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HIV testing practices and the potential role of HIV self-testing among men who have sex with men in Mexico

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Abstract

Objective—To characterize HIV testing practices among men who have sex with men (MSM) in Mexico and intention to use HIV self-testing.

Methods—In 2012, members of one of the largest social/sexual networking websites for MSM in Latin America completed an anonymous online survey. This analysis was restricted to HIV-uninfected MSM residing in Mexico. Multivariable logistic regression models were fit to assess factors associated with HIV testing and intention to use an HIV self-test.

Results—Of 4,537 respondents, 70.9% reported ever having an HIV test, of whom 75.5% reported testing at least yearly. The majority (94.3%) indicated that they would use an HIV home self-test if it were available. Participants identifying as bisexual less often reported ever HIV testing compared to those identifying as gay/homosexual (aOR=0.52, 95%CI: 0.44-0.62). Having a physical exam in the past year was associated with increased ever HIV testing (aOR=4.35, 95%CI: 3.73-5.07), but associated with decreased interest in HIV self-testing (aOR=0.66, 95%CI: 0.48-0.89).

Conclusions—High intention to use HIV home self-testing supports the use of this method as an acceptable alternative to clinic- or hospital-based HIV testing.

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Keywords

men who have sex with men; HIV testing; Mexico; HIV self-test

Introduction

HIV prevalence in the general population of reproductive age adults in Mexico has been estimated to be approximately 0.15%, and has been reported to be stable since 2000.[1] However, the HIV epidemic in Mexico is concentrated among men who have sex with men (MSM), and MSM in Mexico have been estimated to have more than 100 times the odds of HIV compared to men in the general population.[2] Recent estimates of HIV prevalence in Mexico demonstrate an HIV prevalence of nearly 20% among MSM nationwide, with significant regional variation.[3,4] These estimates are likely underestimates, as other literature suggests that only 32% of MSM living with HIV are aware of this status.[3]

Early initiation of antiretroviral therapy (ART) (treatment as prevention, or TasP) has been shown to significantly decrease HIV transmission to HIV-uninfected partners and reduce adverse outcomes in individuals receiving early ART.[5-9] However, early HIV testing is a cornerstone of TasP and "test-and-treat" HIV prevention interventions, and improving HIV outcomes.[10-12] In Mexico City, 61% of patients newly diagnosed with HIV were diagnosed at late stage of their disease (defined as CD4 count <200 cells/mm^3).[13] In a nationwide probabilistic sample of the general population aged 15-49, 19% of participants testing negative and 50% of participants testing positive reported testing for HIV prior to participating in the study.[1] Among MSM in Tijuana, while nearly two-thirds of participants reported HIV testing at least once in their lifetime, nearly 90% of HIV-infected individuals were previously unaware of their serostatus.[4] A 2015 mathematical model suggested that increasing HIV testing to cover 80% of undiagnosed MSM in Mexico would result in a reduction of 70% in new infections in 20 years.[14] Although Mexico introduced commitment to universal access to ART in 2001 and rapid scale-up thereafter[3,13,15], significant gaps in HIV testing coverage remain, limiting the ability of TasP interventions to have the greatest effectiveness in reducing HIV incidence, particularly among key populations who bear the brunt of the HIV epidemic.

World Health Organization (WHO) guidelines on HIV testing services stipulate that individuals with ongoing risk for HIV, including key populations such as MSM, should be tested for HIV at least annually.[16,17] Considerable attention has been given to psychosocial factors such as depression and stigma and their role in HIV testing, but conflicting evidence exists.[18] Stigma, for example, can be internalized and manifest as depression[19,20], which may in turn be related to uptake of HIV prevention services.[21] In Mexico, *machismo* as a cultural phenomenon may contribute to stigma and discrimination experienced by MSM. *Machismo* culture imparts strict gender roles on men, reflecting values placed on masculinity and strong sexual urges for penetrative sex.[22] In addition to *machismo*, homophobia, which remains common in Mexico, contributes to stigma and discrimination experienced by Mexican MSM, and may adversely affect their access to HIV prevention services such as testing.[23] Furthermore, there is some evidence that repeat HIV testing is

associated with increased condomless anal sex.[24] Individuals engaging in more frequent condomless anal sex may benefit the most from frequent HIV testing.

HIV self-testing is a newer HIV testing strategy in which individuals collect saliva or blood spot samples and either use a rapid home test or send samples to a laboratory.[25] HIV self-testing may help overcome some barriers to HIV testing, such as stigma and discrimination[21], by allowing individuals to test in the privacy of their own homes or location of choice.[26] HIV self-testing has been shown to be acceptable among MSM in other settings,[25,27,28] but to date this strategy has not been well studied among MSM in Mexico and HIV self-testing is not currently readily available in Mexico. Given gaps in HIV testing, HIV self-testing may be a potential option for HIV testing for MSM in Mexico who otherwise face barriers to HIV testing.

Improving understanding of factors associated with HIV testing will help identify gaps in HIV testing. Further, assessing whether self-testing might be an acceptable HIV testing strategy may facilitate development of tailored, appropriate interventions to increase testing uptake in this population. We conducted a nationwide online survey of members of a popular social and sexual networking website for MSM to assess HIV testing practices as well as intention to use HIV self-testing. Here, we assess factors associated with ever HIV testing, yearly HIV testing practices, and being willing to use a home HIV self-test among MSM in Mexico.

Methods

Participants and Procedures

In 2012, an anonymous survey was conducted among MSM living in Spanish- and Portuguese-speaking countries in Latin America and the Caribbean who were members of a social and sexual networking website. To be eligible for the survey, participants had to be 18 years of age or older. There were no eligibility criteria based on sexual activity. Complete methods for the survey have been previously reported.[29,30] The present analysis was restricted to individuals who reported currently residing in Mexico, who reported being born male and having a current male gender identity, and who self-reported an HIV negative or unknown serostatus (regardless of HIV testing history). Study procedures were approved by the Institutional Review Board at The Fenway Institute, Fenway Health, Boston, MA.

Measures

Sociodemographics and healthcare use—Participants were asked to report their age, whether their current place of residence was urban or rural (assessed via self report and coded as urban versus rural), what country they were born in (coded as Mexico versus outside of Mexico), their sexual orientation (coded as gay/homosexual, bisexual, heterosexual/straight, or unsure/questioning), their highest level of educational attainment (coded as university or above versus below), income (assessed via self-report by asking people what category best described their income, including no income, low income, middle income, or high income), whether they were currently in a relationship (coded as in a

relationship versus not), and if they had had a physical exam with a healthcare provider in the previous 12 months.

Sexual behaviors—Participants were asked about their condom use patterns with female, male, and transgender partners. Participants who reported any anal intercourse (insertive or receptive) with a male or transgender partner without a condom in the previous 3 months were coded as having had condomless anal sex. Participants who reported condom use at every sexual encounter or those who reported no sexual activity in the previous 3 months were coded as not having had condomless anal sex.

Psychosocial—Depressive symptoms were assessed using the 10-item Center for Epidemiologic Studies Depression Scale (CES-D 10).[31] Problematic alcohol use was assessed with the 4-item CAGE questionnaire.[32,33] Self-acceptance was assessed by asking participants to rate on a scale of 1 to 10 how much they agreed with the following statement: "Self-acceptance is how much a person is comfortable with being who he/she is. On a scale of 1 to 10, with 1 being no acceptance and 10 being complete acceptance, how much would you say you accept yourself?" Experiences of stigma was assessed by asking participants how many times they had been made fun of or called names for being homosexual or effeminate as they were growing up (childhood experiences of stigma) and as an adult (adult experienced stigma), coded as any experiences of stigma versus none.

HIV, STI, and home self-testing—HIV testing history was assessed by asking participants if they had ever been tested for HIV infection. Participants were also asked about their general HIV testing frequency, which was categorized as "yearly or more" versus less than yearly. Sexually transmitted infection (STI) testing was assessed by asking participants if they had been tested for sexually transmitted infections or infections other than HIV in the previous 12 months. Intention to use HIV self-testing was assessed by asking participants, "If a home test for HIV was available, would you use it?"

Statistical Methods

Descriptive statistics were calculated with proportions for categorical variables and medians and interquartile ranges (IQR) for continuous variables by HIV testing history (ever versus never). To assess factors associated with 1) ever HIV testing, 2) testing for HIV at least yearly, and 3) interest in using an HIV self-test, multivariable logistic regression models were built for each outcome, including sociodemographic, sexual behavior, and psychosocial variables as independent variables. Due to the small number of participants identifying as heterosexual or unsure, these models were restricted to participants who reported a bisexual or gay/homosexual sexual orientation. Due to the large sample size of the study, all candidate independent variables were retained in the multivariable model. For models assessing factors associated with intention to use an HIV self-test, sociodemographic, sexual behavior, and psychosocial variables, as well as a history of HIV and STI testing were included as independent variables. A complete case analysis was employed for all analyses. All analyses were conducted in Stata 13.1 (StataCorp, College Station, TX).

Results

Of 59,781 emails opened by participants in Mexico, 13,910 (23.3%) clicked through to the survey and 9,668 (69.5%) started the survey. Of these, 4,537 (46.9%) participants completed the entire survey, of whom 3,217 (70.9%) reported a history of ever HIV testing and 1,903 (41.9%) reported testing for STIs in the previous year. Table 1 lists descriptive characteristics for the study sample by history of HIV testing. Of individuals who had had an HIV test, 2,428 (75.5%) reported that they tested for HIV yearly or more often (53.5% of all participants). Most participants (4,280, 94.3%) indicated that they would use a self-administered HIV test if it were available. Participants who reported a history of HIV testing tended to be older (median age 30 versus 25 years), more frequently identified as gay or homosexual (81.7% versus 69.2%), more frequently had had a physical exam in the previous year (61.2% versus 24.9%), and more likely to have tested for an STI in the last 12 months (54.8% versus 9.1%).

Table 1 presents results of multivariable models assessing factors associated with a history of HIV testing. In a multivariable model, factors associated with increased odds of HIV testing included older age (adjusted odds ratio [aOR] 1.06 per 1-year increase in age, 95% confidence interval [CI] 1.05 to 1.07), living in an urban area (versus rural area, aOR 1.73, 95% CI 1.20 to 2.49), currently being in a relationship (aOR 1.22, 95% CI 1.05 to 1.42), university education or above (versus less than university education, aOR 1.67, 95% CI 1.25 to 2.25), having had a physical exam in the previous year (aOR 4.35, 95% CI 3.73 to 5.07), evidence of problematic alcohol use (aOR 1.27, 95% CI 1.04 to 1.54), higher self-acceptance scores (aOR 1.05 per 1-unit increase in self-acceptance, 95% CI 1.00 to 1.11), and having experienced stigma as a child (aOR 1.23, 95% CI 1.02 to 1.47). Factors associated with decreased odds of HIV testing included identifying as bisexual (aOR 0.52, 95% CI 0.44 to 0.62) compared to identifying as gay/bisexual.

Table 2 presents results of multivariable models assessing factors associated with yearly or more frequent testing practices. Similar factors were associated with HIV testing at least yearly, although in general these effects were attenuated as compared to the results from model assessing ever HIV testing (Table 2). However, participants reporting condomless anal sex in the past 3 months had reduced odds of reporting at least yearly HIV testing practices (aOR 0.81, 95% CI 0.71 to 0.92), and there was no association between experiencing stigma as a child as at least yearly HIV testing practices.

Table 3 lists results multivariable models assessing factors associated with interest in using a self-administered HIV test. Currently being in a relationship was associated with increased odds of interest in using an HIV home self-test (aOR 1.35, 95% CI 1.03 to 1.76). Having had a physical exam in the last year was significantly associated with decreased odds of interest in using an HIV home self-test (aOR 0.66, 95% CI 0.48 to 0.89). There were no significant differences in interest in using an HIV self-test by sexual orientation.

Discussion

In this study of HIV-uninfected MSM in Mexico, we noted a relatively high proportion of individuals who reported prior testing for HIV, but only half of the sample reported regularly testing for HIV per WHO guidelines for sexually active MSM. Despite suboptimal HIV testing practices, interest in HIV self-testing was very high, suggesting that this may be an important alternative HIV testing strategy for MSM who test less frequently or who have never tested. Interestingly, while participants who identified as bisexual were less likely to report ever or regular HIV testing, there were no differences in HIV self-testing intention to use by sexual orientation. Furthermore, MSM who reported having a physical exam in the last year were both more likely to have tested for HIV and also less likely to report being interested in a self-test. HIV self-testing may therefore be an acceptable strategy to reach subgroups of MSM who face barriers accessing healthcare that prevent them from testing for HIV.

Our estimate of HIV testing frequency was slightly higher than has previously been reported in Tijuana[4], which may reflect geographic differences as the current study recruited participants from across the country, and possibly represents higher socioeconomic status MSM, since most users of the website pay a monthly membership fee. Identification of the subgroups of MSM that report suboptimal HIV testing will allow for more precise public health efforts to increase HIV testing coverage, identifying incident cases acutely or during earlier stages of disease and, jointly, curbing HIV transmission.

Our results highlighted that individuals who did not identify as gay or homosexual (including those who identified as bisexual or heterosexual/straight) were less likely to have previously had an HIV test compared to respondents who did identify as gay or homosexual. Previous work has demonstrated that behaviorally bisexual MSM have a differential HIV risk profile compared to MSM who only have sex with men in the United States.[34,35] These differences underscore the fact that MSM are a heterogeneous group and that HIV prevention campaigns may need to be tailored for differentially-identified MSM. Bisexual or heterosexually-identified MSM may not be responsive to public health messaging developed for gay-identified MSM, and may be less willing to participate in these activities. Notably, there were no differences by sexual orientation in interest in using an HIV home self-test, suggesting that this method may provide an opportunity to increase testing among individuals who are less comfortable testing in other venues.

In this study, recent condomless anal intercourse was not associated with HIV testing. Previous work has demonstrated conflicting results regarding the relationship between HIV/STI testing and HIV transmission behavior.[36-38] Evidence from Tijuana previously showed that MSM who had not recently engaged in condomless anal sex had more frequently tested for HIV.[38] Individuals who engage in condomless anal sex are likely at higher risk of acquiring HIV and other STIs, may be at risk of worse outcomes if infections are not identified and treated quickly, and may also be more likely to transmit infections. Given the higher risk of HIV and STI transmission, it is important that individuals partaking in higher risk sexual behaviors, such as condomless anal sex, be tested for both HIV and STIs regularly, and prioritized for HIV and STI testing initiatives.

Having experienced stigma related to sexual orientation as a child was associated with increased HIV testing, and having experienced stigma as an adult was not associated with HIV testing. Individuals who experienced stigma as children may have increased perception of HIV risk due to public health messaging around HIV, which could lead to increased HIV testing. These questions only asked about one dimension of experiences of stigma (being made fun of or called names), however, experienced stigma is only a single dimension of the complex phenomenon of stigma.[39] It is possible that other dimensions of stigma may have different associations with HIV testing behavior, including in adulthood. For example, perceived and experienced stigma may increase following encounters with healthcare providers, which may impact willingness to engage in repeat encounters with healthcare providers.[21] Future work should include more comprehensive measures of stigma to better understand the relationship between stigma and HIV testing behavior.

The vast majority of participants in this study indicated that they would use a home-based HIV self-test if it were available, which is in line with previous literature indicating high intention to use HIV self-testing.[25] Individuals who had had a physical exam in the previous year less frequently indicated that they would use a self-test, which may reflect increased access to HIV testing and less need for a home test. Higher self-acceptance of same-sex sexual behavior was also not significantly associated with decreased odds of interest in a self-test. Individuals with higher self-acceptance may be more comfortable seeking out traditional HIV testing in clinical settings; in the model assessing factors associated with HIV testing, higher self-acceptance was associated with increased HIV testing. These results indicate that HIV self-testing may be an acceptable alternative for individuals who have barriers to seeking out HIV testing in clinics or other physical venues, and suggests that the introduction of HIV self-testing may increase HIV testing rates. Additionally, income was not significantly associated with either HIV testing or willingness to use an in-home self-testing kit for HIV. However, future work will need to evaluate the role of cost to determine accessibility of self-testing kits to maximize their potential benefits and to assess systems for linkage to care for individuals who test positive.[40]

The results of this survey must be considered in the context of some limitations. This was an online cross-sectional survey, and as a convenience sample its results are not generalizable to all MSM in Mexico. Given that we did not collect unique identifiers (including IP addresses), we did not have any further information on where within Mexico individuals lived beyond whether their residence was in a rural or urban setting. Individuals living in urban settings more frequently indicated they had had an HIV test, suggesting there may be important geographic differences that are masked by this analysis. We did not collect information on health insurance status as part of this study. Although income was not associated with HIV testing, it is possible that other socioeconomic characteristics such as health insurance are important determinants of HIV testing. We only asked about ever HIV testing and general HIV testing practices, and did not ask when the last HIV test was performed. Regular HIV testing for at-risk individuals is important to identify new HIV infection in a timely fashion. Rates of recent HIV testing are likely lower than ever testing, but are unknown for this sample. Future work should consider factors associated with recent and regular HIV testing in this population.

Our results suggest a high overall proportion of HIV-uninfected individuals with a history of HIV testing, but suboptimal regular HIV testing practices. Regular HIV testing is an important component of early identification of HIV infections and linkage to care to maximize the benefits of early initiation of ART. In this study, a majority of participants indicated that they would use home-based HIV self-testing kits, suggesting a potential option for individuals who may not seek out HIV testing through other services. Importantly, HIV self-testing was acceptable across all subgroups of MSM irrespective of reported sexual orientation, including bisexually-identifying MSM who may not identify with the gay population, suggesting that HIV self-testing may be an acceptable alternative to increase HIV testing in groups who historically have had disparities in HIV testing.

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Table 1

Factors associated with ever having had an HIV test among men who have sex with men, Mexico, 2012

	HIV Tested (N=3,217)	Never HIV Tested (N=1,320)	Multivariable Model	
			aOR (95% CI)	*P*
Age (years, median, IQR)	30 (25 to 37)	25 (22 to 30)	1.06 (1.05 to 1.07)	<0.001
Urban-dwelling (versus rural)	3,124 (97.1%)	1,249 (94.6%)	1.73 (1.20 to 2.49)	0.003
Born in Mexico (versus outside of Mexico)	3,121 (97.0%)	1,298 (98.3%)	0.83 (0.48 to 1.42)	0.49
Sexual Orientation				
Gay/homosexual	2,628 (81.7%)	913 (69.2%)	1.00 (Reference)	
Bisexual	539 (16.8%)	341 (25.8%)	0.52 (0.44 to 0.62)	<0.001
Heterosexual/straight	7 (0.2%)	8 (0.6%)	NA	NA
Unsure/questioning	43 (1.3%)	58 (4.4%)	NA	NA
In a relationship	1,885 (58.6%)	680 (51.5%)	1.22 (1.05 to 1.42)	0.009
University education (versus below)	3,078 (95.7%)	1,205 (91.3%)	1.67 (1.25 to 2.25)	0.001
Income				
No income	187 (5.8%)	155 (11.7%)	1.00 (Reference)	
Low income	178 (5.5%)	97 (7.4%)	1.08 (0.75 to 1.55)	0.69
Middle income	2,546 (79.1%)	962 (72.9%)	1.10 (0.84 to 1.42)	0.49
High income	306 (9.5%)	106 (8.0%)	0.93 (0.65 to 1.33)	0.69
Had physical exam in past year	1,970 (61.2%)	329 (24.9%)	4.35 (3.73 to 5.07)	<0.001
Any condomless anal sex in last 3 months	1,674 (52.0%)	751 (56.9%)	0.90 (0.77 to 1.04)	0.15
Depression	728 (22.6%)	335 (25.4%)	1.12 (0.94 to 1.34)	0.21
Alcohol dependency	554 (17.2%)	209 (15.8%)	1.27 (1.04 to 1.54)	0.02
Self acceptance (median, IQR)	9 (8 to 10)	9 (8 to 10)	1.05 (1.00 to 1.11)	0.051
Experienced stigma as a child	2,435 (75.7%)	975 (73.9%)	1.23 (1.02 to 1.47)	0.03
Experienced stigma as an adult	1,885 (58.6%)	788 (59.6%)	1.03 (0.87 to 1.20)	0.75

Abbreviations: IQR: interquartile range; aOR: adjusted odds ratio; CI: confidence interval; P: P-value; NA: not applicable

Table 2

Factors associated with yearly or more frequent HIV testing among men who have sex with men, Mexico, 2012

	Test at Least Yearly (N=2,428)	Test Less Than Yearly (N=2,109)	Multivariable Model	
			aOR (95% CI)	*P*
Age (years, median, IQR)	29 (24 to 27)	27 (23 to 33)	1.01 (1.01 to 1.02)	0.001
Urban-dwelling (versus rural)	2,352 (96.9%)	2,021 (95.8%)	1.20 (0.84 to 1.71)	0.32
Born in Mexico (versus outside of Mexico)	2,357 (97.1%)	2,062 (97.8%)	0.96 (0.63 to 1.47)	0.86
Sexual Orientation				<0.001
Gay/homosexual	1,989 (81.9%)	1,552 (73.6%)	1.00 (Reference)	
Bisexual	407 (16.8%)	473 (22.4%)	0.64 (0.54 to 0.76)	
Heterosexual/straight	4 (0.2%)	11 (0.5%)	NA	
Unsure/questioning	28 (1.2%)	73 (3.5%)	NA	
In a relationship	1,417 (58.4%)	1,148 (54.4%)	1.14 (1.00 to 1.31)	0.06
University education (versus below)	2,325 (95.8%)	1,958 (92.8%)	1.42 (1.06 to 1.90)	0.02
Income				
No income	136 (5.6%)	206 (9.8%)	1.00 (Reference)	0.49
Low income	129 (5.3%)	146 (6.9%)	1.13 (0.79 to 1.62)	0.21
Middle income	1,920 (79.1%)	1,588 (75.3%)	1.18 (0.91 to 1.53)	0.53
High income	243 (10.0%)	169 (8.0%)	1.11 (0.80 to 1.56)	
Had physical exam in past year	1,670 (68.8%)	629 (29.8%)	4.76 (4.17 to 5.43)	<0.001
Any condomless anal sex in last 3 months	1,207 (49.7%)	1,218 (57.8%)	0.81 (0.71 to 0.92)	0.002
Depression	519 (21.4%)	544 (25.8%)	0.98 (0.84 to 1.16)	0.86
Alcohol dependency	387 (15.9%)	376 (17.8%)	0.96 (0.81 to 1.14)	0.64
Self acceptance (median, IQR)	9 (8 to 10)	9 (8 to 10)	1.08 (1.03 to 1.13)	0.002
Experienced stigma as a child	1,814 (74.7%)	1,596 (75.7%)	1.00 (0.86 to 1.19)	0.87
Experienced stigma as an adult	1,400 (57.7%)	1,273 (60.4%)	1.00 (0.86 to 1.15)	0.98

Abbreviations: IQR: interquartile range; aOR: adjusted odds ratio; CI: confidence interval; P: P-value; NA: not applicable

Table 3

Factors associated with willingness to use an HIV self-test among men who have sex with men, Mexico, 2012

	Willing to Use HIV Self-Test (N=4,280)	Not Willing to Use HIV Self-Test (N=257)	Multivariable Model	
			aOR (95% CI)	*P*
Age (years, median, IQR)	28 (24 to 35)	27 (23 to 35)	1.01 (0.99 to 1.03)	0.22
Urban-dwelling (versus rural)	4,122 (96.3%)	251 (97.7%)	0.62 (0.27 to 1.43)	0.26
Born in Mexico (versus outside of Mexico)	4,167 (97.4%)	252 (98.1%)	0.79 (0.32 to 1.99)	0.62
Sexual Orientation				
Gay/homosexual	3,343 (78.1%)	198 (77.0%)	1.00 (Reference)	
Bisexual	825 (19.3%)	55 (21.4%)	0.84 (0.61 to 1.16)	0.28
Heterosexual/straight	15 (0.4%)	0	NA	NA
Unsure/questioning	97 (2.3%)	4 (1.6%)	NA	NA
In a relationship	2,441 (57.0%)	124 (48.3%)	1.35 (1.03 to 1.76)	0.03
University education (versus below)	4,042 (94.4%)	241 (93.8%)	1.21 (0.71 to 2.06)	0.49
Income				
No income	320 (7.5%)	22 (8.6%)	1.00 (Reference)	0.67
Low income	256 (6.0%)	19 (7.4%)	0.87 (0.46 to 1.65)	0.47
Middle income	3,318 (77.5%)	190 (73.9%)	1.24 (0.77 to 2.00)	
High income	386 (9.0%)	26 (10.1%)	1.06 (0.57 to 1.97)	0.84
Had physical exam in past year	2,141 (50.0%)	158 (61.5%)	0.66 (0.48 to 0.89)	0.007
Any condomless anal sex in last 3 months	2,310 (54.0%)	115 (44.8%)	1.29 (0.99 to 1.69)	0.06
Depression	997 (23.3%)	66 (25.7%)	0.84 (0.61 to 1.16)	0.29
Alcohol dependency	717 (16.8%)	46 (17.9%)	0.91 (0.65 to 1.28)	0.59
Self acceptance (median, IQR)	9 (8 to 10)	9 (8 to 10)	0.91 (0.82 to 1.00)	0.054
Experienced stigma as a child	3,225 (75.4%)	185 (72.0%)	1.26 (0.92 to 1.72)	0.15
Experienced stigma as an adult	2,516 (157)	157 (61.1%)	0.84 (0.62 to 1.12)	0.22
Ever tested for HIV	3,030 (70.8%)	187 (72.8%)	1.08 (0.77 to 1.51)	0.67
Tested for another STI in the last 12 months	1,740 (41.2%)	123 (48.4%)	0.93 (0.68 to 1.26)	0.63

Abbreviations: IQR: interquartile range; aOR: adjusted odds ratio; CI: confidence interval; P: P-value; NA: not applicable