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## HIV and STIs among MSM in Tajikistan: Laboratory-Confirmed Diagnoses and Self-Reported Testing Behaviors

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### Abstract

Little is known about the prevalence and associations of HIV/STI diagnoses and testing behaviors among men who have sex with men (MSM) in Tajikistan. A non-governmental organization conducted a cross-sectional study of MSM (n=502) assessing laboratory-confirmed HIV/STI diagnoses, HIV/STI testing behavior in the past six months, sociodemographics, HIV/STI risk factors, and victimization/discrimination. Overall, 2.6% were diagnosed with HIV, 2.2% with syphilis, 17.6% with chlamydia, and 56.0% with herpes. Recent testing rates were low for HIV (35.9%) and STIs (14.1%). Compared to MSM who completed university, MSM with a high school education or less had lower odds of recent HIV and STI testing; however, victimization and healthcare discrimination were associated with greater odds of recent STI testing. Given the low HIV prevalence, there is a window of opportunity to extinguish the epidemic before it worsens. Non-governmental organizations are indispensable for expanding testing strategies because they can efficiently reach MSM in Tajikistan.

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**Conflict of Interest:**

All authors have no conflicts of interest.

COMPLIANCE WITH ETHICAL STANDARDS

**Ethical approval:**

All study procedures were approved by both the Bioethics Committee of the Academy of Medical Sciences through the Ministry of Health and Social Welfare of the Republic of Tajikistan and the University of Pittsburgh's Institutional Review Board. Therefore, all procedures were in accordance with the ethical standards of the institutional and national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent:**

Informed consent was obtained from all individual participants included in the study.

## Keywords

men who have sex with men; Tajikistan; testing behaviors; diagnoses; HIV and STIs

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## INTRODUCTION

Despite the rapidly growing HIV prevalence among men who have sex with men (MSM) in low- and middle-income countries (1, 2), MSM have not been sufficiently recognized in research, funding priorities, or prevention and care service delivery in the global response to HIV (1). MSM across the globe experience heightened exposure to stigma and discrimination, which detrimentally affect their sexual health and HIV-related outcomes (3–7). However, little is known about the HIV epidemic among MSM in certain parts of the world—particularly in Central Asia (1, 8). In this region, the same drivers of the HIV epidemic among MSM—such as the criminalization of same-gender sexual behavior—function as barriers to conducting research with MSM (1, 8). Without robust information about HIV among MSM in Central Asia, governments and non-governmental organizations (NGOs) face challenges in designing, implementing, and evaluating programs and policies to address the needs of MSM in this region.

Tajikistan is one Central Asian country where HIV prevalence is still relatively low (0.6%; 9). Nevertheless this prevalence remains concerning as it reflects an increase of over 25% in the last 10 years, with the majority (77%) of new HIV infections occurring among MSM (10). To our knowledge, there is no information about other STIs (e.g., syphilis, chlamydia, and herpes) among MSM in Tajikistan. Currently, the Tajik government is the sole entity authorized to conduct HIV testing nationwide, where it is only carried out in government institutions (i.e., AIDS centers). However, there remains a need for HIV testing programs specifically targeting MSM; according to official government estimates, only 879 MSM in 2010 received an HIV test across the entire country, which has a populace of greater than 7.5 million (10, 11). These preliminary data suggest that government-run AIDS centers are failing to adequately reach MSM.

Despite Tajikistan decriminalizing homosexuality in 1998, being an MSM in Tajikistan is challenging because of the country's cultural and religious traditions as well as social stigma. For example, men in Tajikistan are expected to marry a woman by age 25. Traditions like these can have negative effects on the well-being of MSM, such as internalized homophobia, which may hinder receipt of HIV or STI testing. This is only compounded by a lack of Voluntary Counseling and Testing specialists trained to address the particular needs of MSM (12). Furthermore, MSM in Tajikistan have few safe spaces to congregate. As such, MSM often meet each other through the Internet using social networking sites or face-to-face at public sex areas (called “plezkas”) only known to members of the community. Heterosexist ideals and anti-gay cultural sentiments may facilitate sexual risk behaviors and reduce likelihood of HIV and STI testing for MSM. However, the current HIV prevalence in Tajikistan is still believed to be at a level low enough where timely identification of new HIV infection could prevent the reproduction of epidemics we have seen among MSM in other countries.

NGOs may play a vital role in facilitating the uptake of HIV and STI testing among MSM. Though the government is solely responsible for HIV testing in Tajikistan, NGOs are authorized to provide testing for other STIs. Equal Opportunities, one of only a few NGOs in Tajikistan to serve lesbian, gay, bisexual, and transgender (LGBT) populations, offers STI testing services which are currently being accessed by MSM. This provides a unique opportunity in Tajikistan to not only better understand the needs and barriers of MSM around HIV testing, but an opportunity to assess if a government-NGO partnership can facilitate HIV testing among MSM.

To better understand prevalence and barriers of HIV testing, we conducted a cross-sectional study in Tajikistan's capital and largest city, Dushanbe. This study was specifically designed to do the following: (1) measure HIV and STI testing prevalence among MSM in the past six months; (2) identify sociodemographic characteristics and other factors associated with recent HIV and STI testing behavior among MSM. This study also sought to: (3) characterize utilization of free on-site HIV and STI testing to MSM at time of survey administration; (4) estimate prevalence of laboratory-confirmed diagnoses of HIV, chlamydia, syphilis, and herpes; and (5) identify sociodemographic characteristics and other factors associated with diagnoses among MSM.

## METHODS

### Intervention and Study Design

We conducted a cross-sectional research study among MSM in Dushanbe, Tajikistan. The study was implemented by a local non-governmental organization in Dushanbe named Equal Opportunities. Equal Opportunities is the only organization in Tajikistan to support the health and wellness needs of Tajik LGBT people. The study took place in a resource clinic within Equal Opportunities called the Community Resource Clinic (CRC) for MSM and LGBT people. Some of the services provided by CRC include HIV/STI prevention services, psychological counseling, and legal assistance.

Data for this study were collected from March through August 2015. Participants first completed a questionnaire on various topics (e.g., demographics, sexual risk behaviors, and HIV and STI testing behaviors) administered by trained Equal Opportunities staff. Participants on average took 20 to 45 minutes to complete the questionnaire. After completing the interviewer-administered survey, Equal Opportunities staff provided voluntary counseling for HIV/STIs. Participants were then offered to have blood drawn to get tested for HIV and other STIs. A trained nurse from the Tajikistan AIDS Centers administered all blood draws. All men that participated in any part of this study were incentivized with a hygiene package, which included a number of toiletries and was worth \$10 USD. All study procedures were approved by both the Bioethics Committee of the Academy of Medical Sciences through the Ministry of Health and Social Welfare of the Republic of Tajikistan and the University of Pittsburgh's Institutional Review Board.

## Eligibility and Recruitment

Participants were eligible to partake in the study if there were: (1) 18 years old or older; (2) had sex with a man at least once in their lifetime; and (3) lived in Tajikistan at the time of the study. We used 3 primary methods to recruit participants into the study. First, we used a passive recruitment technique in which we developed and posted a leaflet with information about the study. Second, we used the prior methods and experience of the CRC to find MSM in public places, cruising areas (e.g., indoor bathhouses), and public sex venues (e.g., parks and bazars). In these areas, staff recruited participants by talking to MSM and distributing flyers. Once participants were recruited, we employed our third method: having participants invite their friends and social networks via word-of-mouth or flyers to participate in the study. This method of sampling allowed us to recruit new MSM who were less likely to have previously visited Equal Opportunities or to have utilized any HIV prevention services. Recruiters contacted a total of 645 eligible men for potential study participation, and 502 of the eligible men provided consent to participate in the study, creating our total analytic sample.

Each participant in the study was asked to carefully read the informed consent form. After reviewing the informed consent form, each willing participant signed a form that confirmed his agreement to participate in the study. Each participant was then assigned a unique identification code, which was used to link their HIV/STI test results to their questionnaire, as well as provide participants a means to receive their HIV/STI test results over the phone.

## Measures

**HIV, Chlamydia, Syphilis, and Herpes Diagnoses**—Blood samples were tested for HIV, chlamydia, syphilis, and herpes at the serology laboratory of the Dushanbe City AIDS Center. Blood samples were examined for the presence of antibodies for HIV 1 and 2, syphilis, chlamydia, and herpes. Tests were procured by the Tajikistan government.

**HIV and STI Testing Behaviors**—The questionnaire asked participants whether they got tested for (1) HIV and (2) STIs in the past six months. Response options were yes/no.

**Sociodemographic Characteristics**—In the questionnaire, participants reported their age, place of residence in Tajikistan, highest education completed, sexual orientation (gay-identified, bisexual-identified, and not gay-or bisexual-identified MSM), and relationship status (single, marital, divorced, widower and other). Because of sample size, we collapsed relationship status to be married versus other.

**HIV/STI Risk Factors**—We asked participants how many men they had anal sex with in the past 12 months. We also asked participants whether or not they engaged in commercial sex work or drug/sex exchange in their lifetime.

**Discrimination and Violence**—We asked one question about healthcare-based discrimination, which was measured dichotomously (yes/no) with the following question: “Have you been discriminated by health care providers?” Violence victimization was also

measured dichotomously (yes/no) with the following question: “Have you been subjected to acts of violence due to the fact that you MSM?”

### Data Analyses

We described the sample using frequencies and percentages. To examine bivariate associations of HIV/STI testing and diagnoses, we used Pearson chi-square tests or Fisher’s exact test when expected cell counts were less than 5. Any bivariate statistics with  $p < 0.10$  were included in multivariable logistic regression models.

Only a few participants were missing data on any particular study variable. Therefore, we used listwise deletion to address missing data and allowed the total sample to vary for each analysis; total sample size is noted in the column headers in each table. Analyses were conducted in Stata version 14 (StataCorp, College Station, TX), and statistical significance was set at  $p < 0.05$ .

## RESULTS

Table 1 describes the characteristics of the sample. Many of the 502 participants were married (42.8%), and about half (51.2%) did not identify as gay or bisexual. Nearly half (46.4%) had a high school education or less, and nearly a third (30.3%) had engaged in commercial sexual work or drug/sex exchanges.

### HIV Testing

Table 2 presents bivariate associations of HIV testing. Only 35.9% were tested for HIV in the past six months. Men were more likely to report getting tested if they were older, were living in Dushanbe, had completed university, identified as gay, had a greater number of male sex partners, engaged in sex work, or experienced victimization.

Table 3 presents the multivariable model of HIV testing, which included the following variables based on their bivariate associations: age, residence, education, marital status, sexual orientation, number of male sex partners, sex work, and victimization. Compared to those who had completed university, those with lower education had lower odds of HIV testing. Men living in the Districts of Republican Subordination also had lower odds of HIV testing compared with men living in Dushanbe. There was a trend for age and HIV testing, such that the odds of having an HIV test in the past six months appeared to increase with older age, but not all associations achieved statistical significance. Men who engaged in sex work had higher odds of getting tested for HIV. In the multivariable model, HIV testing was not associated with marital status, sexual orientation, number of male anal sex partners, or victimization.

### STI Testing

Table 2 presents bivariate associations of STI testing. Only 14.1% of men had been tested for STIs in the past six months. Education was associated with STI testing, such that those who with a high school degree or less were the least likely to test. Sexual orientation was associated with STI testing: bisexual-identified men had the lowest STI testing, and gay-

identified men had the highest. Men who engaged in sex work, experienced victimization, or experienced healthcare-based discrimination were more likely than their counterparts to get tested for STIs.

Table 3 presents the multivariable associations of STI testing. Controlling for age, marital status, sexual orientation, number of male sex partners, sex work, victimization, and healthcare-based discrimination, men who completed high school or less had significantly lower odds of STI testing compared with men who completed university. Compared to men with 1–3 sexual partners, men with greater than 15 partners had significantly higher odds of STI testing. Men who experienced victimization or healthcare-based discrimination had higher odds of getting tested for STIs than men who did not experience them. There were no significant associations of STI testing with age, sexual orientation, marital status, or sex work.

### **HIV, Syphilis, Chlamydia, and Herpes Diagnoses**

Thirteen participants (2.6%) were diagnosed HIV-positive. No variables were significantly associated with HIV diagnosis. Additionally, 2.2% were diagnosed with syphilis, 17.6% with chlamydia, and 56.0% with herpes. Syphilis diagnosis was associated with age ( $p=0.020$ ). Chlamydia diagnosis was more likely among those who reported healthcare-based discrimination ( $p=0.007$ ). Herpes was associated with residence ( $p=0.032$ ; lowest in Dushanbe), sexual orientation ( $p=0.015$ ; lowest among bisexual-identified men), and number of male sex partners ( $p=0.001$ ; highest among people with 13–15 male partners and lowest among people with 9–12 male partners). Because only the variables mentioned above were associated with HIV or STI diagnoses, we did not report the full bivariate tables or conduct multivariable models for HIV and STI diagnoses.

## **DISCUSSION**

This exploratory study contributed to filling a critical gap in knowledge about HIV and STI testing behavior among MSM in Central Asia. We assessed the prevalence and associations of recent HIV and STI testing in a sample of MSM in Tajikistan. We found that only 35.9% of our sample had an HIV test in the past six months and even fewer had an STI test in the past six months (14.1%). Though relatively low, this is consistent with prior reports of HIV testing rates ranging from 25% to 49% in Tajikistan and neighboring countries – though it should be noted that Mongolia and Kazakhstan both have rates higher than 50% and 75%, respectively (13). This suggests that more work is needed to increase the uptake of testing services among MSM in Tajikistan. This is especially true for STI testing as an undiagnosed and untreated STI infection can increase vulnerability to HIV acquisition.

Our research also highlights that some groups of MSM are less likely to test for HIV and STIs than other men. For example, people whose highest education was high school or less were significantly less likely than university-educated MSM to obtain a recent HIV or STI test. Meanwhile, men who experienced victimization or healthcare-based discrimination were more likely to receive STI testing. Because we are unable to determine causality, it may simply be that men who access healthcare more often simply have greater opportunity to experience discrimination in these settings. Though less intuitive, another possibility is

consistent with limited research in the United States that demonstrates a positive association between healthcare provider distrust and antiretroviral therapy adherence (14), as well as a positive association between racism and odds of HIV testing among African Americans (15). In some circumstances MSM may similarly utilize health-promoting behaviors such as STI testing as one way to exercise self-determination in an environment that offers few other options. Additionally, men who engaged in sex work were more likely to be HIV tested, perhaps because they are aware of the increased risk of HIV infection associated with sex work. Though some groups of MSM were more or less likely to receive recent HIV or STI testing, the overall prevalence of HIV and STI testing was quite low in this sample, highlighting the need for policies and programs to increase testing for all MSM.

This study also demonstrated the feasibility of a new testing model in Tajikistan where Equal Opportunities—a non-governmental organization that serves the LGBT community—can partner with the government to bring HIV and STI testing to MSM at greater risk of HIV infection. HIV prevalence among MSM in our study was 2.7%, over 50% higher than the last estimate of HIV prevalence among Central Asian MSM (8), suggesting that our recruitment methods successfully reached those MSM in greatest need. Our study suggests that nongovernmental community-based organizations may also be better positioned to reach MSM with necessary HIV and STI interventions. Thus, we anticipate that ongoing partnerships between governmental agencies and non-governmental community-based organizations to reach and conduct basic HIV prevention work to raise levels of HIV testing, correct knowledge of HIV status, and help HIV-positive men access treatment will become a necessary tool in the Tajik response to the global HIV epidemic among MSM.

There are some limitations to this study. Given that this study used a cross-sectional research design we were unable to determine causal ordering of our variables. Moreover, the study relies on self-reported data for survey information, much of which may be underreported due to their stigmatizing nature (e.g., sex work, number of sexual partners). Notably, number of male sexual partners is but one element of risk-taking behavior we were able to assess. Bivariate analyses actually suggest a positive relationship between number of anal sex partners and likelihood of receiving an HIV or STI test. Without assessing condom use, we cannot know if this reflects a health-conscious attitude among men who also used condoms in these encounters, or if these were the same men who perceived themselves at greater risk because they did not use condoms. Furthermore, some variables, such as victimization, were assessed with a single item and prohibit further information about frequency, source, or severity. In addition, we were unable to determine whether positive results for the HIV and STI infections tested were due to acute or chronic infections. We used an aggregated STI testing variable, which measured testing for any STI, prohibiting us from parsing out testing for each individual STI.

Despite these limitations, there are many strengths of our study. We utilized laboratory-confirmed diagnoses of HIV and STIs, and did not rely on self-report statuses, which can inaccurately depict prevalence of HIV and STIs (16, 17). Furthermore, we used a novel recruitment approach in Tajikistan to target and reach for HIV and STI testing. To our knowledge, this study is the largest study of MSM in Tajikistan to date and provides robust baseline data that can be used for comparison data for years to come.

Though HIV prevalence is low among MSM in Tajikistan, rates of sexual risk-taking are high and will facilitate HIV transmission, especially given the low rates of HIV testing among MSM who engage in high-risk behaviors. Policymakers and practitioners still have a window of opportunity to prevent HIV transmissions before they spin out of control among MSM and their sexual partners in Tajikistan, by putting into place well-designed HIV and STI testing, prevention, and care programs. Given the levels of sexual risk within MSM sexual networks and the undeniable fact that HIV has already entered these networks, this opportunity to act before HIV becomes more prevalent will not last forever. The time to act is now.

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**Table 1**

Sample characteristics of MSM: Dushanbe, Tajikistan, 2015

Characteristics	Total (n=502)	
	n	(%)
<b>Age (years)</b>		
18-21	126	(25.1)
22-25	139	(27.7)
26-30	77	(15.3)
31-36	73	(14.5)
37-45	48	(9.6)
46	39	(7.8)
<b>Residence</b>		
Dushanbe	416	(82.9)
Districts of Republican Subordination	60	(12.0)
Khatlon or Sughd Regions	26	(5.2)
<b>Highest Education</b>		
Completed or attended high school	233	(46.4)
Completed or attended professional school	65	(13.0)
Attended university but did not complete	100	(19.9)
Completed university	104	(20.7)
<b>Marital status</b>		
Married	215	(42.8)
Unmarried	287	(57.2)
<b>Sexual Orientation</b>		
Gay-identified	42	(8.4)
Bisexual-identified	203	(40.4)
Not gay-or bisexual-identified MSM	257	(51.2)
<b>Number of male anal sex partners in past 12 months</b>		
1-3	174	(34.7)
4-8	127	(25.3)
9-12	81	(16.1)
13-15	41	(8.2)
15	79	(15.7)
<b>Engaged in commercial sex work or drug/sex exchange</b>		
No	350	(69.7)
Yes	152	(30.3)
<b>Experienced victimization</b>		
No	428	(85.3)
Yes	74	(14.7)
<b>Experienced healthcare-based discrimination</b>		
No	459	(91.4)

Characteristics	Total (n=502)	
	<i>n</i>	(%)
Yes	43	(8.6)

*Note.* MSM = men who have sex with men

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**Table 2**  
Bivariate associations of HIV and STI testing behaviors among MSM: Dushanbe, Tajikistan, 2015

	Had HIV test in past 6 months (n=501)			Had STI test in past 6 months (n=502)		
	n	(%)	P	n	(%)	P
<b>Total</b>	180	(35.9)		71	(14.1)	
<b>Age (years)</b>						
18-21	34	(27.0)	0.004	15	(11.9)	0.093
22-25	41	(29.5)		27	(19.4)	
26-30	29	(37.7)		13	(16.9)	
31-36	32	(44.4)		4	(5.5)	
37-45	25	(52.1)		8	(16.7)	
46	19	(48.7)		4	(10.3)	
<b>Residence</b>						
Dushanbe	161	(38.8)	0.011	62	(14.9)	0.431
Districts of Republican Subordination	12	(20.0)		4	(15.4)	
Khatlon or Sughd Regions	7	(26.9)		5	(8.3)	
<b>Highest Education</b>						
Completed or attended high school	76	(32.6)	0.001	20	(8.6)	0.010
Completed or attended professional school	22	(33.9)		12	(18.5)	
Attended university but did not complete	28	(28.0)		18	(18.0)	
Completed university	54	(52.4)		21	(20.2)	
<b>Marital status</b>						
Married	90	(42.1)	0.014	28	(13.0)	0.533
Unmarried	90	(31.4)		43	(15.0)	
<b>Sexual Orientation</b>						
Gay-identified	23	(54.8)	0.008	9	(21.4)	0.029
Bisexual-identified	61	(30.2)		19	(9.4)	
Not gay-or bisexual-identified MSM	96	(37.4)		43	(16.7)	
<b>Number of male anal sex partners in past 12 months</b>						
1-3	63	(36.2)	0.001	13	(7.5)	0.001

	Had HIV test in past 6 months (n=501)			Had STI test in past 6 months (n=502)		
	n	(%)	P	n	(%)	P
4-8	32	(25.4)		21	(16.5)	
9-12	25	(30.9)		9	(11.1)	
13-15	19	(46.3)		6	(14.6)	
15	41	(51.9)		22	(27.9)	
<b>Engaged in commercial sex work or drug/sex exchange</b>						
No	111	(31.7)	0.003	39	(11.1)	0.003
Yes	69	(45.7)		32	(21.1)	
<b>Experienced victimization</b>						
No	142	(33.2)	0.002	43	(10.1)	<0.001
Yes	38	(52.1)		28	(37.8)	
<b>Experienced healthcare-based discrimination</b>						
No	163	(35.5)	0.521	55	(12.0)	<0.001
Yes	17	(40.5)		16	(37.2)	

Note. MSM = men who have sex with men. P-values were derived from Fisher's exact test or Pearson chi-square test, depending on the expected cell size.

**Table 3**

Multivariable regression models for HIV and STI testing behaviors among MSM: Dushanbe, Tajikistan, 2015

	Had HIV test in past 6 months (n=501)		Had STI test in past 6 months (n=502)	
	<i>OR</i>	(95% <i>CI</i> )	<i>OR</i>	(95% <i>CI</i> )
<b>Age (years)</b>				
18-21	1.00		1.00	
22-25	1.08	(0.59, 1.97)	1.70	(0.79, 3.63)
26-30	1.64	(0.78, 3.48)	1.90	(0.76, 4.74)
31-36	2.18	(1.01, 4.72)	0.41	(0.11, 1.51)
37-45	2.26	(0.97, 5.26)	0.60	(0.19, 1.93)
46	2.13	(0.87, 5.23)	0.78	(0.20, 3.10)
<b>Residence</b>				
Dushanbe	1.00			
Districts of Republican Subordination	0.32	(0.15, 0.68)		
Khatlon or Sughd Regions	0.53	(0.19, 1.45)		
<b>Highest Education</b>				
Completed or attended high school	0.43	(0.25, 0.74)	0.23	(0.10, 0.51)
Completed or attended professional school	0.48	(0.23, 0.99)	0.69	(0.27, 1.74)
Attended university but did not complete	0.44	(0.23, 0.85)	0.58	(0.25, 1.37)
Completed university	1.00		1.00	
<b>Marital status</b>				
Married	1.00			
Unmarried	0.94	(0.56, 1.57)		
<b>Sexual Orientation</b>				
Gay-identified	1.62	(0.76, 3.45)	0.46	(0.17, 1.25)
Bisexual-identified	0.66	(0.42, 1.04)	0.52	(0.27, 1.03)
Not gay-or bisexual-identified MSM	1.00		1.00	
<b>Number of male anal sex partners in past 12 months</b>				
1-3	1.00		1.00	
4-8	0.55	(0.31, 0.97)	2.26	(0.97, 5.27)
9-12	0.65	(0.34, 1.24)	1.42	(0.50, 4.04)
13-15	1.22	(0.57, 2.58)	2.51	(0.76, 8.22)
15	1.42	(0.76, 2.67)	4.46	(1.84, 10.77)
<b>Engaged in commercial sex work or drug/sex exchange</b>				
No	1.00		1.00	
Yes	1.82	(1.12, 2.95)	1.43	(0.76, 2.68)
<b>Experienced victimization</b>				
No	1.00		1.00	
Yes	1.61	(0.91, 2.84)	4.45	(2.26, 8.76)

	Had HIV test in past 6 months (n=501)		Had STI test in past 6 months (n=502)	
	<i>OR</i>	<i>(95% CI)</i>	<i>OR</i>	<i>(95% CI)</i>
<b>Experienced healthcare-based discrimination</b>				
No			1.00	
Yes			3.56	(1.61, 7.85)

*Note.* MSM = men who have sex with men. Healthcare-based discrimination was omitted from the model of HIV testing, while marital status and permanent place of residence were omitted from the model of STI testing, because these variables did not meet pre-established criteria of  $p < 0.10$  in bivariate analysis.

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**Table 4**

Bivariate associations of HIV and STI diagnoses: Dushanbe, Tajikistan, 2015

	HIV (n=502)		Syphilis (n=502)		Chlamydia (n=501)		Herpes (n=502)	
	n	(%)	n	(%)	n	(%)	n	(%)
<b>Total</b>	13	(2.6)	11	(2.2)	88	(17.6)	281	(56.0)
<b>Age (years)</b>								
18-21	3	(2.4)	5	(4.0)	21	(16.8)	80	(63.5)
22-25	3	(2.2)	2	(1.4)	20	(14.4)	68	(48.9)
26-30	2	(2.6)	0	(0.0)	16	(20.8)	42	(54.6)
31-36	3	(4.1)	0	(0.0)	10	(13.7)	39	(53.4)
37-45	0	(0.0)	4	(8.3)	12	(25.0)	27	(56.3)
46	2	(5.1)	0	(0.0)	9	(23.1)	25	(64.1)
<b>Residence</b>								
Dushanbe	12	(2.9)	9	(2.2)	73	(17.6)	223	(53.6)
Districts of Republican Subordination	0	(0.0)	2	(3.3)	13	(21.7)	38	(63.3)
Khatlon or Sughd Regions	1	(3.9)	0	(0.0)	2	(7.7)	20	(76.9)
<b>Highest Education</b>								
Completed or attended high school	8	(3.4)	4	(1.7)	39	(16.7)	128	(54.9)
Completed or attended professional school	3	(4.6)	2	(3.1)	12	(18.5)	33	(50.8)
Attended university but did not complete	1	(1.0)	3	(3.0)	18	(18.2)	56	(56.0)
Completed university	1	(1.0)	2	(1.9)	19	(18.3)	64	(61.5)
<b>Marital status</b>								
Married	7	(3.3)	4	(1.9)	41	(19.1)	125	(58.1)
Unmarried	6	(2.1)	7	(2.4)	47	(16.4)	156	(54.4)
<b>Sexual Orientation</b>								
Gay-identified	0	(0.0)	1	(2.4)	6	(14.3)	27	(64.3)
Bisexual-identified	6	(3.0)	6	(3.0)	37	(18.2)	98	(48.3)
Not gay- or bisexual-identified MSM	7	(2.7)	4	(1.6)	45	(17.6)	156	(60.7)
<b>Number of male anal sex partners in past 12 months</b>								
1-3	6	(3.5)	2	(1.2)	33	(19.1)	109	(62.6)



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	HIV (n=502)		Syphilis (n=502)		Chlamydia (n=501)		Herpes (n=502)	
	n	(%)	n	(%)	n	(%)	n	(%)
4-8	3	(2.4)	3	(2.4)	19	(15.0)	59	(46.5)
9-12	0	(0.0)	1	(1.2)	17	(21.0)	35	(43.2)
13-15	2	(4.9)	1	(2.4)	7	(17.1)	29	(70.7)
15	2	(2.5)	4	(5.1)	12	(15.2)	49	(62.0)
<b>Engaged in commercial sex work or drug/sex exchange</b>								
No	10	(2.9)	7	(2.0)	65	(18.6)	201	(57.4)
Yes	3	(2.0)	4	(2.6)	23	(15.1)	80	(52.6)
<b>Experienced victimization</b>								
No	11	(2.6)	10	(2.3)	71	(16.6)	244	(57.0)
Yes	2	(2.7)	1	(1.4)	17	(23.0)	37	(50.0)
<b>Experienced healthcare-based discrimination</b>								
No	12	(2.6)	10	(2.2)	74	(16.2)	258	(56.2)
Yes	1	(2.3)	1	(2.3)	14	(32.6)	23	(53.5)

Note. MSM = men who have sex with men.