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HIV Preexposure Prophylaxis and Sexual Satisfaction Among Men Who Have Sex with Men

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Abstract

In this large online survey of primarily men who have sex with men, those who used preexposure prophylaxis reported greater sexual satisfaction than non-users, including sexual sensations, sexual presence/awareness, and sexual exchange. Person-centered care and messaging may require acknowledging that some people use preexposure prophylaxis for reasons beyond HIV prevention.

Short summary:

In this large online survey of primarily men who have sex with men, those who used preexposure prophylaxis reported greater sexual satisfaction than non-users, including sexual sensations and sexual presence/awareness.

Keywords

preexposure prophylaxis (PrEP); human immunodeficiency virus (HIV); sexual health; sexual satisfaction; men who have sex with men (MSM)

Introduction

Preexposure prophylaxis (PrEP) is ~99% effective in reducing the risk of HIV acquisition when taken daily. In addition to its robust HIV-prevention benefits, PrEP may contribute to broader sexual health.¹ According to the World Health Organization, sexual health encompasses more than the absence of disease, including physical, mental, and social wellbeing in relation to sexuality.² Condoms have been identified as a barrier to multiple aspects of sexual wellbeing among men who have sex with men (MSM), including pleasure, trust, and intimacy.³ Because PrEP is highly effective in preventing HIV transmission, some users may choose to decrease their condom use, resulting in increased sexual wellbeing.

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In the January 2020 issue of the *American Journal of Public Health*, a series of articles called for increased attention to the role of pleasure in sexual health and public health more broadly. Others have called for a shift in research toward a “positive epidemiology” that focuses on health assets rather than just disease and its risk factors.⁴ However, most studies on PrEP use have focused on disease outcomes, specifically HIV and other sexually transmitted infections (STI), or on condomless sex as a negative outcome of PrEP use. Few studies have explored the association between PrEP use and positive aspects of sexual health, which may be as important to some people as the absence of infection.⁵

In this study, we evaluated the association between PrEP use and sexual satisfaction in a large online sample of HIV-negative adults, primarily MSM, in the United States.

Methods

We developed a survey to assess experiences with PrEP, as previously described.⁶ The survey was open to U.S. residents who were at least 18 years old, did not report a history of HIV diagnosis, and could complete a survey in English. After piloting the survey and incorporating feedback in an iterative fashion, we used online advertisements to recruit a national sample of respondents from two geosocial sexual networking apps that are used predominantly by MSM. The survey was distributed in May 2019. After completing the anonymous survey, participants were invited to enter a raffle to receive a \$50 gift card via email.

Survey domains included sociodemographic characteristics (e.g., age, assigned sex at birth, gender identity, race, ethnicity, income); sexual history (e.g., number of partners, condom use); and recent STI diagnoses, including gonorrhea, chlamydia, or syphilis. Respondents who reported PrEP use in the past six months were categorized as PrEP users.

The primary outcome for this analysis was sexual satisfaction, as measured by the New Sexual Satisfaction Scale (NSSS; Cronbach’s $\alpha=0.94$).⁷ The NSSS is not specific to any gender, sexual orientation, or relationship status. The 20-item scale includes five dimensions: 1) sexual sensations, 2) sexual presence/awareness, 3) sexual exchange (i.e., reciprocity of attention and pleasure), 4) emotional connection/closeness, and 5) sexual activity. These dimensions contribute to two subscales: one focused on personal experiences and sensations (i.e., ego-focused) and the other on the respondent’s perception of partners’ reactions and sexual activity in general (i.e., partner and activity-focused). Respondents were prompted as follows: *Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects. If you have had more than one sexual partner in the last 6 months, please respond based on your overall experience.* The response scale ranged from 1 (*not at all satisfied*) to 5 (*extremely satisfied*).

Analyses were restricted to respondents who reported at least one sex partner in the last six months. We used chi-square tests to compare demographic and behavioral characteristics of PrEP users and non-users, and used t-tests to compare means for the full NSSS, the two subscales, and each individual item. We excluded respondents from analyses if data were missing for a given variable. We did not conduct multivariable analyses to adjust for

confounding because we were not assessing a causal relationship in this cross-sectional study.⁸ Analyses were conducted in SAS 9.5 (Cary, North Carolina).

Results

Of 9,697 respondents, 7,639 reported at least one sex partner in the last six months and were included in analyses. Mean age was 42.3 years (interquartile range 31–53), 68.5% were non-Hispanic white, and 96.1% were MSM. More than one-third (38.5%) used PrEP in the past six months. More PrEP users than non-users were MSM (96.7% vs. 95.8%, $P=0.038$) and had annual incomes \$80,000 (30.4% vs. 22.5%, $P<0.001$), and PrEP users were younger than non-users (mean age 41.2 vs. 43.0 years, $P<0.001$). The distribution of race/ethnicity differed by PrEP use ($P=0.011$), with a lower proportion Black (6.8% vs. 8.3%) and higher proportion Hispanic (12.6% vs. 11.3%) among PrEP users compared with non-users. In the past six months, more PrEP users than non-users had been diagnosed with an STI (24.7% vs. 8.4%, $P<0.001$) and fewer reported always using condoms (7.1% vs. 20.4%, $P<0.001$). PrEP users reported more sex partners than non-users in the past six months (mean 14.2 vs. 6.2, $P<0.001$).

Compared with non-users, PrEP users had higher mean scores for the full sexual satisfaction scale (70.2 vs. 69.2, $P=0.012$), the ego-focused subscale (36.3 vs. 35.8, $P=0.007$), and the subscale focused on partners and sexual activity (33.8 vs. 33.3, $P=0.014$; Table 1). Mean scores were significantly higher for PrEP users than non-users for 11 of 20 individual items across multiple dimensions of the sexual satisfaction scale, including sexual sensations (e.g., “the quality of my orgasms”), sexual presence/awareness (e.g., “my ‘letting go’ and surrender to sexual pleasure during sex”), sexual exchange (e.g., “the pleasure I provide to my partner”), and sexual activity (e.g., “the variety of my sexual activities”). Individual items measuring emotional connection/closeness (e.g., “my emotional opening up in sex”) did not differ significantly between PrEP users and non-users.

Discussion

In this large online sample of primarily MSM using sexual networking apps in the U.S., PrEP users reported greater sexual satisfaction than non-users. This association was consistent across multiple dimensions of sexual satisfaction, including sexual sensations, sexual presence/awareness, sexual exchange, and sexual activity, but not emotional connection/closeness. If causal, there are at least two possible explanations for the observed associations. First, people with greater sexual satisfaction may be more likely to seek out or be offered PrEP because of having more partners or using condoms less frequently. Second, PrEP may promote sexual satisfaction by facilitating condomless sex with reduced anxiety about HIV.

Studies on patient-reported outcomes among PrEP users have consistently found a reduction in anxiety about sex and HIV,^{9–12} but few have explored the association of PrEP use with sexual satisfaction. Whitfield et al. evaluated the longitudinal relationship between PrEP use and sexual satisfaction, sexual esteem, and sexual anxiety in a prospective cohort of gay and bisexual men in the U.S., finding that PrEP users experienced a reduction in sexual anxiety

but no change in sexual esteem or sexual satisfaction after initiating PrEP.¹³ Our results may have differed because of differences in study design or the scales used to measure sexual satisfaction, with the NSSS measuring constructs more associated with physical sexual pleasure than the scale used by Whitfield and colleagues.

Our study was strengthened by its large sample size and anonymity, which may have facilitated disclosure of potentially sensitive information about PrEP use and sexual experiences. The primary limitation was the cross-sectional design, which precludes conclusions about temporality or causality. Because most respondents were non-Hispanic white MSM, our results are not generalizable to all MSM or other populations at risk for HIV in the United States. We also note that differences in the measures of sexual satisfaction between PrEP users and non-users were small; further research can elucidate the relevance of these differences for people's sexual health and well-being.

Our findings suggest that the benefits of PrEP may extend beyond HIV prevention, with PrEP use associated with greater sexual satisfaction among MSM. Person-centered care and effective public health messaging may require acknowledging that some people use PrEP for reasons other than disease prevention. Future longitudinal and qualitative studies can further elucidate the relationship between PrEP, sexual satisfaction, and other positive aspects of sexual health.

Conflicts of Interest and Source of Funding:

Conflicts of interest: JLM has consulted in the past for Kaiser Permanente Northern California on a research grant from Gilead Sciences. DSK has conducted research with project support from Gilead Sciences; has received honoraria for authoring or presenting continuing medical education content for Medscape, MED-IQ, and DKBMEd; and has received royalties for authoring content for Up-to-Date, Inc. KHM has received unrestricted research grants from Gilead Sciences and Janssen, and has been on Scientific Advisory Boards for Gilead and Merck. All other authors declare no conflicts. *Source of funding:* This work was supported by the Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute, and JLM is supported in part by the National Institute of Allergy and Infectious Diseases [K01 AI122853].

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Table 1.

Comparison of sexual satisfaction between respondents who used preexposure prophylaxis (PrEP) and those who did not use PrEP in the past six months: U.S. online survey, May 2019

<i>Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects:</i>	PrEP users (n=2,942)	PrEP non-users (n=4,697)	P
Individual scale items, mean (SD)			
The intensity of my sexual arousal	3.73 (0.91)	3.67 (0.98)	0.009
The quality of my orgasms	3.68 (0.95)	3.61 (1.04)	0.007
My “letting go” and surrender to sexual pleasure during sex	3.64 (1.05)	3.56 (1.11)	0.001
My focus/concentration during sexual activity	3.61 (0.96)	3.55 (1.03)	0.009
The way I sexually react to my partner(s)	3.76 (0.92)	3.70 (1.01)	0.006
My body’s sexual functioning	3.44 (1.08)	3.49 (1.12)	0.10
My emotional opening up in sex	3.35 (1.11)	3.34 (1.14)	0.73
My mood after sexual activity	3.76 (0.98)	3.67 (1.06)	<0.001
The frequency of my orgasms	3.42 (1.14)	3.39 (1.18)	0.34
The pleasure I provide to my partner(s)	3.94 (0.91)	3.89 (0.97)	0.023
The balance between what I give and receive in sex	3.54 (1.03)	3.50 (1.09)	0.14
My partner(s)’ emotional opening up during sex	3.26 (1.07)	3.28 (1.11)	0.41
My partner(s)’ initiation of sexual activity	3.38 (1.10)	3.33 (1.17)	0.09
My partner(s)’ ability to orgasm	3.77 (1.01)	3.76 (1.06)	0.74
My partner(s)’ surrender to sexual pleasure (“letting go”)	3.67 (1.00)	3.63 (1.07)	0.18
The way my partner(s) take care of my sexual needs	3.49 (1.09)	3.43 (1.15)	0.038
My partner(s)’ sexual creativity	3.30 (1.11)	3.23 (1.19)	0.011
My partner(s)’ sexual availability	3.13 (1.15)	3.11 (1.21)	0.45
The variety of my sexual activities	3.37 (1.11)	3.27 (1.17)	<0.001
The frequency of my sexual activity	2.99 (1.24)	2.83 (1.29)	<0.001
Subscale 1: ego-focused, mean (SD)	36.32 (7.48)	35.80 (8.22)	0.007
Subscale 2: partner(s) and sexual activity, mean (SD)	33.83 (8.37)	33.31 (9.07)	0.014
Full scale, mean (SD)	70.19 (14.74)	69.24 (16.08)	0.012

Sexual satisfaction was measured using the New Sexual Satisfaction Scale.⁷ Responses were anchored as follows: 1 = *not at all satisfied*, 2 = *a little satisfied*, 3 = *moderately satisfied*, 4 = *very satisfied*, 5 = *extremely satisfied*. P-values were obtained from t-tests.