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Factors Associated With Online Sex Partners Among Gay, Bisexual and Other Men Who Have Sex With Men: Results From a National Survey

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Abstract

Background: Associations between online sex seeking and increased risk for sexually transmitted infections (STIs) and human immunodeficiency virus (HIV) among men who have sex with men (MSM) typically rely on convenience samples. We examined Internet and mobile app use for finding sex partners among a nationally representative sample of MSM.

Methods: We analyzed 2011 to 2017 data from the National Survey of Family Growth, a nationally representative sample of the civilian, non-institutionalized US population (15–44 years). The analytic sample was comprised of men who reported 1 or more same-sex partners in the past year. We also assessed associations between online sex-seeking and STI risk, sexual health care behaviors, and condom use.

Results: Of 13,320 male respondents, 442 (3.0%) reported sex with a man in the past year, of whom 215 (46.3%) had met a partner online. Between MSM who met partners online and those who did not, we found no differences by age, education, race/ethnicity or socioeconomic status. Men who have sex with men with online partners were more likely to identify as gay (68.4% vs 49.5%, $P = 0.0124$). They also reported more sex partners overall (M = 3.04 vs 1.60, $P < 0.0001$), and multiple insertive (46.3% vs 8.5%, $P < 0.0001$) and receptive (33.2% vs 15.4%, $P = 0.0055$) anal sex partners, in the past year. They were also more likely to receive sexual risk assessments (56.0% vs 40.4%, $P = 0.0129$), STI testing (57.4% vs 35.3%, $P = 0.0002$), and STI treatment (17.8% vs 8.7%, $P = 0.0152$) in the past year. We found no differences in condom use.

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Conclusions: Men who have sex with men who report using online sources to find sex partners are more likely than other MSM to report behaviors that increase risk for STI/HIV but are also more likely to engage in behaviors that may mitigate further transmission, such as STI testing.

Use of the Internet and mobile applications (apps) by gay, bisexual, and other men who have sex with men (collectively referred to as MSM) to meet romantic and sexual partners, and its association with sexually transmitted infection (STI) and human immunodeficiency virus (HIV) risks, has been widely reported in the literature.[1-4] Worldwide, MSM's use of virtual spaces to find sex partners has increased over time, largely due to its ease, efficiency, and relative anonymity.[2,3] In the United States, MSM reporting use of online venues, including apps, to find sex partners increased from 21% in 2008 to 44% in 2014.[4] More recently, 75% of participants (n = 7867) of the 2019 American Men's Internet Survey, an online, cross-sectional, annual survey of MSM in the United States, reported using a dating app or website in the past year and 72% reported meeting a male partner through an app.[5]

However, findings are mixed regarding those who use the Internet and apps for seeking sex partners and increased engagement in behaviors that put them at increased risk of acquiring or transmitting STI/HIV. Most studies have found that those who report online sex partner (OSP) more frequently engage in behaviors that put them at increased STI risk, such as condomless anal sex, a greater number of sex partners, and alcohol/drug use.[4] A smaller set of studies, however, have not found some of these associations, for example, not finding differences in condomless anal sex between MSM with OSP versus those without.[6,7] Of the studies that have examined the association between OSP and STI infection rates, the majority have found higher rates of bacterial STIs among MSM with OSP compared with other MSM. Results from a 2018 meta-analysis found associations among MSM with OSP and self-reported syphilis, gonorrhea, and chlamydial infections, although there was no association between OSP and HIV.[2]

Although the Internet and apps have changed patterns of dating and sex seeking among MSM, it remains unclear what influence these venues have had on increased STI/HIV acquisition and if that influence has changed over time. To date, most studies have relied on convenience samples with no comparison group or have used narrow recruitment or sampling strategies that target venues catering to MSM populations, such as community-based organizations, sexual health facilities specializing in care for MSM, or sex-seeking websites or apps that target MSM. This reduces the ability to generalize to the larger MSM population in the United States or draw firm conclusions about whether the Internet and apps facilitate STI/HIV risks. To achieve a clear answer about potential STI/HIV risks associated with having OSP, a question was added about OSP to the National Survey of Family Growth (NSFG), a nationally representative sample of 15- to 44-year-olds. In this article, we analyzed NSFG data from 2011 to 2017 to estimate the proportion of US MSM who use the Internet or apps to meet male sex partners. We further estimated associations of having OSP with sociodemographic characteristics and sex behaviors. Lastly, we examined sexual health care seeking among MSM respondents. We aimed to provide an estimate of the prevalence of Internet/dating app use to meet sex partners by MSM in the United States, describe this population, and report on associations between OSP and engagement in behaviors that either increase or mitigate STI/HIV risk.

MATERIALS AND METHODS

Analytic Sample

For this analysis, we used the 2011 to 2015 and 2015 to 2017 NSFG surveys. The NSFG is a nationally representative, multistage area probability sample of the civilian, non-institutionalized US population between the ages of 15 and 44 years from 2011 to 2015 and between 15 and 49 years from 2015 to 2017. NSFG was designed to include samples of the household population of men and women aged 15 to 44 years in 50 states and the District of Columbia. Hispanics/Latinos, African Americans, and teenagers were oversampled to produce reliable estimates for these groups. The sampling methodology for the NSFG has been described in detail elsewhere.[8] The sample size and response rates for men aged 15 to 44 years were 9321 (70%) in 2011 to 2015 and 3999 (64%) in 2015 to 2017.

We restricted the analysis to 442 men aged 15 to 44 years who reported sex with a man in the past 12 months, or those who responded, "do not know" (n = 5). The study sample was weighted to produce national estimates using methods and procedures proposed by the National Center for Health Statistics to account for the sample design.[8] These analyses use the 6-year case weight, which represents population totals at the approximate midpoint of data collection of the 2011 to 2017 fieldwork period (July 2014).

Measures

Online Sex Partners—We measured OSP by the question: "Some men meet their sexual partners by using the Internet, and some do not. Internet includes the use of social network websites, such as Facebook or MySpace, websites directed toward gay men, such as Manhunt or Gay.com, dating websites, or the use of mobile social applications, such as Foursquare or Grindr. Thinking about your male sex partners in the last 12 months, did you first meet any of them using the Internet?"

Sex Behavior—The sexual risk behavior variables (all in reference to a male partner in the past 12 months) included: number of insertive/receptive oral sex partners, number of insertive/receptive anal sex partners; condom use at last insertive/receptive oral and anal sex; serosorting behavior, defined as limiting partners to those of the same HIV status, and other HIV/STI-related risk behaviors including sex with a partner who had other partners, sex in exchange for money or drugs, and drug use (ie, illicit drug injection, crack cocaine, or methamphetamine use).

Sexual Health Care Behaviors—Sexual health care behaviors in the past 12 months included receipt of a sexual risk assessment by a doctor or other medical care provider; having tested for HIV and STI or tested for an STI in the pharynx or rectum; receiving treatment or medication from a doctor or other medical care provider for an STI; or being told by a doctor or other medical care provider that they had chlamydia, gonorrhea (both past year), genital herpes or syphilis (both lifetime).

Sociodemographic Measures—Sociodemographic variables examined included age in years (15–24 years, 25–34 years, 35–44 years), race/ethnicity (Hispanic, non-Hispanic

White, non-Hispanic Black, Other or multiple race), sexual orientation (heterosexual/straight, homosexual/gay, bisexual), marital or cohabiting status (never married, currently/formerly married), poverty level (below poverty level, above poverty level) and education (less than high school, high school graduate or General Education Development, more than high school). As with all interviewer-administered items in NSFG, marital status was defined in relation to opposite-sex partners or spouses. In the 2015 to 2017 NSFG, the response categories of the sexual identity question included "something else." Men who described their sexual orientation as "something else" (n = 8) were not shown separately but were included in overall estimates.

Data Collection

The survey includes both computer-assisted personal interviews (CAPI) and audio computer assisted self-interviewing. Questions about use of the Internet or apps to meet men, sexual risk, and health care behaviors among MSM in this analysis were collected via audio computer assisted self-interviewing. Participation in the survey was voluntary, and all responses were confidential. The NSFG received institutional review board approval from National Center for Health Statistics within the Centers for Disease Control and Prevention.

Analysis

All analyses were performed on weighted data using SAS version 9.3 (SAS Institute Inc., Cary, NC). We used SAS SURVEY procedures to calculate the percent distribution and 95% confidence intervals of demographic characteristics, sexual risk behaviors and health care behaviors among MSM overall and stratified by whether they had OSP compared with other MSM. We also conducted χ^2 analyses to examine differences in demographic characteristics, sexual risk behaviors and sexual health care behaviors among MSM by whether they had OSP. A P value of 0.05 or less was considered statistically significant.

RESULTS

Of 13,320 male respondents, 442 (3.0%) reported sex with a man in the past year, of whom 215 (46.3%) had met a partner online. Table 1 presents the demographic characteristics of MSM overall and by whether they had OSP in the past year. Overall, 33.0% of MSM were aged 15 to 24 years, 55.2% were non-Hispanic white, 61.6% had more than a high school diploma or GED, 84.8% had never married nor cohabited, and 73.1% lived above the poverty level. About 60% of MSM identified as gay, 27.8% identified as bisexual, and 12.2% identified as straight. Almost half of MSM reported an OSP in the past year (46.3%). Men who have sex with men with OSP did not differ significantly from those without by age, race/ethnicity, marital status, poverty level, or education. However, a higher percentage of men who had OSP identified as gay than those without (68.4% vs 49.5%, $P = 0.0124$).

Table 2 shows the distribution of behaviors by whether MSM had OSP in the past year. The mean number of male sexual partners (oral or anal sex) in the past year was higher among MSM who had OSP (M = 3.04; SD = 0.18) than those who had not (M = 1.60; SD = 0.11; $P = 0.0000$). A higher percentage of MSM with OSP reported 2 or more oral sex partners (65.1% vs 28.0%, $P < 0.0001$), receptive anal sex partners (33.2% and 15.4%, $P = 0.0055$),

and insertive anal sex partners (46.3% and 8.5%, $P < 0.0001$) in the past year than those without.

Regarding sexual risk behaviors, no differences were seen in condom use at last receptive or insertive anal sex by whether MSM had OSP or not. However, serosorting, or limiting partners to those with the same HIV status, was more prevalent among MSM with OSP (88.3% vs 70.7%; $P = 0.0001$). A higher percentage of MSM with OSP reported sex with a male partner who had other sex partners (72.9% vs 49.6%, $P = 0.0002$) or sex in exchange for money or drugs (10.5% vs 2.8%, $P < 0.0001$) than those who had not.

A higher percentage of MSM with OSP reported sexual health care behaviors in the past year than MSM without OSP (Table 3), including receiving a sexual risk assessment from a doctor or other medical care provider (56.0% vs 40.4%; $P = 0.0129$), and testing for HIV (48.4% vs 31.3%; $P = 0.0134$) or other STI (57.4% vs 35.3%; $P = 0.0002$). Also, higher percentages of MSM with OSP reported treatment for any STI (17.8% vs 8.7%; $P = 0.0152$) or were told by a doctor or other medical care provider that they had chlamydia or gonorrhea in the past year (13.2% vs 2.3%; $P < 0.0001$), genital herpes (10.0% vs 2.7%; $P = 0.0020$), or syphilis (9.8% vs 2.6%; $P = 0.0225$) in their lifetime. The percentage of MSM who reported extragenital STI screening (pharynx or rectum) in the past year was higher for those with OSP than those without, but the difference was not statistically significant (63.5% vs 49.2; $P = 0.2321$).

DISCUSSION

Almost half of MSM in this sample reported OSP in the past year. We did not find sociodemographic differences among MSM by OSP except that those who met partners online were more likely to identify as gay. When considering behaviors associated with increased risk of STI/HIV, MSM with OSP reported more partners and a higher percentage reported exchanging sex for money or drugs and having sex with partners who had other partners. However, having OSP was not correlated with more drug use or less condom use. Behaviors typically considered to be protective from STI/HIV were more likely to be reported by MSM with OSP, including serosorting and higher use of sexual health services. These men, although more likely to report having had an STI, were also more likely to indicate getting tested or screened for an STI.

The considerable proportion of MSM reporting an OSP may reflect the increasing availability and accessibility of these sites over the past 2 decades, effectively the normalization of online dating and sex seeking. Men who have sex with men with OSP were more likely to identify as gay, which may suggest that using online sites and dating apps are a common or accepted activity among MSM who disclose their sexual identity. Although MSM with OSP reported more sex partners, in this study, we were not able to determine if use of online websites and apps was the reason for having more partners, or if these men would have more partners regardless of these technologies. Because using technology may be correlated with the number of sex partners, it is difficult to discern if using the Internet or dating apps to meet sex partners is riskier than any other venue. Because of survey question limitations, we were only able to measure if any sex partner in the past year was met online,

rather than ascertain the number of partners met online or frequency of sex seeking behavior. Additionally, because all data are reported from the perspective of the respondent, it is not possible to infer information about sexual networks. And although MSM with OSP reported a greater likelihood of having sex with a partner who had other sex partners, this may be a function of the many online websites and apps whose goal is to facilitate the meeting of many men regardless of relationship or partnership status. Moreover, an OSP does not necessarily mean risker sex. As we found in this study, there were no differences in condom or drug use by whether MSM had OSP. A higher percentage of MSM with OSP reported exchanging money or drugs for sex, but the total number of men reporting this, although significant, was low (n = 24).

Men who have sex with men with OSP were more likely to report engaging in protective behaviors, such as serosorting and receiving sexual health services. Identifying partners with the same HIV status may be easier online because many sites allow users to disclose their status or indicate status preference in partners when establishing a profile. It should be noted that although more men, regardless of OSP, reported condom use at last anal sex (insertive or receptive), there was still a sizable proportion of men (38.3%–45.3%) who did not use a condom. A proportion of condom nonuse among MSM in this sample may be because of use of preexposure prophylaxis (PrEP) to prevent HIV exposure; however, we were unable to determine use of PrEP by MSM in NSFG.

Engagement in sexual health care behaviors could be influenced by many factors, including symptoms of or exposure to an STI or exposure to STI/HIV health messages, which are common online and in apps. If men with OSP are more likely to seek sexual health care, they are more likely to receive STI/HV testing, which may result in higher rates of STIs. Many of the men in this sample did not receive STI or HIV testing in the past 12 months and a low proportion of men reported STI testing in the throat or rectum, as recommended by the Centers for Disease Control and Prevention,[9] despite high numbers of oral sex partners, suggesting opportunities to increase receipt of sexual health services.

Results from this study confirm the findings from many previous, less rigorous studies that men who use online venues including dating apps engage in behaviors that may increase their risk of acquiring an STI but are also more likely to engage in behaviors that may protect against STI/HIV.[1-3] A strength of this study is that the estimates are relatively comprehensive, incorporating MSM who are not encountered in venue-based assessments or via online surveys in which people respond to a general solicitation. Such respondents might have different risk and vulnerability profiles and provided a basis of comparison absent in many studies. However, the cross-sectional design of the NSFG prevents us from making causal inferences regarding Internet/mobile app use and STI risk-related behaviors among MSM. Nor does NSFG collect STI biomarkers, so we were not able to directly examine the relationship between Internet use and STI acquisition. Other limitations include recall biases, which could also affect estimates, and our inability to control for some variables that could affect sexual risk, such as alcohol and drug use during sex or use of PREP, or generalize findings to men older than 44 years.

These data are some of the first to explore OSP among a probability sample of MSM and offer a baseline for understanding OSP app use in this population. Future research describing sexual behaviors among MSM who meet sex partners online will help us understand the role of the Internet, dating apps, and other future emerging technologies that may increase STI/HIV risk. Future research is also needed to capture trends in online sex seeking over time to clarify if, and when, online venues impose an increased risk for STI/HIV and when that risk may be mitigated. Lastly, more research on individual level motivation for using online venues for sex seeking, and a better understanding of men's awareness and mitigation of risks associated with online/dating app use may help inform STI/HIV prevention efforts.

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TABLE 1.

Demographic Characteristics of MSM Aged 15–44 Years, by Whether They Met an OSP in Last 12 Months, 2011–2017

	Total No. Sexually Active MSM		Had OSP		No OSP		
	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	*P*
Unweighted sample size	442		215		227		
Population total estimate	1,802,000		834,000	100.0	968,000	100.0	
Total *		100.0		46.3 (40.5–52.2)	100.0	53.7 (47.8–59.5)	0.2177
Age, y							
15–24	158	33.0 (26.0–40.1)	72	34.2 (24.9–43.4)	86	32.1 (23.2–40.9)	0.9076
25–34	92	23.3 (15.7–30.9)	48	23.6 (14.4–32.8)	44	23.0 (13.5–32.6)	
35–44	192	43.7 (35.3–52.0)	95	42.3 (32.9–51.6)	97	44.9 (34.1–55.6)	
Race/ethnicity							
Hispanic	114	25.6 (17.7–33.5)	45	23.1 (14.4–31.8)	69	27.8 (17.5–38.1)	0.7345
Non-Hispanic White	220	55.2 (47.8–62.6)	114	56.1 (46.8–65.3)	106	54.5 (45.0–63.9)	
Non-Hispanic Black	65	9.8 (6.4–13.2)	32	9.9 (5.3–14.5)	33	9.6 (4.7–14.6)	
Other/multiple	43	9.4 (6.0–12.8)	24	10.9 (5.2–16.6)	19	8.1 (4.2–12.0)	
Sexual identity							
Heterosexual or straight	63	12.2 (7.8–16.5)	19	6.9 (3.1–10.7)	44	16.7 (9.4–24.1)	0.0124
Homosexual or gay	253	58.3 (51.1–65.4)	142	68.4 (59.9–76.8)	111	49.5 (39.4–59.7)	
Bisexual	117	27.8 (21.4–34.2)	50	23.1 (14.6–31.6)	67	31.8 (22.7–40.9)	
Marital or cohabiting status †							
Never married	386	84.8 (79.1–90.5)	190	85.5 (78.2–92.7)	196	84.2 (77.1–91.4)	0.7860
Currently/formerly married or cohabiting	56	15.2 (9.5–20.9)	25	14.5 (7.3–21.8)	31	15.8 (8.6–22.9)	
Poverty level ‡							
Below poverty level	133	26.9 (21.3–32.4)	59	25.6 (17.5–33.7)	74	28.0 (20.2–35.8)	0.1794
Above poverty level	309	73.1 (67.6–78.7)	156	74.4 (66.3–82.5)	153	72.0 (64.2–79.7)	
Highest level of education							
Less than high school	63	10.3 (7.1–13.5)	20	9.2 (4.4–14.0)	43	11.3 (7.2–15.4)	0.0702
High school graduate or GED	121	28.1 (21.6–34.7)	54	22.5 (15.7–29.4)	67	32.9 (23.3–42.6)	
More than high school	258	61.6 (54.7–68.5)	141	68.3 (60.1–76.5)	117	55.8 (46.0–65.5)	

Note: GED, general equivalency diploma. Percentages may not add to 100% due to rounding. *P* values are from Rao-Scott χ^2 tests.

[*] Includes those who reported their sexual identity as "something else," "do not know," or "refused," not shown separately.

[†] Marital or cohabiting status refers to relationships with opposite-sex sex partners.

[‡] The Medicaid expansion cutoff was used for this analysis.

95% CI, 95% confidence interval.

TABLE 2.

Sexual Behaviors in the Past 12 Months Among MSM Aged 15–44 Years, by Whether They Reported OSP, 2011–2017

	Total No. Sexually Active MSM		Had OSP		No OSP		*P*
Risk behaviors (past year)	Mean	SD	Mean	SD	Mean	SD	
Mean number of male partners (SD)	2.28	0.11	3.04	0.18	1.60	0.11	<0.0001
No. male partners, by type of sex	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	
No. male oral sex partners *							
None	20	4.2 (1.4, 6.9)	5	3.0 (0.01, 5.8)	15	5.2 (1.6, 8.8)	<0.0001
1	219	50.6 (43.4, 57.8)	70	31.9 (24.4, 39.4)	149	66.7 (56.0, 77.5)	
2 or more	203	45.2 (37.8, 52.6)	140	65.1 (57.3, 73.0)	63	28.0 (17.6, 38.5)	
No. male receptive anal sex partners							
None	171	40.7 (33.8, 47.6)	65	30.1 (22.0, 38.3)	106	49.8 (40.4, 59.3)	0.0055
1	146	35.7 (29.4, 41.9)	64	36.7 (27.8, 45.6)	82	34.8 (25.8, 43.7)	
2 or more	125	23.6 (18.4, 28.9)	86	33.2 (25.5, 40.9)	39	15.4 (6.7, 24.1)	
No. male insertive anal sex partners							
None	154	32.8 (26.3, 39.3)	55	22.8 (16.4, 29.3)	99	41.4 (31.1, 51.7)	<0.0001
1	164	41.2 (34.6, 47.8)	62	30.9 (22.2, 39.6)	102	50.1 (40.0, 60.2)	
2 or more	123	26.0 (20.8, 31.1)	97	46.3 (37.4, 55.1)	26	8.5 (4.9, 12.2)	
Condom use and serosorting behaviors							
Condom use during last receptive anal sex with a male partner							
No	124	45.1 (37.7, 52.4)	69	45.3 (34.8, 55.8)	55	44.9 (31.1, 58.6)	0.9666
Yes	146	54.9 (47.6, 62.3)	81	54.7 (44.2, 65.2)	65	55.1 (41.4, 68.9)	
Condom use during last insertive anal sex with a male partner							
No	119	38.7 (30.8, 46.5)	62	39.0 (29.0, 49.0)	57	38.3 (27.4, 49.2)	0.9201
Yes	168	61.3 (53.4, 69.2)	97	61.0 (51.0, 71.0)	71	61.7 (50.8, 72.6)	
Risk behaviors (past 12 mo)	n	%, 95% CI	n	%, 95% CI	n	95% CI	
Serosorted according to partner's HIV status †							
No	109	21.0 (16.2, 25.9)	32	11.7 (7.1, 16.4)	77	29.3 (21.3, 37.3)	0.0001
Yes	325	79.0 (74.1, 83.8)	180	88.3 (83.6, 92.9)	145	70.7 (62.7, 78.7)	
Other HIV- and STI-related risk factors (past 12 mo)							

	Total No. Sexually Active MSM		Had OSP		No OSP		*P*
Sex with a nonmonogamous male partner[‡]							
No	170	39.7 (32.5, 46.9)	58	27.1 (18.9, 35.3)	112	50.4 (40.3, 60.6)	0.0002
Yes	248	60.3 (53.1, 67.5)	145	72.9 (64.7, 81.1)	103	49.6 (39.4, 59.7)	
Sex with a male partner in exchange for money or drugs							
No	408	93.6 (90.6, 96.7)	190	89.5 (84.1, 94.9)	218	97.2 (94.5, 99.8)	0.0055
Yes	32	6.4 (3.3, 9.4)	24	10.5 (5.1, 15.9)	8	2.8 (0.2, 5.5)	
HIV and STI-risk related drug use[§]							
No	407	94.2 (91.7, 86.6)	191	92.5 (88.8, 96.1)	216	95.6 (92.3, 99.0)	0.2218
Yes	33	5.8 (3.4, 8.3)	22	7.5 (3.9, 11.2)	11	4.3 (1.0, 7.7)	

Percentages may not add to 100% due to rounding. *P*-values are from t-tests for means and χ^2 tests for categorical variables.

[*] Includes giving or receiving oral sex from a male partner.

[†] Respondents were asked, "Some men only have sex with other males that they know have the same HIV status as they do, and some do not. Thinking about your male sex partners in the last 12 months, do you usually limit your male partners to those of the same HIV status to prevent getting or transmitting HIV?"

[‡] Respondents were asked, "In the last 12 months, how many of your male partners were having sex with other people around the same time?"

[§] Includes illicit-drug injection, crack cocaine use or crystal methamphetamine use.

TABLE 3.

Health Care Behaviors in Past 12 Months Among MSM Aged 15–44 Years, by Whether They Had OSP, 2011–2017

	Total No. Sexually Active MSM		Had OSP		No OSP		*P*
Health care behaviors (past 12 mo)	**n**	**% (95% CI)**	**n**	**% (95% CI)**	**n**	**% (95% CI)**	
Sexual risk assessment by a doctor or other health provider*							
No	218	52.3 (46.4–58.3)	95	44.0 (35.8–52.2)	123	59.6 (50.9–68.2)	0.0129
Yes	223	47.7 (41.7–53.6)	120	56.0 (47.8–64.2)	103	40.4 (31.8–49.1)	
Tested for HIV							
No	258	60.8 (55.2–66.4)	114	51.6 (42.6–60.7)	144	68.7 (60.3–77.1)	0.0134
Yes	183	39.2 (33.6–44.8)	101	48.4 (39.4–57.4)	82	31.3 (22.9–39.7)	
Tested for STI†							
No	233	54.4 (47.2–61.7)	92	42.6 (34.8–50.4)	141	64.7 (54.7–74.6)	0.0002
Yes	209	45.6 (38.3–52.8)	123	57.4 (49.6–65.2)	86	35.3 (25.3–45.3)	
Tested for STI in pharynx or rectum‡							
No	86	42.4 (34.5–50.2)	44	36.4 (25.7–47.2)	42	50.8 (33.0–69.7)	0.2321
Yes	122	57.6 (49.8–65.5)	79	63.5 (52.8–74.3)	43	49.2 (31.3–67.0)	
Treated for STI†							
No	376	87.1 (83.3–90.8)	173	82.2 (76.1–88.4)	203	91.3 (87.1–95.5)	0.0152
Yes	65	12.9 (9.2–16.6)	42	17.8 (11.6–23.9)	23	8.7 (4.5–12.9)	
Told by a doctor or other medical care provider he had:							
Chlamydia or gonorrhea (past year)							
No	405	92.7 (89.5–95.7)	187	86.9 (80.8–92.8)	218	97.7 (95.6–99.7)	<0.0001
Yes	36	7.4 (4.3–10.5)	28	13.2 (7.2–19.2)	8	2.3 (0.3–4.4)	
Genital herpes (lifetime)							
No	417	93.8 (90.8–97.0)	200	89.9 (84.2–95.8)	217	97.3 (95.2–99.3)	0.0020
Yes	25	6.1 (3.0–9.2)	15	10.0 (4.2–15.8)	10	2.7 (0.7–4.8)	
Syphilis (lifetime)							
No	415	94.1 (91.3–98.9)	194	90.2 (85.2–95.3)	221	97.4 (94.5–100.0)	0.0225
Yes	27	5.9 (3.1–8.7)	21	9.8 (4.7–14.8)	6	2.6 (0.00–5.5)	

[*] Includes any “yes” response to 4 questions asking whether in the past 12 months, a doctor or other health care provider asked about their sexual orientation or the sex of their sexual partners, their number of sex partners, their use of condoms and the types of sex he has, whether vaginal, oral or anal.

[†] Question specifies testing or treatment for a “sexually transmitted disease, like gonorrhea, chlamydia, herpes or syphilis.” STI treatment was asked only of those who reported STI testing in the past year.

[‡] Only asked of those who reported STI testing in the past year.