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HIV/STD prevalence among MSM in Chengdu, China and associated risk factors for HIV infection

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Abstract

Objective—To assess the prevalence of HIV and selected STDs among MSM in Chengdu, China and the risk factors associated with HIV infection.

Methods—A cross-sectional study using a snowball sampling method was conducted from March to July, 2007. Participants were asked to complete a questionnaire about sexual history, high risk behaviors, STD infection history, HIV knowledge and testing, and an assessment of depression. Blood samples were taken for antibody testing for HIV, HSV-2, and syphilis.

Results—A total of 538 MSM were recruited and 513 (95.4%) consented to complete the questionnaire. HIV, HSV-2 and syphilis prevalence were 9.1%, 24.7%, and 28.1%, respectively. The rate of consistent condom use was low and varied by types of sexual partners. The highest was with casual male partners (38.6%) and the lowest was with wife or girl friend (17.8%). Money boys (MB) were 6 times more likely to be infected with HIV compare to clerks/students. Infection with either HSV or syphilis increased the risk of HIV infection more than 4 fold.

Conclusions—The prevalences of HIV and STDs were high among MSM in Chengdu. To prevent HIV/STDs, campaigns promoting condom use are needed not only to boost the frequency of condom use, but also to educate MSM about proper condom use.

Keywords

Men who have sex with men; Prevalence; HIV; STD; China

INTRODUCTION

Men who have sex with men (MSM) have been harshly and disproportionately impacted upon by HIV and continue to be a major driver of the HIV/AIDS epidemic in the world. In the United States, MSM accounted for approximately 45% of newly reported HIV/AIDS diagnoses in 2006 and nearly 54% of cumulative AIDS diagnoses [1]. In Australia, New Zealand and most western European countries MSM accounted for as much as 70% of all HIV-infections [2]. In

Indonesia, MSM represent 15% of reported AIDS cases, 29% in Singapore, 32% in Hong Kong, and 33% in the Philippines [3].

By 2007 the major groups infected with HIV in China were injection drug users (IDUs; 38.5%), former blood donors (FPDs; 19.3%) and promiscuous heterosexuals (17.8%) [4]. However, recent data indicated an emerging epidemic among MSM in the main cities.[5–8] According to the China Ministry of Health (MOH), 2–4% of adult males in China are primarily homosexual in their sexual behaviors which corresponds to 5–10 million men.[9] By the end of 2005, it was estimated that 47,000 MSM were living with HIV/AIDS, accounting for 7.3% of the total number of estimated HIV cases in China.[10]

Surveys among MSM have been rare in China. In Beijing, an increasing HIV prevalence among MSM has been observed in the past three years, from 0.4% in 2004, to 4.6% in 2005, to 5.8% in 2006.[7] This trend agreed with the results of another study in a northern city of China that showed a slight increase of HIV prevalence among MSM from 1.3% in 2002 to 2.2% in 2006 [5]. Studies across China have reported high levels of STD infections, a high prevalence of multiple sexual partners, and low consistent condom use [5,7,11–14]. In a study conducted in six large cities in China, only 32.5% of 1389 participants had always used condoms when having anal intercourse. The average number of their male sex partners was 5.7, including 4.4 unfamiliar sex partners in the past 6 months, 11.6% had participated in group sex in the past 6 months [12].

Limited data on HIV among MSM in Sichuan indicated that high-risk behaviors occur within this population. One survey reported that 84.7% MSM had had sex with male partners in the past 6 months, and that the median number of partners for anal sex and oral sex were 4.4 and 4.2 respectively. About 62% of those who engaged in anal sex reported having three or more partners in the past 6 months, and 20% of them had paid for sexual services during the same period. Condom use with different male partners varied significantly. The proportions of consistent condom use with regular, casual, and commercial male partners were 15.8%, 16.3% and 32.3% respectively. Only 18.3% of participants reported having been tested for HIV antibody in the past 12 months [15,16].

With support of the China-UK HIV/AIDS Prevention and Care Project and the Sichuan CDC, the Chengdu Gay Community Care Organization (CGCCO) has provided HIV voluntary counseling and testing (VCT) and high-risk behaviors surveillance among MSM in Chengdu since 2002. Data indicated that HIV prevalence surged from 0.64% in 2003 to 6.58% in 2006, and the percentage of consistent condom use when having anal sex remained at about 40% after the four-year intervention effort [17]. A cross-sectional survey was conducted from March to June 2007 in Chengdu to update the prevalence of HIV and STDs among MSM and the factors associated with HIV infection.

METHODS

Study design and sampling

The Snowball sampling was used to recruit participants from the Chengdu MSM community. According to the formative study carried out before the quantitative survey, the major venues for MSM activities in Chengdu included internet chatrooms, bars, tea bars, MB (Money Boy) brothels, public restrooms, public bathhouses, and parks. Fifteen seeds were selected to cover all types of venues. Since some seeds 'died out' soon after the survey started, four more seeds were recruited later in the process using the same procedure. All seeds were MSM at least 18 years old, fluent in both Mandarin and the Chengdu dialect, and had patronized MSM venues frequently.

MSM eligible for the study were at least 18 years, had been living in Chengdu in the past three months, and had had oral or anal sex with other men. All of the participants were given the option of either completing the written questionnaire by themselves or undergoing a face-to-face interview in either the Mandarin or Chengdu dialects. The information collected in the questionnaire included demographic characteristics, sexual history with other men and women including unprotected anal intercourse (UAI), commercial sex, self-reported STD infection history and specific symptoms of STD infections in the genital track or anus in the past 6 months, past HIV testing, HIV knowledge and attitudes, and assessment of depression (CES_D).

At the beginning of the survey, the interviewer briefly introduced himself and the study, then went through a series of formalities with the participant including the importance and nature of confidentiality, issues related to the collection of information, the right not to participate and to withdraw from participation without penalty, incentive distribution, referral information related to sexual health issues and access to the final report. Participants were not asked to sign the informed consent form to maintain the anonymity of this study. After the interview a 2.5 ml blood sample was drawn from each participant for HIV, HSV-2 and syphilis testing.

Laboratory testing

Collected specimens were tested by the Sichuan Provincial Center for Disease Prevention and Control for antibodies to HIV, HSV-2, and Syphilis. Antibody to HIV was detected by the Enzyme Linked Immunosorbent Assay (ELISA; Livzon Group Reagent Factory, Zhuhai, China) and positive results were confirmed by Western Blot (WB; Singapore MP Biomedical Asia Pacific Ltd.). IgG antibody to syphilis was tested by ELISA (Beijing Kinghawk Pharmaceutical Co., Ltd). HSV-2 IgG was also test by ELISA using the only reagent approved by FDA. (Focus Technologies, Cypress, CA, USA).

Ethical considerations and incentives

The survey was anonymous, no names or other personal identifying information were collected from the participants. Each participant was assigned a unique study number and identified only by this number during the process. A private room in the CGCCO office was used for the interviews. Participants were given a pre-numbered card with an appointment date for receiving their test results and post-test counseling. Referral for treatment for the positives were provided as needed. 50 Chinese Yuan (\$6.5 U.S) was given to the participants as compensation for their time, or the equivalent value in condoms and lubricants.

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of California, Los Angeles (UCLA) and the Chinese Center for Disease Control and Prevention (China CDC).

Statistical methods

Descriptive analyses were conducted to describe the demographic characteristics of the sample, prevalence of HIV and STDs, and the risk factors for HIV infection. Univariate and multivariate logistic regressions analyses were used to assess the associations between the risk factors and HIV infection. Variables in the multivariate analysis were selected based on the results of univariate analysis as well as the prior knowledge. When variables were significantly correlated, only those variables best explaining the relationships were used for model fitting. All statistical analyses were performed using the Statistical Analysis System (SAS) version 9.1.3 for Windows.

RESULTS

A total of 538 MSM were recruited to the study among whom 513 (95.4%) completed the questionnaire. All 538 blood samples were tested for HIV and HSV-2 while only participants who finished the questionnaire were tested for syphilis. The HIV (confirmed only), HSV-2 and syphilis prevalence of the total sample were 9.1% (49/538; 95% CI: 6.7%, 11.5%), 24.7% (133/538; 95% CI: 21.1%, 28.4%), and 28.1% (144/513; 95% CI: 24.2%, 32.0%), respectively. Prevalences of both HIV and HSV-2 were higher among those who refused to respond to the questionnaire (HIV: 16.0% vs. 8.8%; HSV-2: 32.0% vs. 24.4%). However, since the sample size was small and no personal information was collected for the non-respondent, no further conclusions could be made.

Demographic information

Since no information was obtained from those who refused to answer the questionnaire, only 513 participants were included in the final analysis. The age of the participants ranged from 16.8 to 44.5 years, with a median age of 24 years. More than half (57.5%) were younger than 25 years, and 48.2% had some college or higher education. The majority (80.8%) of the sample had never been married. The primary reason for getting married was to satisfy their parents' wishes (54.4%) followed by the desire to conceal their homosexual orientation (27.9%). Some participants indicated that they did not know their sexual orientation before getting married. For those who had never married, 50.5% wanted to be married in the future. Approximately 70% of them thought the most important reason to marry would be to satisfy their parents' wishes. The second most important reason was that they also loved females (26.8%). Only 12.2% reported that the most important reason to be married was to conceal their sexual orientation.

Almost two-thirds (63%) of the participants identified themselves as either absolutely homosexual or bisexual. Forty-three (8.4%) did not state their sexual orientation or "did not know". However, when asked which gender(s) they preferred to have sex with, nine of the 43 preferred only males, 15 preferred mostly males, 13 both equally, four mostly female, and two only females. Sexual orientation of those who did not reveal their sexual orientation was defined according to these preferences.

The most popular strategy to find male sexual partners was the internet (63.1%), followed by through friends (51.9%), in bars (19.5%), and in public bathhouse (10.6%). When asked which *one* above had been used most, 54.2% of participants selected internet, and 27.6% through friends.

High-risk sexual behaviors and condom use

The median age at first sex (oral, anal and/or vaginal) was 19 years. More than 60% of the participants' first sexual partners were male (62.1%). Some of the participants started their sexual activities as early as eight years old, while a few had their first anal intercourse with a male in their 40s. Table 1 shows the numbers of male sex partners with whom the participants had had oral or anal sex, as well as female sex partners. More than half (55.5%) of the participants had had sex with female partners in their life.

A boyfriend (BF) was defined as somebody with whom the participant had had sex and desired a long-term relationship. The majority of the participants had only one or no BFs in the past 6 months. The numbers of BFs or female sex partners in the past 6 months were similar between HIV-positive and HIV-negative participants. However, HIV-positive participants tended to have more casual male partners (Table 1).

The most preferred sexual behavior with male partners was anal sex (82.7% with BFs and 77.7% with casual male partners). About half (44%) of the participants had always or almost always been insertive, while 32% were always receptive, and 22% were about the same for both.

In the past 6 months, 26 (5.1%) participants had paid for sex with FSWs, and 52 (10.2%) with “Money Boys” (MBs), while 10 (2.0%) had sold sex to female clients and 93 (18.3%) to male clients. The number of participants who had sold sex was higher than those admitting to be MBs, indicating that some of them might have been selling sex only occasionally.

The rate of consistent condom use (always used condoms when having sex) varied by type of sexual partners. The highest use was with casual male partners (38.6%), and the lowest was with wives or girlfriends (17.8%). About two-thirds (67%) had had anal sex as their most recent encounter, and condom use for the past sexual intercourse was 57.5% (289/503, 95% CI: 53.1%, 61.8%). The primary means to avoid HIV/STD infection when not using a condom was washing after sexual intercourse (52.9%), and avoiding having anal sex (28.3%).

Five questions were used to assess participants’ knowledge of condom use (Table 2). Only 120 men (23.4%) gave the right answers to all five questions. One-third (33.7%) of the participants thought that condoms could be tested for safety before sex by filling them with water, and 26.3% believed that HIV/STDs could be prevented by putting a condom on just before ejaculation.

Knowledge about HIV/AIDS was generally low (Table 2). No critical questions were answered correctly by more than 70% of the participants, including ‘a person with HIV/AIDS can look as healthy as other people’ (66.3%), ‘persons with STD are more likely to be infected with HIV’ (63.9%), and ‘people with HIV cannot transmit the virus to others if not symptomatic’ (67.7%).

Using lubricant when having anal sex prevents small tears and lesions in the anus lining reducing the risk of HIV transmission. In our study, 258 participants (50.4%) used only water-based lubricants when having anal sex, 60 (11.7%) used only oil-based lubricant, and 112 (21.9%) used both. When not having lubricant available, 218 (42.6%) avoided having anal sex, and 239 (46.7%) used other material for lubrication such as saliva, toothpaste or oil.

Other risk behaviors

One-fifth (21.6%) of participants often consumed alcohol before having sex, among whom 51 admitted to being drunk a few times. One quarter (124; 24.2%) of participants had used illegal drugs. The most popular was Ketamine (112/124, 91.1%) followed by Amphetamine (68/124, 55.3%). Only four participants had used heroin, of whom two had injected. Only 14 (2.7%) of participants had used drugs before having sex.

STDs

One-fifth (20.3%) of participants reported having been diagnosed as being infected with a STD. Only half (53.5%) received treatment in a regular clinic or hospital. Among those who denied being diagnosed with a STD, 24.2% had had symptoms in genital track or anus one to two weeks after having oral, anal or vaginal intercourse. According to the results of testing for HSV-2 and syphilis, 195 (36.2%) participants were infected with at least one STD, of whom 74 (37.9%) had both HSV-2 and syphilis infections.

Depression assessment

The shortened version of the Center for Epidemiologic Studies Depression Scale (CES-D) was used to assess participants' mental health status. The CES-D is a 20-item, self-reporting depression scale. Items refer to the frequency of symptoms during the past week. The score for each person is calculated based on the answers to the questions. A score below 15 indicates that the participant does not appear to be experiencing high levels of depressive symptoms at that time. Scores between 15 and 21 indicate mild to moderate depression, and over 21 indicate possible major depression. In this study, 237 (46.3%) participants scored less than 15, 82 (16.0%) between 15 and 21, and 193 (37.7%) over 21.

Risk factors for HIV infection

In the total sample, students comprised 14.8%, but none were found to be infected with HIV. Thirty HIV-infected participants (66.7%) were self-employed or in a service business and seven HIV-positive participants were MBs. HIV-positive persons tended to have had more lifetime sexual partners than negatives.

The possible risk factors for HIV infection were assessed by logistic regression. Since HSV-2 and syphilis infections were correlated in the sample (OR=6.59, 95% CI: 4.24, 10.24), STD infection was defined as either one of them or both. Table 3 shows the results of univariate and multivariate logistic regression. After controlling for other variables, participants who had a college or higher education level were 3 times more likely to be infected with HIV (OR=3.17, 95% CI: 1.44, 6.97). Those who had a history of being infected by either HSV or syphilis were over four times more likely to be HIV positive (OR=4.48, 95% CI: 2.02, 9.96). Not knowing how to use condoms properly also significantly increased the risk for HIV infection (OR=2.65, 95% CI: 1.27, 5.54). Compared to clerks or students, the risk of HIV infection for money boys was 6 times higher (OR=6.43, 95% CI: 1.54, 28.86). For those who had lived in Chengdu for more than five years, the risk of HIV infection was 2.5 times higher (OR=2.47, 95% CI: 1.06, 5.76).

DISCUSSION

Chengdu is one of the major cities in southwest China. Studies have estimated that Chengdu has more than 71,000 MSM among whom at least 10,000 are sexually active.[18] Surveillance data among MSM in Chengdu indicated that the HIV prevalence has increased dramatically from 0.64% in 2003 to 6.58% in 2006 [17], and was 9.11% in our study in 2007.

HSV-2 and/or syphilis infection significantly increased the risk of being infected with HIV. After controlling for other risk factors, participants who had been infected with either HSV or syphilis were four times more likely to be infected by HIV. In our study, about 20% of participants self-reported having had a diagnosed STD infection in the past but only half had been treated in a regular clinic.

High-risk behaviors were common in this population. Only half of the participants used a condom during their last sexual intercourse. Consistent condom use was low even with casual male sex partners (38.6%). Only 23% of participants were able to correctly answer all the questions about how to use condoms properly. When not using condom during sex, more than half of them just washed after sex to avoid being infected with HIV/STDs.

Money boys (MB) were 6 times more likely to be infected with HIV compared to government employees, clerks or students. Some participants who did not identify themselves as MB also reported occasionally behaviors of selling sex for extra money. Among those who were self-employed or worked in a service business, 18.1% had engaged in commercial sex with male

clients in the past six months, which was higher than among clerk/government employees (3.7%) or students (2.7%), putting this group at higher risk of HIV infection.

MSM living in Chengdu for more than five years were twice as likely to be infected with HIV compared to those living a shorter time. This may reflect a shorter cumulative exposure time. The internet has become the most popular method for MSM seeking sexual partners, followed by through friends. In addition to focusing on the venues patronized by MSM, such as bars, parks, and bathhouse, intervention activities targeting MSM should target the internet and personal network. Programs also need to reach MSM with STDs who do not attend STD clinics.

By the end of 2007, the major HIV transmission mode in Sichuan was still IDUs. In our study, about one-fourth of the participants had tried illegal drugs. However, drug use was not found to be a risk factor for HIV infection in our study, possibly because most of them used Ketamine or amphetamine instead of injecting of heroin. Thus, the HIV epidemic among MSM and IDUs appeared to be independent, so far.

Limitations of this study

Because of the biases associated with the snowball sampling method, participants in this study were not likely to have been a representative sample of MSM in Chengdu. Possible bias may also derive from the choice of the initial seeds, since most of them were volunteers from the Chengdu Gay Care Organization, were young and had a college degree or higher level of education. Participants wanting to hide their sexual orientation such as those who were married or had a high social status were probably less likely to be recruited to this study. Therefore, compared to the entire MSM population in Chengdu, our sample might have been younger, better educated, and less likely to be married. The IgG antibodies of syphilis were tested by an ELISA assay, and were not confirmed by TPHA testing. Therefore, the syphilis prevalence in this study might be overestimated. A positive result of syphilis testing only indicated a history of infection, not necessarily active syphilis.

CONCLUSIONS

HIV prevalence among MSM in Chengdu has been increasing rapidly in the past few years. STD infections were also very high in this population, and significantly increased the risk for being infected with HIV. To prevent HIV/STDs, promotion campaigns of condom use are needed not only to boost the frequency of condom use, but also to educate MSM about proper condom use. Certain subpopulations, such as those infected with STDs or who engage in commercial sex, require more attention and intervention. To reach the most sexually active MSM, more efforts should target the internet and the personal networks in this population.

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Table 1

Number of lifetime sexual partners and partners in past 6 months

	HIV positives N=45		HIV negatives N=468		P value
	n	%	n	%	
Number of lifetime male sex partners (oral sex)					
1-5	7	16.7	176	39.4	<0.01
6-10	8	19.0	128	28.6	
11-50	20	47.6	106	23.7	
>50	7	16.7	37	8.3	
Number of lifetime male sex partners (anal sex)					
1-5	9	21.4	197	44.8	<0.01
6-10	7	16.7	111	24.8	
11-50	20	47.6	110	24.6	
>50	6	14.3	29	6.5	
Number of lifetime female sex partners					
0	13	30.2	205	45.9	0.01
1	12	27.9	145	32.4	
1-5	10	23.3	65	14.5	
>5	8	18.6	32	7.2	
Number of boyfriends (BF) in past 6 months					
0	13	28.9	140	29.9	0.51
1	19	42.2	227	48.5	
>1	13	28.9	101	21.6	
Number of casual male partners in past 6 months					
0	4	8.9	122	26.1	<0.01
1	11	24.4	82	17.6	
2-5	14	31.1	190	40.7	
>5	16	35.6	73	15.6	

	HIV positives N=45		HIV negatives N=468		P value
	n	%	n	%	
Number of female sex partners in past 6 months					
0	33	73.3	344	73.5	0.91
1	7	15.6	80	17.1	
>1	5	11.1	44	9.4	

* Fisher's exact test

Table 2

Knowledge of HIV/AIDS and condom use

	Yes		No		Unsure	
	n	%	n	%	n	%
Knowledge about HIV/AIDS						
A person with HIV/AIDS can look as healthy as other people	337	66.3	106	20.9	65	12.8
Persons with STDs are more likely to be infected with HIV	326	63.9	87	17.1	97	19.0
HIV/AIDS currently is curable	48	9.5	351	69.6	105	20.8
People with HIV cannot transmit the virus to others if not symptomatic	73	14.5	340	67.7	89	17.7
Doing physical exercises can prevent infection with HIV	316	62.6	138	27.3	51	10.1
Eating more nutritious food can prevent HIV infection	231	45.7	211	41.8	63	12.5
Washing after having sex can prevent HIV infection	286	56.3	171	33.7	51	10.0
Knowledge about how to use a condom use						
Need to check expiration date before use	457	89.3	17	3.3	38	7.4
Need to test condoms for safety by filling with water before use	172	33.7	241	47.3	97	19.0
Squeeze the tip of condom gently till so no air is trapped inside, and hold the tip to unroll the condom along the length of the penis	418	82.1	32	6.3	59	11.6
Condoms can prevent people from being infected with HIV/STDs if put on just before ejaculation	133	26.3	315	62.3	58	11.5
Withdraw penis when it is still hard	303	60.4	107	21.3	92	18.3

Table 3

Factors associated with HIV infection among MSM in Chengdu

	Univariate				Multivariate			
	N	OR	95% CI	P-value	OR	95% CI	P-value	P-value
Age (years)								
<25 (Ref)	295	1						
25–35	142	1.62	0.81, 3.28	0.18				
>35	76	2.08	0.93, 4.66	0.07				
Education								
Senior high school or lower (Ref)	206	1			1			
College or above	247	1.03	0.56, 1.91	0.92	3.17	1.44, 6.97		<0.01
Occupation								
Clerk/student (Ref)	240	1			1			
Self-employed/service business	224	4.52	2.03, 10.10	<0.01	4.11	1.68, 10.06		<0.01
Money boy (MB)	47	5.12	1.76, 14.90	<0.01	6.43	1.54, 28.86		0.01
Marital status								
Never married	404	1						
Married/divorced	96	1.66	0.82, 3.36	0.16				
Income (yuan/month)								
<500	93	0.48	0.18, 1.27	0.14				
500–2000 (Ref)	274	1						
>2000	127	0.65	0.30, 1.40	0.27				
Sexual orientation								
Homosexual (Ref)	347	1						
Bisexual	130	1.08	0.53, 2.17	0.84				
Heterosexual	36	0.96	0.28, 3.32	0.95				
From urban or rural area								
Urban (Ref)	410	1						
Rural	103	1.92	0.98, 3.77	0.06				
Time of living in Chengdu								
<=5 years (Ref)	193	1			1			

	Univariate					Multivariate				
	N	OR	95% CI	P-value	OR	95% CI	P-value	OR	95% CI	P-value
>5 years	320	2.59	1.22, 5.51	0.01	2.47	1.06, 5.76	0.04			
Number of lifetime male partners for anal sex										
<=10 (Ref)	324	1			1					
>10	165	3.60	1.87, 6.93	<0.01	2.76	1.32, 5.78	<0.01			
Number of BF's in past 6 months										
0 (Ref)	153	1								
1	246	0.90	0.43, 1.88	0.78						
>1	114	1.39	0.62, 3.12	0.43						
Number of casual male sex partners in past 6 months										
0 or 1 (Ref)	219	1								
2-5	204	1.01	0.47, 2.14	0.99						
>5	89	3.00	1.41, 6.36	<0.01						
Number of lifetime female sex partners										
<=1 (Ref)	375	1								
>1	115	2.60	1.36, 4.96	<0.01						
Condom use during the last intercourse										
No (Ref)	214	1								
Yes	289	1.54	0.81, 2.93	0.19						
Condom use with BF in past 6 months										
Never	53	0.95	0.31, 2.90	0.92						
Sometimes	221	1.28	0.67, 2.44	0.45						
Always (Ref)	84	1								
Condom use with casual male partners in past 6 months										
Never	44	0.61	0.14, 2.70	0.51						
Sometimes	193	1.73	0.92, 3.25	0.09						
Always (Ref)	149	1								
Correctly answered questions about condom use										
>=4/5 (Ref)	261	1			1					

	Univariate					Multivariate		
	N	OR	95% CI	P-value	OR	95% CI	P-value	
<=3/5	252	2.22	1.16, 4.23	0.02	2.65	1.27, 5.54	<0.01	
Lubricant use								
No (Ref)	82	1						
Yes	430	1.04	0.45, 2.41	0.93				
Preferred sexual behaviors								
Anal sex	277	1.06	0.57, 1.96	0.86				
Others (Ref)	233	1						
Diagnosed STD during lifetime								
No (Ref)	396	1						
Yes	104	1.30	0.63, 2.67	0.47				
Either HSV or syphilis								
No (Ref)	318	1			1			
Yes	195	5.19	2.61, 10.33	<0.01	4.48	2.02, 9.96	<0.01	
Illegal drug use								
Yes	124	0.77	0.36, 1.64	0.50				
No (Ref)	389	1						
CES_D								
<15 (Ref)	237	1						
15-21	82	1.21	0.48, 3.04	0.68				
>21	193	1.59	0.81, 3.10	0.18				