



HHS Public Access

Author manuscript

Int J STD AIDS. Author manuscript; available in PMC 2024 September 04.

Published in final edited form as:

Int J STD AIDS. 2024 August ; 35(9): 675–688. doi:10.1177/09564624241248254.

Awareness, willingness to use pre-exposure prophylaxis, and use of post-exposure prophylaxis for HIV prevention among men who have sex with men in Mexico

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Abstract

Background: Little is known about awareness and willingness to use or purchase HIV pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM) in Mexico.

Methods: MSM in Mexico were recruited via advertisements on online social venues to participate in Encuesta de Sexo Entre Hombres, an online behavioral survey. Awareness of PrEP, willingness to take PrEP if available for free, willingness to purchase PrEP, awareness of post-exposure prophylaxis (PEP), and ever PEP use were assessed in descriptive and multivariate analyses.

Results: Overall, 54.8% (4588/8376) of participants were aware of PrEP. Of those aware, 77.6% were willing to use PrEP if free and 52.6% were willing to purchase PrEP, generally at a maximum monthly cost of \$500MXP. Both awareness of and willingness to use PrEP if free or for purchase were significantly greater among MSM who were younger, and varied by demographic,

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Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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recent healthcare use, and behavioral risk factors. Only 8.2% had ever used PEP, which was highly associated with healthcare utilization.

Conclusions: About half of Mexican MSM were aware of PrEP. The majority of those aware were willing to use PrEP if available for free and many were willing to purchase PrEP at low cost. Leveraging demographic, recent healthcare use, and behavioral risk characteristics associated with awareness and willingness to use PrEP could be useful in designing future PrEP programs for MSM in Mexico. Expanding healthcare settings in which PEP is available may also support identifying candidates for PrEP and scaling up PrEP implementation.

Keywords

HIV; pre-exposure prophylaxis; post-exposure prophylaxis; awareness; willingness to use; men who have sex with men; Mexico

Introduction

While HIV incidence has substantially decreased globally over the past decade, Latin America experienced a 21% increase in new HIV infections from 2010 to 2019.^{1,2} The HIV epidemic in Latin America is largely concentrated among men who have sex with men (MSM), transgender women, sex workers, and people who inject drugs.³ The prevalence of HIV among MSM in Latin America is estimated at 12.6%, and in Mexico, estimates of HIV prevalence among MSM are between 10.8% to 17.4%.⁴⁻⁷ In aiming to meet global HIV prevention and treatment targets including the Joint United Nations Programme on HIV/AIDS's (UNAIDS) goal of ending AIDS by 2035, measuring key indicators of effective HIV prevention is critical to monitoring progress. Further, assessing factors associated with key indicators can better inform implementation of prevention strategies and messaging.

Biomedical HIV prevention options such as pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) are important, cost-effective strategies for ending the HIV epidemic.⁸ Yet, only 11 of 17 countries in Latin America provided some access to PrEP at the end of 2021.⁹ Oral PrEP is a once-daily oral pill that can prevent the sexual acquisition of HIV by about 99% in HIV-negative MSM.¹⁰ While Mexico has participated in the PrEP clinical trials, widescale implementation in populations most affected by HIV has been slow.^{11,12} One study across multiple Latin American countries estimated PrEP awareness among MSM in Mexico at 64%.^{13,14} Another study in 2018–2019 estimated that although over 80% of MSM in Mexico were aware of PrEP, only 4% were currently on PrEP and 34% were interested in PrEP.¹² These studies found that higher education, higher income, and substance use was associated with PrEP awareness and younger age, use of apps for sexual encounters, PrEP eligibility, and having five or more sex partners in the past 6 months was associated with PrEP willingness among MSM in Mexico.¹²⁻¹⁴ Yet, limited data on differences in PrEP awareness and willingness by sexual risk behaviors and factors important to access such as region, insurance type, and cost hinder understanding of awareness and interest of PrEP among those who may need it. Cost is of particular importance in a Mexican context, as previous research has found that more Mexican MSM preferred PrEP free of charge in comparison to Brazilian and Peruvian MSM.¹⁴

One PrEP indication criteria suggested by the Pan American Health Organization (PAHO) is the previous use of PEP.² PEP is a course of oral antiretroviral treatment initiated up to 72 hours after a potential exposure to HIV and can reduce risk of infection by about 80%.^{15,16} While PEP is indicated for infrequent exposures to HIV, those with frequent, recurring exposures could benefit from transitioning to PrEP as an ongoing prevention strategy after completion of a PEP regimen.¹⁷ Understanding factors associated with awareness and use of PEP may assist in highlighting existing barriers to biomedical prevention strategies that will need to be addressed in efforts to expand PrEP and PEP access. While current literature on PEP in Mexico is sparse, one study across multiple Latin American countries in 2018 estimated PEP awareness among MSM in Mexico at 55%.¹⁴ Availability of PEP has been limited only to patients of Clínica Condesa, a small network of specialized HIV care and prevention clinics located predominantly in Mexico City.¹⁸ Identifying subgroups of MSM with previous PEP use may further inform approaches for where and for whom initial PrEP interventions and messaging may be most effective.

Given the existing knowledge gaps about PrEP and PEP among MSM in Mexico, and the lack of geographically diverse data on these topics within Mexico, we sought to examine PrEP and PEP awareness, willingness to take PrEP, and use of PEP among a sample of MSM in Mexico. The findings from this study can help to inform implementation strategies for biomedical HIV prevention interventions within public health and clinical health systems in Mexico.

Methods

In 2017, MSM were recruited to participate in the Encuesta de Sexo Entre Hombres (ESEH), an online cross-sectional behavioral survey that collected information on demographics, sexual behaviors, and use of healthcare and HIV prevention services. Study methods have been described in detail elsewhere.^{4,19} In brief, participants were recruited via banner advertisements and direct message blasts on popular social networking applications (herein referred to as recruitment venues) including Facebook, Grindr, Hornet, Twitter, SoyHomosensual, and Desastre. Recruited persons accessed a link to the online survey via the ad or message and self-administered the screening, consent process, and questionnaire on the SurveyGizmo platform. Participants were eligible if they were 18 years of age, identified as a cisgender man, and either identified as gay or bisexual or reported ever having oral or anal sex with a man. Informed consent was provided as an electronic written consent form displayed as part of the online survey for participants to review and decide whether they consented to the study. The questionnaire covered topics of sociodemographics, use of and experiences with healthcare systems and providers, HIV and STI testing and diagnosis history, HIV and STI treatment, sexual behaviors, alcohol and drug-related behaviors, and use of prevention strategies including condoms, PEP, and PrEP. The study protocol was reviewed and approved by the ethics committee or institutional review boards at the Mexico National Institute of Public Health, Emory University, and the University of California-San Diego.

The overall analytic dataset included respondents who were eligible, provided consent, completed at least 70% of the survey, and were not identified as duplicates. In

addition, our analysis was restricted to participants who reported being HIV-negative. We performed descriptive analyses to summarize key characteristics of our sample including sociodemographic, healthcare utilization, sexual and drug-related behavior variables, and our main outcomes of interest. Our main outcomes included: awareness of PrEP, willingness to use PrEP for free, willingness to purchase PrEP, awareness of PEP, and ever use of PEP. Questions related to willingness to use were dichotomized with those responding in the affirmative “Yes” as being willing and were compared to those who responded either “No,” “Maybe,” or “Don’t Know.” Regions were categorized as follows: Noroeste (Baja California, Baja California Sur, Sonora, Sinaloa, Chihuahua, and Durango), Noreste (Coahuila, Nuevo León, Tamaulipas, San Luis Potosí, and Zacatecas), CDMX/EdoMex (Ciudad de México and Estado de México), Centro (Hidalgo, Puebla, Tlaxcala, Morelos, Guerrero, and Veracruz), Bajío/Occidente (Aguascalientes, Nayarit, Jalisco, Colima, Guanajuato, Michoacán, and Querétaro), and Sur/Sureste (Oaxaca, Tabasco, Chiapas, Campeche, Yucatán, and Quintana Roo). Concurrency was defined as the participant or their last sexual partner having sex with other partners during the time when they were having sex with each other, as reported by the participant; analyses of concurrency were limited to participants with at least one sexual partner in the past 12 months.

We performed bivariate and multivariate modeling to assess the associations between key characteristics and the outcomes of interest. Separate models for each covariate-outcome association were performed. Bivariate models included the covariate as well as recruitment venue given the study design.⁴ Multivariate models included the covariate and controlled for age, education, income, region, health insurance, and recruitment venue; these latter variables were included based on a priori evidence of their potential association with PrEP or PEP and after assessing the significance of their associations with the main outcomes in bivariate models.²⁰ Because our outcomes were generally common (>10%) and obtained from cross-sectional data, odds ratios from logistic regression may overestimate associations compared to prevalence ratios, the preferred measure of association.²¹ Therefore, log-linked Poisson regression models with generalized estimating equations, clustering on the unique survey ID, were implemented to obtain adjusted prevalence ratios (aPR) and their 95% confidence intervals (CI).^{21–23} Lastly, for those who reported being willing to purchase PrEP, we assessed at what maximum monthly cost they would be willing to purchase it (\$500 Mexican pesos (MXP), \$1000MXP, \$2000MXP, \$3000MXP, \$5000MXP); due to small cells at higher costs this variable was categorized to \$500MXP, \$1000MXP, and \$2000MXP or higher in the analysis. We report the percentage of participants willing to purchase PrEP at a given maximum cost, both overall and by selected demographic characteristics. We performed chi-square tests and obtained *p*-values to evaluate whether the distribution of responses to the maximum out-of-pocket monthly cost (500, \$1000, or \$2000 MXP) varied significantly by the groups of the specified demographic characteristic. Statistical significance was determined using an alpha level of 0.05. SAS software version 9.4 (SAS Institute, Cary, NC) was used to perform analyses.

Results

Of 33,129 persons who accessed and began the survey process, 15,875 met inclusion criteria for the overall analytic dataset. Of these, a total of 8818 participants reported

being HIV-negative and were included for this analysis. Most participants were young and college-educated, with about one-third (33.3%) of our sample being 18–24 years old and another third (28.5%) being 25–29 years old and over; two-thirds (71.2%) had a college education or higher (Table 1). Although many participants (35.1%) were from the CDMX/EdoMex region, each of the six regions comprised at least 10% of the sample. The majority of participants were recruited via Grindr (48.0%) or Facebook (17.6%). Only 14.8% did not have health insurance and many participants (43.8%) reported having coverage via the Instituto Mexicano del Seguro Social (IMSS). Over half of the sample reported condomless anal sex in the past 12 months (62.3%) and one-third (35.9%) reported condomless anal sex at last sex. More than half reported either themselves or their partner having concurrent sexual partners in the past 12 months (58.5%) and 10.2% had a bacterial sexually transmitted infection (STI) in the past 12 months. About half (54.8%, 4588/8376) reported being aware of PrEP and of these, 77.6% (3534/4556) reported being willing to take PrEP if available for free and 52.6% (2400/4561) reported being willing to purchase PrEP. Fewer MSM were aware of PEP (39.2%, 3411/8706), and of those aware, only 8.2% (268/3286) reported ever having used PEP.

In our bivariate analyses, sociodemographic variables age, education, income, region, health insurance, and recruitment venue were independently associated with at least one of our main outcomes of interest: PrEP awareness, willingness to use PrEP if free, and willingness to purchase PrEP, PEP awareness, and/or PEP use, further supporting their inclusion as covariates in our multivariate analyses. In addition, we compared bivariate and multivariate model results and since significant findings and conclusions were very similar between the two approaches, we report only the multivariate results.

In our multivariate models, we found that several sociodemographic, testing behavior, sexual behavior characteristics were associated with PrEP awareness, willingness to use PrEP if free, and willingness to purchase PrEP. For PrEP awareness, MSM who were younger (aPR (18–24 vs 40) = 1.13; 95% CI: 1.03, 1.23), had a college education or higher (aPR = 1.16; 95% CI: 1.09, 1.23), had a higher income (aPR (>\$18000MXP vs \$8000MXP) = 1.35, 95% CI: 1.27, 1.44), received an HIV test in the past year (aPR = 1.24; 95% CI: 1.18, 1.30), used non-injection drugs (aPR = 1.17; 95% CI: 1.12, 1.22), had a higher number of male sex partners (aPR (10 vs 0–1) = 1.32; 95% CI: 1.23, 1.41), and had concurrent partners (or partner had concurrent partners) in the past year (aPR (yes vs no) = 1.14; 95% CI: 1.07, 1.21) were more likely to be aware of PrEP (Table 2). MSM from regions other than CDMX/EdoMex (aPR (Centro vs CDMX/EdoMex) = 0.83; 95% CI: 0.77, 0.89) and MSM who had condomless anal sex at last sex (aPR = 0.90; 95% CI: 0.86, 0.94) were less likely to be aware of PrEP.

Of those that were aware of PrEP, MSM who were younger (aPR (18–24 vs 40) = 1.13; 95% CI: 1.05, 1.23), from the Centro region (aPR (Centro vs CDMX/EdoMex) = 1.07; 95% CI: 1.02, 1.13), had a higher number of sexual partners (aPR (10 vs 0–1) = 1.17; 95% CI: 1.10, 1.26), had condomless anal sex in the past 12 months (aPR = 1.08; 95% CI: 1.04, 1.13) or at last sex (aPR = 1.06; 95% CI: 1.02, 1.10), had condomless anal sex at last sex with a partner whose HIV status was positive or unknown (aPR = 1.12; 95% CI: 1.07, 1.17), and had a bacterial STI in the past year (aPR = 1.07; 95% CI: 1.02, 1.13)

were significantly more likely to report being willing to use PrEP if available for free (Table 3). Similarly, MSM who were younger (aPR (18–24 vs 40) = 1.19; 95% CI: 1.03, 1.36), from the Centro region (aPR (Centro vs CDMX/EdoMex) = 1.13; 95% CI: 1.02, 1.24), and had condomless anal sex at last sex (aPR = 1.12; 95% CI: 1.05, 1.19) more commonly reported being willing to purchase PrEP. In addition, MSM from the Noroeste region (aPR (Noroeste vs CDMX/EdoMex) = 1.12; 95% CI: 1.01, 1.25) and those who had IMSS (aPR (IMSS vs None) = 1.11; 95% CI: 1.01, 1.24) were more likely to report being willing to purchase PrEP; and those who visited a health care provider in the past 12 months were less likely to report being willing to purchase PrEP (aPR = 0.92; 95% CI: 0.85, 0.98). Among MSM willing to purchase PrEP, when asked the maximum monthly cost they would be willing to pay for PrEP, 57.6% reported \$500 MXP, 30.8% reported \$1000 MXP, and 11.6% reported \$2000 MXP or higher (data not shown). The distribution of responses for maximum cost categories varied significantly by income ($p < .01$) and health insurance ($p < .01$) but not by age ($p = .13$) or by region ($p = .13$) (Figure 1). Of note, a greater percentage of MSM making $> \$18000$ MXP/month were willing to pay \$1000 MXP (36%) or \$2000 MXP (15%) and a greater percentage of those that had Other or Multiple health insurance coverage were willing to pay \$1000 MXP (38% and 38%, respectively) or $> \$2000$ MXP (17% and 14%, respectively). Although not significantly different from other groups, slightly higher percentages of younger MSM ages 18–24 (34%) and of Noroeste participants (37%) were willing to pay \$1000 MXP per month.

In our analysis of PEP outcomes, MSM who were younger (aPR (18–24 vs 40) = 1.15; 95% CI: 1.02, 1.29), had a college education or higher (aPR = 1.27; 95% CI: 1.17, 1.38), had a higher income (aPR ($> \$18000$ MXP vs $\$8000$ MXP) = 1.33, 95% CI: 1.23, 1.45), received an HIV test in the past year (aPR = 1.48; 95% CI: 1.38, 1.59), used non-injection drugs (aPR = 1.21; 95% CI: 1.14, 1.28), and had a higher number of male sex partners (aPR (10 vs 0–1) = 1.17; 95% CI: 1.06, 1.28) were more likely to be aware of PEP (Table 4). Yet, MSM from regions other than CDMX/EdoMex (aPR (Centro vs CDMX/EdoMex) = 0.79; 95% CI: 0.71, 0.87), and those who visited a health care provider in the past year (aPR = 0.92; 95% CI: 0.86, 0.98), had condomless anal sex in the past 12 months (aPR = 0.94; 95% CI: 0.88, 0.996) or at last sex (aPR = 0.89; 95% CI: 0.84, 0.95), and had condomless anal sex with partner whose HIV status was positive or unknown at last sex (aPR = 0.83; 95% CI: 0.75, 0.91) were less likely to be aware of PEP. Having ever taken PEP was significantly more common among MSM who had visited a health care provider in the past year (aPR = 2.00; 95% CI: 1.37, 2.92), received an HIV test in the past year (aPR = 2.12; 95% CI: 1.43, 3.15), had 10 male sex partners in the past year (aPR (10 vs 0–1) = 2.47; 95% CI: 1.45, 4.20), and used non-injection drugs in the past year (aPR = 1.36; 95% CI: 1.04, 1.80). PEP use was less likely to be reported among MSM who were from regions other than CDMX/EdoMex (aPR (Centro vs CDMX/EdoMex) = 0.41; 95% CI: 0.23, 0.72).

Discussion

In our study, we found that about half of HIV-negative MSM in Mexico were aware of PrEP. Primarily MSM who were young, college-educated, received HIV testing, had more sexual partners, and reported non-injection drug use had higher PrEP awareness. Among MSM who were aware of PrEP, willingness to use PrEP was high, with three-quarters willing

to take PrEP if available for free and one-half willing to purchase PrEP. Overall, young MSM and those reporting behaviors that may place them at increased risk for HIV exposure more commonly reported being willing to take PrEP particularly if available for free. Most participants willing to pay for PrEP would pay a maximum of \$500MXP monthly; less than half were willing to pay \$1000MXP or more. Interestingly, awareness of PEP was lower than that for PrEP, and use of PEP was substantially low with about 1 in 12 MSM ever having taken PEP. Although PEP awareness was associated with younger age, HIV testing, and some HIV-related risk behaviors, actual PEP use was strongly associated with engagement in healthcare.

Our findings that only half of HIV-negative MSM were aware of PrEP suggests that significant efforts to increase awareness about what PrEP is and its effectiveness in preventing HIV acquisition remains paramount. Some studies that took place shortly after ESEH observed much higher PrEP awareness, at up to 80%; this may suggest that our estimate serves at a baseline for PrEP awareness among MSM prior to availability of PrEP in Mexico and that awareness could be increasing.^{11–13,24} However, a perhaps stronger explanation for our lower PrEP awareness estimate is the larger sample we obtained over diverse regions of Mexico; only one-third of our sample lived in Mexico City or State of Mexico which more closely resembles the geographic population distribution, and all regions outside of CDMX/EdoMex had significantly lower PrEP awareness in our study.²⁵ We also observed PEP awareness to be lower than that of PrEP, suggesting that more generally, biomedical interventions for HIV prevention may not be widely promoted or incorporated into prevention campaigns for MSM in Mexico. This may further reflect limited availability of PEP given it has predominantly only been offered in the Clínica Condesa network located in the Mexico City region.¹⁸ Biomedical HIV prevention awareness campaigns could be useful tools for reaching MSM that may have a need for PEP or PrEP, including different modalities of PrEP as they evolve.²⁶ Further, given the reach and participation in our study, social networking platforms may be an effective method for future campaigns.

We found that MSM who engaged in condomless anal sex at last sex were less likely to be aware of PrEP. One reason for this could simply be that MSM who are using condoms as their HIV prevention method may be more aware of PrEP than those who do not use condoms or may be receiving condoms in healthcare or community settings that provide PrEP information. However, it remains striking that almost half of those who were not using condoms at last sex and may have increased risk for HIV exposure were unaware of PrEP. Our results suggest that existing sources of information about PrEP and PEP may be limited and therefore it will be important for future educational campaigns to consider alternate methods for communicating prevention messages to persons who may benefit most from their use, and particularly for PrEP which can serve as an ongoing effective prevention method. Additionally, we found clear and consistent differences in PrEP and PEP awareness by geographical region, with regions outside of CDMX/EdoMex demonstrating significantly lower awareness of PrEP and PEP. This follows previous evidence for geographical differences in HIV testing and HIV care.⁴ Efforts to increase awareness and access to PrEP and PEP for MSM outside of CDMX/EdoMex are warranted. Additional qualitative research on how best to tailor PrEP intervention strategies for MSM and for health care providers

that could offer PrEP in these areas could be helpful to ensuring equitable access to effective HIV prevention methods.

Among MSM who were aware of PrEP, we found substantial willingness to use PrEP if available for free and even willingness to purchase. Promisingly, MSM reporting sexual behaviors that increase the likelihood of HIV exposure were more willing to use if available for free. Moreover, MSM with IMSS and multiple insurance sources were more willing to pay for PrEP than those with no insurance. As IMSS serves the majority of the non-governmental workforce in the country, this population may earn an income high enough to support payment for PrEP. Together, these findings suggest that there was demand for PrEP from those who may need it so long as cost was not a barrier. At the time of the ESEH survey, PrEP was not available; in recent years, PrEP was available only via the national ImPrEP clinical trial, and after the trial became available for free via Clínica Condesa in the Mexico City area.¹¹ Access to low-cost manufacturing of HIV drugs including tenofovir disoproxil fumarate (TDF)/emtricitabine (FTC) (the components of the brand Truvada pill) offers promise for making PrEP available to all those who would benefit from it in Mexico, yet improving the reach of free access to those who need and want it remains a challenge.²⁷ In 2020, the Mexican Health Secretary, IMSS, and CENSIDA initiated efforts to implement a PrEP program that would secure PrEP medications for dissemination nationally in regional sexual health clinics and other public clinics; however, uptake remains low.^{24,28} PEP access has historically been available for free at specialized clinics like Clínica Condesa.¹⁸ Ever using PEP was very low in our study and was highly associated with engagement in care, such as visiting a healthcare provider and receiving an HIV test in the past year; this corresponds with the contexts in which PEP has been available for MSM. It does also signal that existing biomedical HIV prevention interventions are most commonly implemented within specialized clinics. Leveraging and expanding healthcare settings in which PEP is available may also support identifying and educating candidates for PrEP and scaling up PrEP implementation efforts. Further, training providers about PrEP to ensure awareness of its free availability and build competency and confidence in prescribing PrEP will be important to increasing its uptake.

While half of the sample was willing to purchase PrEP, more than half of MSM willing to purchase would only be willing to pay a maximum of \$500MXP or less per month. Current prices for PrEP in Mexican pharmacies are estimated at \$1600MXP per monthly supply (about \$80USD). Our findings suggest that there may be opportunity for reaching some MSM with low-cost PrEP directly from pharmacies, including MSM who were younger, had lower income, and lived in areas outside of Mexico City; however this strategy may benefit from a further reduction in cost and will still rely on adequate access to providers that can offer a PrEP prescription. Initiatives to educate and train healthcare providers that provide STI and HIV treatment in regions where access to PrEP is currently limited will be important to achieve effective PrEP roll-out nationally. Further, our findings highlight the importance of healthcare access given almost 1 in 7 MSM did not report having any health insurance and would have to pay for PrEP out-of-pocket. Efforts to increase and streamline healthcare coverage for MSM and HIV prevention services like PrEP could be helpful, while also supporting the logistical needs to initiate PrEP including provider visits, HIV testing, and laboratory testing costs. Ensuring costs associated with PrEP prescription are

incorporated into healthcare coverage or are available at low cost may further support uptake of PrEP among MSM in Mexico. Lastly, as the availability of PrEP modalities continues to expand, future research could consider willingness and cost by PrEP modality, including long acting injectables that may be preferred by Mexican MSM.²⁶

Our study had several limitations and strengths. First, this was a cross-sectional study, therefore we can only make conclusions about associations between independent variables and our outcomes of interest. Further, we used an online, convenience sampling method for recruitment and data were not weighted, therefore our results are not generalizable to all MSM in Mexico or in a given geographical region. Related, our sample was predominantly young and had a college education or higher, indicating that key outcomes like awareness and willingness to use PrEP may be higher than that of all MSM in Mexico. In addition, these data were from 2017 and PrEP implementation in Mexico has been quickly evolving in recent years.²⁴ Nevertheless, our data can serve as an important baseline for comparison to other future data collections to evaluate how PrEP awareness, willingness to use, and uptake changes as it becomes more readily available. Future studies should seek to collect information on PrEP use and capture healthcare-related factors that may significantly impact PrEP access and uptake nationally and regionally. One important strength of this study is that the online recruitment approach allowed for collection of data from a large number of MSM and from all regions of Mexico making this a novel and diverse data source to inform HIV prevention outcomes.

Conclusions

About half of MSM in Mexico were aware of PrEP in 2017, and the vast majority of those aware were willing to use PrEP if it were available for free, including MSM who were younger, lived outside of CDMX/EdoMex, and reported sexual behaviors that could increase the chances of getting HIV. About half of MSM were willing to purchase PrEP, generally at a maximum monthly cost of \$500MXP. Previous PEP use was low, although highly associated with engagement in healthcare, suggesting that existing healthcare systems could be leveraged to reach MSM who may have a need for and willingness to use PrEP. Overall, both awareness of and willingness to use PrEP varied by sociodemographic, recent healthcare use, and behavioral risk factors which could all be useful in designing future education campaigns and PrEP programs for MSM in Mexico.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Baruch and Hernandez-Avila acknowledge support for this research from the San Diego Center for AIDS Research, an NIH-funded program (P30 AI036214). Algarin acknowledges support from NIDA under grant number 1K01DA055521. Smith acknowledges support from NIDA under grant number K01DA039767 and NIMH under grant number R01MH123282.

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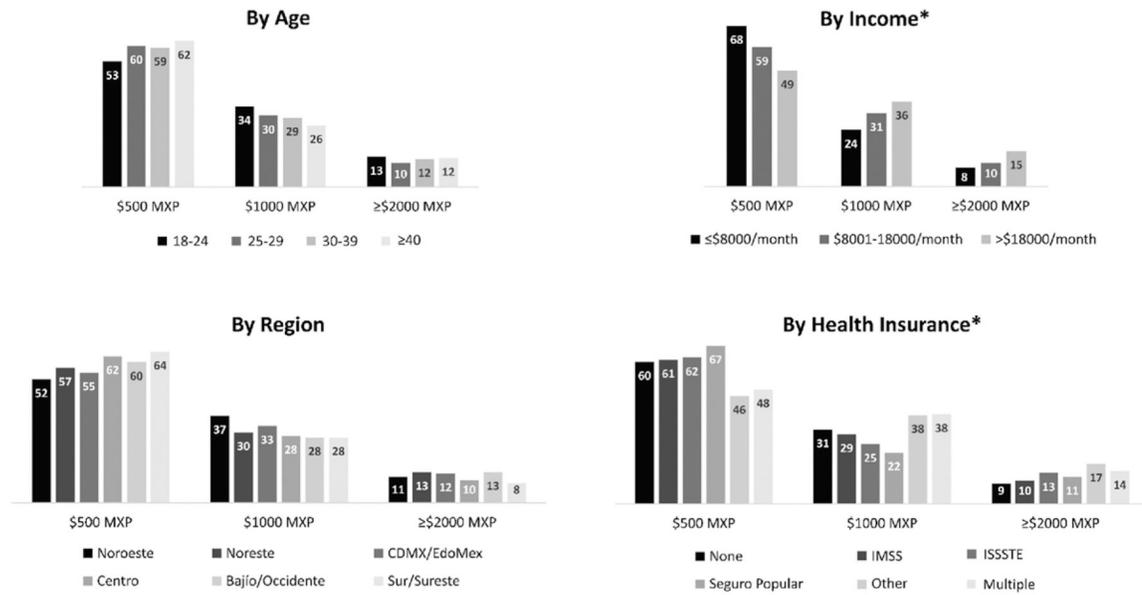


Figure 1. Maximum out-of-pocket monthly cost at which MSM were willing to purchase PrEP, Encuesta de Sexo Entre Hombres, 2017. Abbreviations: PrEP: HIV pre-exposure prophylaxis; MXP: Mexican peso; IMSS: Instituto Mexicano del Seguro Social; ISSSTE: Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado; CDMX/EdoMex: Ciudad de México and Estado de México. Notes: Analyses were limited to 4561 participants who reported being HIV-negative, aware of PrEP, and willing to purchase PrEP. ‘Other’ health insurance included: Sedena/Semar, Pemex, Private, or Other reported as participant’s only health insurance. *Significant at $p < 0.05$ based on chi-square tests assessing whether the distribution of responses to the categorical variable for the maximum out-of-pocket monthly cost (500, \$1000, or \geq 2000 MXP) varied significantly by the groups of the specified demographic variable. P-values were .13 (by age), <0.01 (by income), 0.13 (by region), and <0.01 (by health insurance).

Table 1.

Sample characteristics of HIV-negative men who have sex with men in Mexico, Encuesta de Sexo Entre Hombres, 2017

Characteristics	<i>n</i> (%)
Age	
18–24	2932 (33.3)
25–29	2516 (28.5)
30–39	2421 (27.5)
40	949 (10.8)
Education	
High school/technical school or less	2500 (28.8)
College or higher	6181 (71.2)
Monthly household income (MX peso)	
\$8000 or less	2295 (32.8)
\$8001–18,000	2299 (32.8)
More than \$18,000	2405 (34.4)
Region	
Noroeste	903 (10.2)
Noreste	935 (10.6)
CDMX/EdoMex	3098 (35.1)
Centro	1247 (14.1)
Bajío/Occidente	1607 (18.2)
Sur/Sureste	1028 (11.7)
Recruitment venue	
Facebook	1552 (17.6)
Grindr	4237 (48.0)
Hornet	89 (1.0)
Twitter	1064 (12.1)
SoyHomosensual	1086 (12.3)
Desastre	155 (1.8)
Other	635 (7.2)
Health insurance	
None	1146 (14.8)
IMSS	3399 (43.8)
ISSSTE	563 (7.3)
Seguro Popular	715 (9.2)
Other ^a	579 (7.5)
Multiple	1354 (17.5)
Visited health care provider, past 12 months	
Yes	5826 (73.1)
No	2143 (26.9)
Received HIV test, past 12 months	

Characteristics	n (%)
Yes	5505 (66.5)
No	2775 (33.5)
Non-injection drug use, past 12 months	
Yes	2889 (34.1)
No	5589 (65.9)
Drug or alcohol use before last sex	
Yes	3309 (39.7)
No	5031 (60.3)
Number of male sex partners, past 12 months	
0 to 1	1281 (15.6)
2 to 4	2513 (30.7)
5 to 9	1822 (22.3)
10+	2572 (31.4)
Condomless anal sex, past 12 months	
Yes	4584 (62.3)
No	2772 (37.7)
Condomless anal sex, at last sex	
Yes	3011 (35.9)
No	5385 (64.1)
Condomless anal sex with partner whose HIV status was positive or unknown, at last sex	
Yes	1099 (13.1)
No	7288 (86.9)
Concurrency in past 12 months ^b	
Yes	4286 (58.5)
Don't know	1560 (21.3)
No	1478 (20.2)
Bacterial STI ^c , past 12 months	
Yes	821 (10.2)
No	7213 (89.8)
Aware of HIV pre-exposure prophylaxis (PrEP)	
Yes	4588 (54.8)
No	3788 (45.2)
Willing to take PrEP if free ^d	
Yes	3534 (77.6)
No/don't know	1022 (22.4)
Willing to purchase PrEP ^d	
Yes	2400 (52.6)
No/maybe/don't know	2161 (47.4)
Aware of HIV post-exposure prophylaxis (PEP)	
Yes	3411 (39.2)
No	5295 (60.8)

Characteristics	<i>n</i> (%)
Ever used PEP ^e	
Yes	268 (8.2)
No	3018 (91.8)
Total	8818 (100)

Abbreviations: HIV: human immunodeficiency virus; IMSS: Instituto Mexicano del Seguro Social; ISSSTE: Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado; CDMX/EdoMex: Ciudad de México and Estado de México; STI: sexually transmitted infection.

Note: Numbers may not sum to total due to missing data.

^aOther health insurance included: Sedena/Semar, Pemex, Private, or Other reported as participant's only health insurance.

^bConcurrency was defined as the participant or their last sexual partner having sex with other partners during the time when they were having sex with each other, as reported by the participant; analyses of concurrency were limited to participants with at least one sexual partner.

^cBacterial STI included gonorrhea, chlamydia, or syphilis.

^dAmong participants aware of PrEP.

^eAmong participants aware of PEP.

Table 2.

Awareness of HIV pre-exposure prophylaxis among HIV-negative men who have sex with men in Mexico, Encuesta de Sexo Entre Hombres, 2017

Characteristics	Aware of PrEP ^a		
	<i>n</i> (%)	aPR (95% CI) ^b	<i>p</i> -value
Age			
18–24	1374 (48.9)	1.13 (1.03, 1.23)	0.009
25–29	1420 (59.2)	1.22 (1.12, 1.32)	<0.001
30–39	1346 (58.5)	1.18 (1.09, 1.29)	<0.001
40	448 (51.4)	Referent	
Education			
High school/technical school or less	1054 (44.6)	Referent	
College or higher	3472 (59.0)	1.16 (1.09, 1.23)	<0.001
Monthly income (MX peso)			
\$8000 or less	949 (43.3)	Referent	
\$8001–18,000	1289 (58.6)	1.25 (1.17, 1.33)	<0.001
More than \$18,000	1534 (66.1)	1.35 (1.27, 1.44)	<0.001
Region			
Noroeste	417 (49.0)	0.83 (0.77, 0.90)	<0.001
Noreste	442 (50.1)	0.83 (0.77, 0.90)	<0.001
CDMX/EdoMex	1885 (63.5)	Referent	
Centro	560 (47.3)	0.83 (0.77, 0.89)	<0.001
Bajío/Occidente	817 (53.6)	0.87 (0.82, 0.92)	<0.001
Sur/Sureste	467 (48.3)	0.84 (0.77, 0.92)	<0.001
Recruitment venue			
Facebook	628 (42.3)	0.90 (0.83, 0.96)	0.003
Grindr	2077 (52.7)	Referent	
Hornet	40 (48.8)	0.98 (0.76, 1.26)	0.851
Twitter	672 (64.6)	1.19 (1.13, 1.27)	<0.001
SoyHomosensual	693 (65.2)	1.16 (1.09, 1.23)	<0.001
Desastre	100 (66.7)	1.19 (1.04, 1.36)	0.013
Other	378 (61.9)	1.13 (1.05, 1.21)	0.001
Health insurance			
None	618 (55.5)	Referent	
IMSS	1719 (52.8)	0.96 (0.90, 1.03)	0.267
ISSSTE	298 (55.8)	0.96 (0.87, 1.06)	0.411
Seguro Popular	352 (51.0)	1.00 (0.91, 1.10)	0.958
Other ^c	360 (65.1)	1.09 (1.00, 1.18)	0.053
Multiple	791 (60.6)	1.04 (0.97, 1.11)	0.324
Visited health care provider, past 12 months			
Yes	3190 (56.8)	1.05 (0.99, 1.11)	0.054
No	1052 (51.5)	Referent	

Characteristics	Aware of PrEP ^a		
	n (%)	aPR (95% CI) ^b	p-value
Received HIV test, past 12 months			
Yes	3110 (59.1)	1.24 (1.18, 1.30)	<0.001
No	1262 (47.5)	Referent	
Non-injection drug use, past 12 months			
Yes	1725 (62.3)	1.17 (1.12, 1.22)	<0.001
No	2735 (51.5)	Referent	
Drug or alcohol use before last sex			
Yes	1740 (55.5)	0.98 (0.94, 1.02)	0.399
No	2647 (55.0)	Referent	
Number of male sex partners, past 12 months			
0 to 1	585 (47.1)	Referent	
2 to 4	1175 (49.3)	1.06 (0.98, 1.15)	0.121
5 to 9	977 (56.8)	1.21 (1.12, 1.31)	<0.001
10	1564 (63.6)	1.32 (1.23, 1.41)	<0.001
Condomless anal sex, past 12 months			
Yes	2450 (55.8)	0.99 (0.94, 1.03)	0.580
No	1491 (56.5)	Referent	
Condomless anal sex, at last sex			
Yes	1474 (51.0)	0.90 (0.86, 0.94)	<0.001
No	2944 (57.2)	Referent	
Condomless anal sex with partner whose HIV status was positive or unknown, at last sex			
Yes	546 (51.6)	0.96 (0.90, 1.02)	0.187
No	3867 (55.5)	Referent	
Concurrency in past 12 months ^d			
Yes	2404 (58.3)	1.14 (1.07, 1.21)	<0.001
Don't know	802 (53.5)	1.09 (1.01, 1.17)	0.033
No	716 (50.5)	Referent	
Bacterial STI, past 12 months ^e			
Yes	472 (61.0)	1.07 (1.00, 1.14)	0.055
No	3761 (54.7)	Referent	
Total	4588 (54.8)		

Abbreviations: HIV: human immunodeficiency virus; PrEP: pre-exposure prophylaxis; aPR: adjusted prevalence ratio; CI: confidence interval; IMSS: Instituto Mexicano del Seguro Social; ISSSTE: Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado; CDMX/EdoMex: Ciudad de México and Estado de México; STI: sexually transmitted infection.

Note: Numbers may not sum to total due to missing data.

^aOf 8818 HIV-negative MSM, 8376 provided valid response about awareness of PrEP.

^bModels for each exposure-outcome association adjusted for age, education, income, region, health insurance, and recruitment venue.

^cOther' health insurance included: Sedena/Semar, Pemex, Private, or Other reported as participant's only health insurance.

^dConcurrency was defined as the participant or their last sexual partner having sex with other partners during the time when they were having sex with each other, as reported by the participant; analyses of concurrency were limited to participants with at least one sexual partner.

^eBacterial STI included gonorrhea, chlamydia, or syphilis.

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Willingness to use HIV PrEP among HIV-negative men who have sex with men aware of PrEP in Mexico, Encuesta de Sexo Entre Hombres, 2017

Table 3.

Characteristics	Willing to take PrEP if free ^d		Willing to purchase PrEP ^e	
	n (%)	aPR (95% CI) ^b	n (%)	aPR (95% CI) ^b
Age				
18–24	1093 (79.9)	1.13 (1.05, 1.23)	736 (53.8)	1.19 (1.03, 1.36)
25–29	1112 (78.9)	1.11 (1.02, 1.19)	753 (53.3)	1.17 (1.02, 1.34)
30–39	1010 (75.7)	1.07 (0.99, 1.16)	708 (53.0)	1.18 (1.04, 1.35)
40	319 (72.0)	Referent	203 (45.6)	Referent
Education				
High school/technical school or less	824 (78.6)	Referent	539 (51.2)	Referent
College or higher	2662 (77.2)	0.99 (0.95, 1.04)	1827 (53.0)	1.02 (0.94, 1.11)
Monthly income (MX peso)				
\$8000 or less	735 (78.0)	Referent	481 (51.0)	Referent
\$8001–18,000	1017 (79.3)	1.01 (0.97, 1.06)	680 (53.0)	1.02 (0.94, 1.12)
More than \$18,000	1161 (76.1)	0.99 (0.95, 1.04)	811 (53.1)	1.04 (0.95, 1.13)
Region				
Noroeste	333 (80.2)	1.05 (0.99, 1.12)	236 (56.9)	1.12 (1.01, 1.25)
Noreste	381 (78.1)	1.04 (0.98, 1.10)	258 (52.9)	1.03 (0.93, 1.15)
CDMX/EdoMex	1397 (74.7)	Referent	938 (50.1)	Referent
Centro	507 (81.8)	1.07 (1.02, 1.13)	342 (55.1)	1.13 (1.02, 1.24)
Bajío/Occidente	597 (78.1)	1.02 (0.96, 1.07)	399 (52.2)	1.00 (0.92, 1.10)
Sur/Sureste	319 (80.2)	1.04 (0.98, 1.11)	227 (57.0)	1.09 (0.97, 1.23)
Recruitment venue				
Facebook	500 (80.0)	0.96 (0.91, 1.02)	315 (50.6)	0.86 (0.77, 0.95)
Grindr	1645 (79.9)	Referent	1116 (54.1)	Referent
Homert	33 (82.5)	1.02 (0.87, 1.20)	22 (56.4)	1.03 (0.76, 1.40)
Twitter	507 (76.2)	0.92 (0.87, 0.97)	359 (53.8)	0.94 (0.86, 1.03)
SoyHomosensual	494 (71.6)	0.89 (0.84, 0.94)	356 (51.5)	0.92 (0.84, 1.00)
Desastre	66 (66.0)	0.79 (0.67, 0.93)	47 (47.0)	0.82 (0.64, 1.05)
Other	289 (76.7)	0.96 (0.89, 1.02)	185 (49.1)	0.89 (0.79, 1.01)
				0.075

Characteristics	Willing to take PrEP if free ^d			Willing to purchase PrEP ^e		
	n (%)	aPR (95% CI) ^b	p-value	n (%)	aPR (95% CI) ^b	p-value
Health insurance						
None	476 (77.5)	Referent		293 (47.6)	Referent	
IMSS	1331 (78.1)	0.96 (0.94, 1.05)	0.857	907 (53.1)	1.11 (1.01, 1.24)	0.039
ISSSTE	229 (76.8)	1.01 (0.93, 1.09)	0.843	156 (52.5)	1.09 (0.94, 1.27)	0.249
Seguro Popular	266 (76.2)	0.98 (0.90, 1.06)	0.560	172 (49.0)	1.05 (0.91, 1.21)	0.505
Other ^c	273 (76.3)	0.99 (0.92, 1.07)	0.834	191 (53.4)	1.11 (0.97, 1.28)	0.144
Multiple	606 (76.9)	1.00 (0.94, 1.06)	0.926	438 (55.7)	1.16 (1.03, 1.30)	0.011
Visited health care provider, past 12 months						
Yes	2436 (76.9)	0.98 (0.94, 1.02)	0.407	1626 (51.3)	0.92 (0.85, 0.98)	0.015
No	821 (78.4)	Referent		574 (54.7)	Referent	
Received HIV test, past 12 months						
Yes	2374 (76.9)	0.97 (0.93, 1.01)	0.112	1600 (51.8)	0.94 (0.88, 1.00)	0.069
No	991 (78.8)	Referent		692 (55.1)	Referent	
Non-injection drug use, past 12 months						
Yes	1359 (79.2)	1.03 (0.99, 1.07)	0.129	891 (51.9)	0.98 (0.91, 1.04)	0.471
No	2074 (76.4)	Referent		1440 (53.0)	Referent	
Drug or alcohol use before last sex						
Yes	1357 (78.5)	1.03 (0.99, 1.07)	0.143	934 (53.9)	1.05 (0.98, 1.12)	0.157
No	2015 (76.7)	Referent		1354 (51.6)	Referent	
Number of male sex partners, past 12 months						
0 to 1	397 (68.2)	Referent		283 (49.0)	Referent	
2 to 4	890 (76.5)	1.10 (1.03, 1.19)	0.008	637 (54.5)	1.09 (0.98, 1.22)	0.122
5 to 9	752 (77.7)	1.10 (1.02, 1.19)	0.009	490 (50.5)	0.98 (0.87, 1.11)	0.751
10	1279 (82.1)	1.17 (1.10, 1.26)	<0.001	837 (53.7)	1.07 (0.96, 1.20)	0.228
Condomless anal sex, past 12 months						
Yes	1957 (80.4)	1.08 (1.04, 1.13)	<0.001	1293 (53.1)	1.03 (0.95, 1.10)	0.489
No	1084 (73.2)	Referent		770 (52.0)	Referent	
Condomless anal sex, at last sex						
Yes	1195 (81.3)	1.06 (1.02, 1.10)	0.001	824 (56.1)	1.12 (1.05, 1.19)	<0.001
No	2208 (75.5)	Referent		1495 (51.1)	Referent	

Characteristics	Willing to take PrEP if free ^d			Willing to purchase PrEP ^d		
	n (%)	aPR (95% CI) ^b	p-value	n (%)	aPR (95% CI) ^b	p-value
Condomless anal sex with partner whose HIV status was positive or unknown, at last sex						
Yes	467 (85.7)	1.12 (1.07, 1.17)	< 0.001	297 (54.6)	1.07 (0.98, 1.17)	0.122
No	2932 (76.3)	Referent		2021 (52.5)	Referent	
Concurrency, past 12 months ^d						
Yes	1878 (78.6)	1.05 (1.00, 1.11)	0.060	1256 (52.5)	1.03 (0.94, 1.13)	0.563
Don't know	624 (78.2)	1.05 (0.98, 1.12)	0.165	422 (53.0)	1.02 (0.92, 1.15)	0.667
No	555 (75.0)	Referent		375 (52.5)	Referent	
Bacterial STI, past 12 months ^e						
Yes	386 (82.0)	1.07 (1.02, 1.13)	0.010	248 (52.5)	1.02 (0.92, 1.13)	0.729
No	2867 (76.7)	Referent		1957 (52.4)	Referent	
Total	3534 (77.6)			2400 (52.6)		

Abbreviations: HIV: human immunodeficiency virus; PrEP: HIV pre-exposure prophylaxis; aPR: adjusted prevalence ratio; CI: confidence interval; IMSS: Instituto Mexicano del Seguro Social; ISSSTE: Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado; CDMX/EdoMex: Ciudad de México and Estado de México; STI: sexually transmitted infection.

Note: Numbers may not sum to total due to missing data.

^aAnalyses were limited to participants who reported being aware of PrEP. Of 4588 HIV-negative MSM aware of PrEP, 4556 provided valid response about willingness to take PrEP if available for free and 4561 provided valid response about willingness to pay for PrEP.

^bModels for each exposure-outcome association adjusted for age, education, income, region, health insurance, and recruitment venue.

^cOther health insurance included: Sedena/Semar, Pemex, Private, or Other reported as participant's only health insurance.

^dConcurrency was defined as the participant or their last sexual partner having sex with other partners during the time when they were having sex with each other, as reported by the participant; analyses of concurrency were limited to participants with at least one sexual partner.

^eBacterial STI included gonorrhoea, chlamydia, or syphilis.

Table 4.

Awareness and ever use of HIV post-exposure prophylaxis among HIV-negative men who have sex with men in Mexico, Encuesta de Sexo Entre Hombres, 2017

Characteristics	Aware of PEP ^d		Ever used PEP ^b		p-value
	n (%)	aPR (95% CI) ^c	n (%)	aPR (95% CI) ^c	
Age					
18–24	1028 (35.4)	1.15 (1.02, 1.29)	69 (7.0)	0.94 (0.57, 1.54)	0.804
25–29	1063 (42.7)	1.21 (1.08, 1.35)	77 (7.5)	0.87 (0.54, 1.41)	0.579
30–39	978 (41.1)	1.16 (1.03, 1.29)	87 (9.2)	0.99 (0.63, 1.57)	0.956
40	342 (36.9)	Referent	35 (10.8)	Referent	
Education					
High school/technical school or less	748 (30.3)	Referent	52 (7.2)	Referent	
College or higher	2610 (42.8)	1.27 (1.17, 1.38)	211 (8.4)	1.11 (0.78, 1.60)	0.553
Monthly income (MX peso)					
\$8000 or less	701 (31.0)	Referent	45 (6.8)	Referent	
\$8001–18,000	943 (41.6)	1.22 (1.12, 1.32)	76 (8.4)	1.03 (0.70, 1.50)	0.892
More than \$18,000	1134 (47.5)	1.33 (1.23, 1.45)	92 (8.3)	0.91 (0.61, 1.32)	0.593
Region					
Noroeste	285 (31.9)	0.72 (0.64, 0.81)	18 (6.7)	0.60 (0.34, 1.05)	0.076
Noreste	377 (36.7)	0.84 (0.76, 0.93)	22 (6.1)	0.56 (0.34, 0.92)	0.023
CDMX/EdoMex	1442 (47.0)	Referent	151 (10.8)	Referent	
Centro	462 (34.1)	0.79 (0.71, 0.87)	27 (6.1)	0.41 (0.23, 0.72)	0.002
Bajfo/Occidente	566 (38.2)	0.83 (0.77, 0.90)	36 (6.6)	0.70 (0.48, 1.04)	0.078
Sur/Sureste	279 (31.5)	0.74 (0.66, 0.84)	14 (5.2)	0.52 (0.28, 0.95)	0.034
Recruitment venue					
Facebook	469 (30.5)	0.95 (0.86, 1.04)	32 (7.2)	0.78 (0.49, 1.23)	0.279
Grindr	1531 (36.9)	Referent	139 (9.5)	Referent	
Homnet	35 (39.8)	1.23 (0.93, 1.63)	4 (12.5)	1.65 (0.58, 4.70)	0.347
Twitter	526 (49.6)	1.30 (1.20, 1.41)	22 (4.3)	0.50 (0.32, 0.80)	0.004
SoyHomosensual	514 (47.5)	1.15 (1.06, 1.25)	33 (6.6)	0.77 (0.52, 1.16)	0.214
Desastre	68 (43.9)	1.16 (0.95, 1.42)	3 (4.5)	0.58 (0.19, 1.75)	0.332

Characteristics	Aware of PEP ^a			Ever used PEP ^b		
	n (%)	aPR (95% CI) ^c	p-value	n (%)	aPR (95% CI) ^c	p-value
Other	268 (42.3)	1.07 (0.96, 1.20)	0.203	35 (13.4)	1.14 (0.75, 1.74)	0.528
Health insurance						
None	459 (40.5)	Referent		31 (7.1)	Referent	
IMSS	1255 (37.4)	0.92 (0.84, 1.00)	0.059	90 (7.4)	1.14 (0.74, 1.76)	0.544
ISSSTE	227 (41.2)	0.97 (0.85, 1.10)	0.609	22 (10.0)	1.62 (0.93, 2.84)	0.090
Seguro Popular	266 (37.9)	1.01 (0.89, 1.15)	0.860	19 (7.5)	0.91 (0.47, 1.76)	0.770
Other ^d	255 (44.4)	1.00 (0.89, 1.13)	0.994	22 (9.0)	1.26 (0.70, 2.26)	0.443
Multiple	585 (43.7)	1.00 (0.90, 1.10)	0.953	53 (9.3)	1.28 (0.80, 2.06)	0.306
Visited health care provider, past 12 months						
Yes	2267 (39.4)	0.92 (0.86, 0.98)	0.009	198 (9.0)	2.00 (1.37, 2.92)	<0.001
No	863 (40.9)	Referent		44 (5.3)	Referent	
Received HIV test, past 12 months						
Yes	2405 (44.2)	1.48 (1.38, 1.59)	<0.001	227 (9.7)	2.12 (1.43, 3.15)	<0.001
No	841 (30.7)	Referent		34 (4.2)	Referent	
Non-injection drug use, past 12 months						
Yes	1301 (45.5)	1.21 (1.14, 1.28)	<0.001	122 (9.7)	1.36 (1.04, 1.80)	0.027
No	2016 (36.5)	Referent		139 (7.2)	Referent	
Drug or alcohol use before last sex						
Yes	1283 (39.3)	0.96 (0.91, 1.02)	0.226	111 (9.0)	1.25 (0.95, 1.65)	0.109
No	1979 (39.8)	Referent		144 (7.5)	Referent	
Number of male sex partners, past 12 months						
0 to 1	461 (36.4)	Referent		21 (4.6)	Referent	
2 to 4	885 (35.6)	0.99 (0.90, 1.10)	0.871	56 (6.6)	1.35 (0.76, 2.42)	0.307
5 to 9	749 (41.7)	1.14 (1.03, 1.26)	0.013	48 (6.7)	1.36 (0.75, 2.45)	0.315
10+	1110 (43.6)	1.17 (1.06, 1.28)	0.002	132 (12.4)	2.47 (1.45, 4.20)	<0.001
Condomless anal sex, past 12 months						
Yes	1787 (39.3)	0.94 (0.88, 0.996)	0.039	147 (8.6)	1.31 (0.97, 1.79)	0.080
No	1163 (42.6)	Referent		88 (7.8)	Referent	
Condomless anal sex, at last sex						
Yes	1086 (36.4)	0.89 (0.84, 0.95)	<0.001	78 (7.5)	1.01 (0.75, 1.36)	0.933

Characteristics	Aware of PEP ^a			Ever used PEP ^b		
	n (%)	aPR (95% CI) ^c	p-value	n (%)	aPR (95% CI) ^c	p-value
No	2177 (41.0)	Referent		173 (8.2)	Referent	
Condomless anal sex with partner whose HIV status was positive or unknown, at last sex						
Yes	363 (33.3)	0.83 (0.75, 0.91)	<0.001	35 (10.4)	1.36 (0.92, 2.02)	0.127
No	2898 (40.3)	Referent		215 (7.6)	Referent	
Concurrency in past 12 months ^e						
Yes	1750 (41.3)	1.04 (0.96, 1.12)	0.397	143 (8.5)	1.31 (0.87, 1.97)	0.204
Don't know	576 (37.4)	0.98 (0.89, 1.09)	0.754	47 (8.4)	1.19 (0.72, 1.98)	0.492
No	577 (39.4)	Referent		34 (6.0)	Referent	
Bacterial STI, past 12 months ^f						
Yes	346 (42.7)	1.04 (0.95, 1.14)	0.371	36 (10.7)	1.32 (0.90, 1.94)	0.149
No	2821 (39.5)	Referent		212 (7.8)	Referent	
Total	3411 (39.2)			268 (8.2)		

Abbreviations: HIV: human immunodeficiency virus; PEP: HIV post-exposure prophylaxis; aPR: adjusted prevalence ratio; CI: confidence interval; IMSS: Instituto Mexicano del Seguro Social; ISSSTE: Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado; CDMX/EdoMex: Ciudad de México and Estado de México; STI: sexually transmitted infection.

Note: Numbers may not sum to total due to missing data.

^aOf 8818 HIV-negative MSM, 8706 provided valid response about awareness of PEP.

^bAnalyses were limited to participants who reported being aware of PEP. Of 3411 HIV-negative MSM aware of PEP, 3286 provided valid response about use of PEP.

^cModels for each exposure-outcome association adjusted for age, education, income, region, health insurance, and recruitment venue.

^dOther health insurance included: Sedena/Semar, Pemex, Private, or Other reported as participant's only health insurance.

^eConcurrency was defined as the participant or their last sexual partner having sex with other partners during the time when they were having sex with each other, as reported by the participant; analyses of concurrency were limited to participants with at least one sexual partner.

^fBacterial STI included gonorrhoea, chlamydia, or syphilis.