MSM and MSMW are burdened with high rates of HIV. Furthermore, roughly a third of participants tested reported an STI. Though it is known that China has been faced with rising rates of syphilis,[38] the extremely high prevalence of syphilis among the sample is indicative of a continued problem with the public health infrastructure.

Among HIV-infected men who have sex with other men, no differences were found between MSM and MSMW regarding linkage to and retention in HIV care. More than a quarter of HIV-positive individuals took over six months after their initial HIV diagnosis to be connected to care. These results fall within the range found among other studies in China[39] and globally.[40-42] This delay in care may partially be a result of high levels of stigma against HIV-positive individuals, particularly by Chinese health care providers.[43] Furthermore, although two-thirds of HIV-positive individuals were recommended ART, over 12% stopped taking ART, primarily because they considered it too expensive or difficult to take. Given that China initiated a free ART programme in 2003,[44,45] the fact that some participants cited expense as their main reason for stopping ART is puzzling. However, given our small sample size, further investigation of the ART system and retention in care is needed in order to elucidate the main underlying causes of HIV treatment failure.

Our study has several limitations. First, our findings are limited by the fact that we relied on self-reported prevalence of HIV and STI testing and diagnosis. Second, because the majority of our participants were young and urban, testing and prevalence rates found in this study may not be reflective of testing and prevalence rates among older or rural men who have sex with other men. Third, a lifetime measure of bisexual behaviour was used rather than a 12-month period in order to reduce confounding by number of sexual partners.[46] MSMW who have had sex with a woman in their youth, but have only had sex with men since then, may have different risk factors than other MSMW who are currently engaging in relationships with both men and women. Finally, our study had a relatively small number of HIV-positive participants and was not sufficiently powered to identify significant differences in indicators for linkage to and retention in care among HIV-positive individuals.

In summary, our findings indicate that MSMW are more likely to engage in risky sexual behaviour with multiple partners and less likely to use condoms than MSM. In addition to the risks to their own sexual health, these men have the potential to impact both male and female sexual partners in terms of HIV, STIs, and other adverse outcomes. A social environment in China that values heterosexual marriage and reproduction and marginalises sexual minorities likely contributes to concealment of sexual identity and sexual behaviours, which increases risk for HIV and STI transmission. The prevalence of HIV and STIs are high among MSM and MSMW, but HIV and STI testing rates are low. A number of HIV-positive individuals had delayed linkage to care or were not retained in care. These findings

have important implications for HIV and STI treatment and prevention programmes. First, some MSM and MSMW have high levels of HIV and STI infection, higher than rates found in earlier studies,[21,47-50] and therefore, there should be increased efforts to reach this target population. Second, given lower rates of condom use during anal sex among MSMW, targeted interventions specific to increasing condom use among this population may be necessary and may need to include content specific to this population, such as reducing the risk of transmitting STIs to female partners. Third, there is a need to promote and increase HIV and STI testing among MSM and MSMW and improve linkage to and retention in care among HIV-positive individuals. Achieving a successful decrease in HIV and STI epidemics among Chinese men who have sex with other men and averting potential outbreaks in HIV and STIs among their male and female sexual partners will depend on the ability of HIV/STI control programmes to facilitate a reduction in risk behaviours.

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Table 1

Comparison of demographic characteristics between MSM and MSMW in china (*N* = 1363), 2014.

	Overall *N* (%)	MSMW *N* (%)	MSM *N* (%)	*P*
Age				.000**
24 and below	748 (54.9)	104 (26.8)	644 (66.1)	
25 and above	615 (45.1)	284 (73.2)	331 (33.9)	
Education				.246
High school or less	344 (25.2)	100 (25.8)	244 (25)	
College	939 (68.9)	259 (66.8)	680 (69.7)	
Graduate school	80 (5.9)	29 (7.5)	51 (5.2)	
Income (per month)				.000**
<1500 RMB ($250)	358 (26.3)	37 (9.5)	321 (32.9)	
1500–3000 RMB	402 (29.5)	90 (23.2)	312 (32)	
3001–5000 RMB	363 (26.6)	146 (37.6)	217 (22.3)	
5001–8000 RMB	157 (11.5)	80 (20.6)	77 (7.9)	
>8000 RMB ($1333)	83 (6.1)	35 (9)	48 (4.9)	
Ethnicity				.105
Han Chinese	1251 (92.2)	364 (94.1)	887 (91.4)	
Ethnic minority	106 (7.8)	23 (5.9)	83 (8.6)	
Marital status				.000**
Single, never married	1147 (84.2)	207 (53.4)	940 (96.4)	
Married or engaged	147 (10.8)	123 (31.7)	24 (2.5)	
Separated/divorced	69 (5.1)	58 (14.9)	11 (1.1)	
Sexual orientation				.000**
Gay	997 (73.1)	186 (47.9)	811 (83.2)	
Bisexual	349 (25.6)	189 (48.7)	160 (16.4)	
Straight	17 (1.2)	13 (3.4)	4 (0.4)	
Living location				.237
Urban	1215 (89.1)	352 (90.7)	863 (88.5)	
Rural	148 (10.9)	36 (9.3)	112 (11.5)	
Region				.000**
North	307 (22.5)	76 (19.6)	231 (23.7)	
East	453 (33.2)	168 (43.3)	285 (29.2)	
South	274 (20.1)	52 (13.4)	222 (22.8)	
West	329 (24.1)	92 (23.7)	237 (24.3)	
Total	1363 (100)	388 (28.5)	975 (71.5)	–

MSM: men who have sex with men; MSMW: men who have sex with both men and women.

Table 2

Comparison of risk factors for HIV and STIs and HIV/STI testing rates among Chinese MSM and MSMW (n = 1363).

Measure	Overall *N* (%)	MSMW *N* (%)	MSM *N* (%)	*P*	AOR (95% CI)	*P*
Anal sex preferences				.000**		
Insertive	509 (37.3)	239 (61.6)	270 (27.7)		2.37 (1.66–3.39)	.000**
Receptive	590 (43.3)	85 (21.9)	505 (51.8)		.54 (.37–.80)	.002**
No preference	264 (19.4)	64 (16.5)	200 (20.5)			
Used a condom during last anal sex act with a man				.000**		
Yes	707 (64.2)	190 (49)	517 (72.4)		3.42 (2.40–4.37)	.000**
No	395 (35.8)	198 (51)	197 (27.5)			
How many sex partners have you had in public venues in the past 6 months?				.000**		
None	1213 (89)	317 (81.7)	896 (91.9)			
1	74 (5.4)	31 (8)	43 (4.4)		1.56 (.93–2.62)	.093
2–3	53 (3.9)	24 (6.2)	29 (3)		1.64 (.90–2.99)	.107
>4	23 (1.7)	16 (4.1)	7 (0.7)		4.72 (1.73–12.87)	.002**
During the past 6 months, how many acts of receptive anal sex have you engaged in with these partners? (n = 150)				.415		
0–5	107 (71.3)	48 (67.6)	59 (74.7)			
6–10	19 (12.7)	8 (11.3)	11 (13.9)		.83 (.27–2.54)	.747
11–20	12 (8)	7 (9.9)	5 (6.3)		1.73 (.44–6.77)	.431
>20	12 (8)	8 (11.3)	4 (5.1)		2.48 (.58–10.51)	.218
During the past 6 months, how many acts of insertive anal sex have you engaged in with these partners? (n = 150)				.092		
0–5	95 (63.3)	39 (54.9)	56 (70.9)			
6–10	26 (17.3)	14 (19.7)	12 (15.2)		1.44 (.53–3.90)	.471
11–20	11 (7.3)	5 (7)	6 (7.6)		.95 (.22–4.03)	.942
>20	18 (12)	13 (18.3)	5 (6.3)		3.36 (.91–12.40)	.068
Recreational drugs during the past 12 months				.009**		
None	1046 (76.7)	302 (77.8)	744 (76.3)			
Poppers	271 (19.9)	65 (16.8)	206 (21.1)		.70 (.50–.98)	.039*
Meth, ecstasy, other	46 (3.4)	21 (5.4)	25 (2.6)		1.32 (.69–2.52)	.401
Consumption of drugs prior to sex in the past 12 months				.932		
Yes	244 (17.9)	70 (18)	174 (17.8)		.87 (.62–1.22)	.406
No	1119 (82.1)	318 (82)	801 (82.2)			
Group sex in the past 12 months				.000**		
Yes	125 (9.2)	68 (17.5)	57 (5.8)		2.47 (1.64–3.73)	.000**
No	1238 (90.8)	320 (82.5)	918 (94.2)			

Measure	Overall *N* (%)	MSMW *N* (%)	MSM *N* (%)	*P*	AOR (95% CI)	*P*
Transactional sex in the past 12 months				.005**		
Yes	69 (5.1)	30 (7.7)	39 (4)		2.65 (1.50–4.68)	.001**
No	1294 (94.9)	358 (92.3)	936 (96)			
Main source of income through sex work (*n* = 69)				.021*		
Yes	20 (29)	13 (43.3)	7 (17.9)		3.34 (.72–15.51)	.124
No	49 (71)	17 (56.7)	32 (82.1)			
Ever been forced to have sex				.346		
Yes	273 (20)	84 (21.6)	189 (19.4)		1.20 (.87–1.65)	.276
No	1090 (80)	304 (78.4)	786 (80.6)			
First sex non-consensual (*n* = 273)				.004**		
Yes	114 (41.8)	46 (54.8)	68 (36)		2.32 (1.25–4.32)	.008**
No	159 (58.2)	38 (45.2)	121 (64)			
Age of first anal sex				.000**		
Pre-puberty/early teen (1–15)	91 (6.7)	26 (6.7)	65 (6.7)		.82 (.41–1.65)	.580
Late teen (16–17)	177 (13)	23 (5.9)	154 (15.9)		.41 (.20–.80)	.010*
College age (18–21)	647 (47.7)	146 (37.7)	501 (51.6)		.55 (.33–.93)	.026*
Early 20s (22–24)	256 (18.9)	94 (24.3)	162 (16.7)		.60 (.35–1.03)	.062
Late 20s (25–29)	105 (7.7)	52 (13.4)	53 (5.5)		.79 (.43–1.45)	.448
Over 30	81 (6)	46 (11.9)	35 (3.6)			
Have you ever tested for HIV?				.044*		
Yes – HIV infected	63 (4.6)	25 (6.4)	38 (3.9)		1.19 (.66–2.15)	.559
Yes – HIV uninfected	556 (40.8)	162 (41.8)	394 (40.4)		.77 (.58–1.03)	.074
Yes – never got results	59 (4.3)	22 (5.7)	37 (3.8)		1.15 (.62–2.12)	.660
No – never tested	685 (50.3)	179 (46.1)	506 (51.9)			
Have you ever been tested for STIs?				.000**		
Yes	436 (32)	152 (39.2)	284 (29.1)		1.22 (.93–1.60)	.149
No	927 (68)	236 (60.8)	691 (70.9)			

MSM: men who have sex with men; MSMW: men who have sex with both men and women; AOR: adjusted odds ratio; CI: confidence interval. Adjusted for age, urban vs rural location, region, education, income and ethnicity; MSM are the reference group.

* $P \leq 0.05$.

** $P \leq 0.01$.

Table 3

Lifetime prevalence of STIs and HIV among MSM and MSMW with a history of testing (n = 436 – STI tests; n = 619 – HIV tests).

STI	Overall *N* (%)	MSMW *N* (%%)	MSM *N* (%%)	*P*
Syphilis	55 (12.6)	18 (11.8)	37 (13)	.722
Gonorrhea	29 (6.7)	13 (8.6)	I6 (5.6)	.244
Chlamydia	5 (1.1)	4 (2.6)	1 (0.4)	.052
Genital herpes	11 (2.5)	10 (6.6)	1 (0.4)	.000 **
Genital warts	63 (14.4)	19 (12.5)	44 (15.5)	.397
Total STI diagnosis	133 (30.5)	46 (30.3)	87 (30.6)	.936
HIV positive	63 (10.2)	25 (13.4)	38 (8.8)	.084

MSM: men who have sex with men; MSMW: men who have sex with both men and women.

Fisher's exact tests were used for Chlamydia and Genital Herpes due to small cell counts; all others were computed using Pearson Chi square test.

** $p \leq 0.01$.

Table 4

HIV treatment indicators among MSM and MSMW ($n = 63$).

	Overall *N* (%)	MSMW *N* (%)	MSM *N* (%)	*P*
Year first diagnosed with HIV				.362
1997–2011	15 (23.8)	7 (28)	8 (21)	
2012–2014	48 (76.2)	18 (72)	30 (78.9)	
Time between first HIV diagnosis and linkage to care				.700
6 months or less	47 (74.6)	18 (72)	29 (76.3)	
Over 6 months	16 (25.4)	7 (28)	9 (23.7)	
Did the doctor recommend ART?				.154
Yes	44 (69.8)	20 (80)	24 (63.2)	
No	19 (30.2)	5 (20)	14 (36.8)	
Have you ever taken ART?				.328
Yes – still taking	33 (52.4)	15 (60)	18 (47.4)	
Yes – not currently taking	8 (12.7)	4 (16)	4 (10.5)	
No	22 (34.9)	6 (24)	16 (42.1)	
How long did you take ART before stopping? ($n = 8$)				.549
Less than 1 month	2 (25)	1 (25)	1 (25)	
1–6 months	5 (62.5)	3 (75)	2 (50)	
1–5 years	1 (12.5)	0 (0)	1 (25)	
Why did you stop taking ART? ($n = 8$)				.446
Too expensive	3 (37.5)	2 (50)	1 (25)	
Side effects	1 (12.5)	0 (0)	1 (25)	
Not working	1 (12.5)	1 (25)	0 (0)	
Too difficult to take	3 (37.5)	1 (25)	2 (50)	

MSM: men who have sex with men; MSMW: men who have sex with both men and women; ART: antiretroviral therapy.