

Pre-Exposure Prophylaxis and Post-Exposure Prophylaxis awareness among men who have sex with men in Brazil

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Abstract

AIM: We aim to characterize PEP and PrEP awareness in a large national sample of Brazilian MSM.

SUBJECT: Various disparities exist in HIV transmission among men who have sex with men (MSM). Post-exposure Prophylaxis (PEP) and Pre-exposure prophylaxis (PrEP) has been shown as important strategies to prevent HIV, but there is variation in uptake within the MSM population.

METHODS: This was a cross-sectional, population survey-based, analytical study, conducted exclusively online in all the regions of Brazil, with a sample of 2250 MSM. The multivariate logistic regression model was adopted to produce adjusted odds ratios (ORa), considering a significance level at .05.

RESULTS: We found a low knowledge about forms of prevention, with 54.6% claiming to know PEP and 46.4% PrEP. Men who did not recognize themselves as homosexual, that is bisexual (ORa = 1.89, 95% CI 1.48-2.40) and heterosexual (ORa = 3.83, 95% CI 2.80-5.24) were more likely to know the PEP. Having a higher minimum wage (ORa = 0.72, 95% CI 0.56-0.93) decreased the chances of knowing PrEP, as well as having a higher level of education, factors that usually coexist, with the graduate level being the highest of them (ORa = 0.13, 95% CI 0.06-0.28).

CONCLUSION: Men still seem to know PEP from experience, after the failure of other preventive measures and not beforehand. PrEP awareness is permeated by barriers related to structure and social determinants.

Introduction

Men who have sex with men (MSM) belong to a population group that, classically, presents additional vulnerabilities to Sexually Transmitted Infections (STIs), due to factors such as: homophobia, discrimination, difficulty in accessing health services and sexual behavior (Fogel et al, 2020).

Among the current biomedical prevention strategies against HIV infection, Pre-Exposure Prophylaxis (PrEP), has stood out for its effectiveness in developed clinical trials, with a reduction in the risk of infection ranging from 92–100%, depending on adherence to therapy (Heffron et al, 2017). Its use is particularly recommended for key populations vulnerable to infection including, but not exclusively to, MSM.

Another important preventive strategy, Post-Exposure Prophylaxis (PEP), was implemented in the current forms in the Brazilian Health System (SUS) in 2015. However, since 1990 this technology has been used in a timely manner, especially in the case of accidents contaminated or potentially contaminated materials. Subsequently, it was gradually expanded to cases of sexual violence (1998) and then to any type of sexual exposure (2011) (Brasil, 2015).

Both strategies stand out in the prevention of HIV due to their character of chemoprophylaxis, with high rates of effectiveness and ability to act in scenarios where there is failure or non-use of condoms. Despite

this, there are data that demonstrate a growing number of new HIV cases in this population (Queiroz et al, 2019).

Understanding the current levels of knowledge and the barriers to access to PEP/PrEP among this group is an important step to expand their acceptance, as the knowledge of PEP/PrEP was correlated with the future willingness to adopt it (Petroll et al, 2017; Chu et al, 2019). Therefore, the objective of this study is to assess awareness of PEP and PrEP among Brazilian MSM.

Methods

This is an analytical, epidemiological, cross-sectional study, conducted with an online national survey conducted with Brazilian MSM.

The sample was defined based on the population of 3.5% of MSM as recommended by the Ministry of Health of Brazil. The sample size calculation considered a maximum tolerable error of 5% and a significance level of 5%, in the case of a decision to reject the main hypotheses under analysis in the study, with the final sample being fixed at 2250 participants. To participate in the research, individuals should identify themselves as cisgender men, be 18 years of age or older and have had at least one sexual relationship with another man in the last 12 months (Petroll et al, 2017).

To obtain the data, a page was created on Facebook® (<https://www.facebook.com/taafimdeque/>) with a fixed post containing details of the survey and invitation to participate. This post was boosted to reach online participants in all regions of Brazil. Concomitantly, it was disseminated in Facebook® groups. The user had access to a link that directed him to the study questionnaire hosted on Google Forms. Internet users who signed the Free and Informed Consent Form online and filled out all items in the questionnaire were included. Participants should inform the email to avoid duplicate responses, more details of this method have been published previously (Queiroz et al, 2019a, Queiroz et al, 2019b).

The post was accompanied by an electronic link that gave access to the survey questionnaire, which was subdivided into four sections to address the participants' social, demographic and health information, which are: (1) Personal characteristics; (2) Sociocultural characteristics; (3) Health issues and (4) Sexual Behaviors and Practices. The researchers used the free Google forms tool, creating a planned form so that all mandatory questions were answered. In this way, the questionnaire would only be computed if, at the end, all conditions were met, therefore, those that were not finalized were not saved by the system. To answer the questionnaire, participants should inform the email, avoiding duplicate responses.

The descriptive analysis of the numerical and categorical variables was performed with the aid of the IBM® Software Statistical Package for the Social Science (SPSS) version 26.0. For bivariate analysis of the variables of interest in relation to PEP/PrEP awareness, chi-square tests were used. The binary logistic regression model was adopted to produce the "odds ratios" (Adjusted OR) to assess factors related to the chance of knowing the prevention strategies, adopting the Brazilian regions as an adjustment point in order to allow the extrapolation of the results to the national level despite regional differences.

In the binary logistic regression analysis with the enter method, we included significant variables in the bivariate analyzes and reported as important in the theoretical background. Bivariate and multivariate logistic regression generated Odds Ratio (OR) and adjusted OR and presented a 95% confidence interval indicating the chances of knowing PEP and PrEP, categorized into: Yes or No.

The study complied with national and international standards of ethics in research with human beings and was approved by the Research Ethics Committee of the Federal University of Piauí, Opinion No. 1.523.003.

Results

On average, participants were 25.74 years old (SD = 7.76), had completed higher education (57.8%), were single (75.2%), did not practice any religion (63.9%), lived with parents (55.5%), with an average individual income of 2145 reais and identified themselves as homosexuals (75.7%). Most participants lived in the southeastern region of Brazil (50.3%) (Table 1).

Table 1
Sociodemographic characteristics of users of geosocial applications (n = 2250).

Variables	N (%)	Mean	SD	Min-Max
Income		2154.5	2734	0-30000
Age in years		25.74	7.76	18–90
18 to 20	522(23.2)			
21 to 25	836(37.1)			
26 to 30	488(21.7)			
More than 30	376(16.7)			
Education				
Elementary School	57(2.5)			
High school	445(19.7)			
Higher education/College degree	1.303(57.8)			
Graduate	445(19.7)			
Brazil's region				
North	108(4.8)			
Northeast	336(14.9)			
Midwest	202(9.0)			
Southeast	1.133(50.3)			
South	424(18.8)			
Type of relationship				
Single	1.696(75.2)			
Stable relationship	516(22.9)			
Divorced/Widow	38(1.7)			
Sexual orientation				
Heterosexual	214(9.5)			
Bisexual	320(14.2)			
Homosexual	1707(75.7)			
HIV status				
Positive	159 (7.1)			

Variables	N (%)	Mean	SD	Min-Max
Negative	1452 (64.5)			
Does not know	639 (28.4)			
Health service frequency				
Monthly	235 (10.4)			
Every 2 months	279 (12.4)			
Every 6 months	700 (31.1)			
Annually	445 (19.8)			
Rarely	591 (26.3)			

Regarding the health aspects of MSM, the prevalence of HIV in the sample was 7.1%, however 28.4% of the participants did not know their HIV serological status; the search for health services shows a distance from the population, in which 31.1% report going to the service twice a year and 26.3 only rarely. In contrast, the Internet was reported as the main source of information on HIV by 87% of them, although knowledge about the forms of prevention was low, with 54.6% claiming to know PEP and 46.4% PREP.

The association between PEP and PREP awareness and the other sociodemographic variables are explored in Tables 02 and 03. All variables were statically significant (see Supplementary Files-Tables 02 and 03).

In the analysis of the associated factors on PEP awareness (Fig. 1), the adjusted OR values are shown. Having a lower minimum wage (ORa = 1.43, 95% CI 1.12–1.83) increased the chances of knowing the strategy, however having a higher education, had a protective effect on the outcome, and the level of graduate the highest (ORa = 0.15, 95% CI 0.08–0.29) which is related to the finding that older men (ORa = 0.62, 95% CI 0.52–0.74) has a decreased chance of awareness. Men who did not recognize themselves as homosexual, that is bisexual (ORa = 1.89, 95% CI 1.48–2.40) and heterosexual (ORa = 3.83, 95% CI 2.80–5.24) were more likely to know the PEP.

As for health aspects, not having been diagnosed with HIV increased awareness (ORa = 2.22; 95% CI 1.86–2.64) as well as a greater search for health services (ORa = 1.78; 95% CI 1.51–2.11) and be seronegative (ORa = 2.22, 95% CI 1.86–2.64). However, not having had an STI (ORa = 0.5, 95% CI 0.33–0.74), not knowing about aspects of one's own health such as having had an STI (ORa = 0.93, 95% CI 0.67–1.27) or your partner (ORa = 0.66, 95% CI 0.54–0.80) decrease the chances.

In the analysis of the factors associated with the studied PrEP awareness cohort (Fig. 2), the crude OR values adjusted for the region of the country are presented. Having a higher minimum wage (ORa = 0.72, 95% CI 0.56–0.93) decreased the chances of knowing the strategy, as well as having a higher degree of

education, factors that usually coexist, with the graduate level being the highest of them (ORa = 0.13, 95% CI 0.06–0.28). Men who did not recognize themselves as homosexual, that is bisexual (ORa = 1.9, 95% CI 1.50–2.47) and heterosexual (ORa = 5.07, 95% CI 3.51–7.42). The health aspects remained relevant for the analysis, not having been diagnosed with HIV increased awareness (ORa = 2.24; 95% CI 1.85–2.64) as well as a greater search for the health service (ORa = 2.01; 95% CI 1.70–2.34) (see Supplementary Files-Tables 04 and 05).

Discussion

The use of specific drugs to prevent HIV is an important development in combating the disease. However, its availability has no value if people are not aware of its existence. Our findings clearly indicate the need for further education to raise awareness of these alternative methods of prevention. Health departments, community organizations and health service providers can contribute to such efforts.

The findings bring relationships that defy common sense, which is often based on heterosexist perceptions about the LGBT + community. Due to the historical construction of the disease in the community, this condition causes strangeness among heterosexuals who, before being infected, were not at risk. This leads to the concern to hide their diagnoses, as a way to preserve their personal and social identities and before the construction of the family (Okoror et al, 2016). In our results, those who do not identify themselves as homosexuals, are more aware of PEP, this can be explained by previous contacts with this form of prevention, since heterosexual men do not perceive themselves at risk for infection, may adopt worse prevention strategies. and, with that, resort to PEP. This hypothesis needs further studies to be confirmed, since the data available in the Brazilian health service do not present an investigation between sexual orientation and the form of exposure (sex with men or women). In fact, mixed studies that explore the relationship between past exposures, perceived risk of future exposures and their own sexual identity would contribute to understanding the finding.

There is a lack of studies on men who identify themselves as heterosexual and the search for PEP (Leal, Knauth and Couto, 2015), with a recent focus on a context of sexual violence (Ebert et al, 2018), which exposes their disconnection with preventive methods, either internally (by themselves) or externally (by third parties, health professionals or researchers) that validate this false sense of safety.

Despite this, the increasing numbers of PEP use in Brazil place heterosexual men as the third group (Brasil, 2020) that most seeks the strategy. These data, however, do not indicate whether the exposure that led to prophylaxis was hetero or homosexual, which could allow a more informed debate about sexuality, prevention and interventions.

Qualitative study that sought to understand this phenomenon points out the search for PEP provided an opportunity for reflection on the way of thinking and preventing not only HIV, but also other STIs. The stigma related to the use of antiretrovirals and the need to hide medication from friends and family were elements that caused self-reflection about personal vulnerabilities in the face of (possible) infection. The ideals of hegemonic masculinity permeated the discourses of perception and risk management for

infection by the virus. Awareness raising actions should be directed so that such patterns of masculinity are re-signified in order to reduce the vulnerability of men in general and, more specifically, among the segments of heterosexuals (Santos et al, 2020).

Our study shows a difference in the available literature, since the studies show that the price of PrEP is one of the biggest barriers to access (Bauermeister et al, 2013, Dolezal et al, 2015) and in Brazil their access is free and universal (available to the entire population), which reveals new and unique barriers to the country, mainly social inequities, since most users are located in large urban centers, they are cisgender men, white and young (Marins et al, 2019). Since our results are based on data of the whole country, not only bid urban centers, this can explain the difference to other studies.

Both going to the service and being HIV negative proved to be relevant to the knowledge of the two strategies, given that our findings can help to design interventions specifically designed for the MSM population (Liu et al, 2008), classically considered difficult to access (due to individual, social and structural vulnerabilities). Intervention studies to increase awareness and adherence to strategies show that aspects such as confidentiality, privacy, reliability and convenient location in the health service are fundamental for users (Restar et al, 2017).

The conclusions of this study are subject to limitations. The main one is that it was based on information self-reported by the participants. This information is subject to memory bias, in the absence of health records for verification. To mitigate this limitation, participants were instructed to consult their records, if necessary. Another aspect to be considered is the cross-sectional nature of the study.

Although there are caveats about the reliability of the data, the literature is replete with studies that reinforce the feasibility of using personal reports to study diseases that are heavy on stigma and prejudice, such as HIV/AIDS, especially among hard-to-reach populations, such as MSM (Venable et al, 2019).

Conclusion

Despite being important strategies to stop the advance of the HIV pandemic, there are shortcomings in the service to reach MSM, one of the main populations to benefit from them. Men still seem to know PEP from experience, after the failure of other preventive measures and not beforehand. And awareness of PrEP is permeated by barriers related to structure and social determinants. Greater public outreach and education are expected to address this deficiency so that PEP and PrEP can achieve their public health potential.

Declarations

Author's contribution:

AQ: made substantial contributions to the conception and design of the work; in the acquisition, analysis, and interpretation of data; drafted the work and approved the version to be published. AS: made substantial contributions to the conception and design of the work; in the acquisition, analysis, and interpretation of data; and approved the version to be published. IM: revised it critically for important intellectual content and approved the version to be published. SD: revised it critically for important intellectual content and approved the version to be published.

Compliance with Ethical Standards

Disclosure of potential conflict of interest

The authors declare that they have no conflict of interest.

Research involving human participants

All procedures in the present study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This study was approved by the human research ethics Committee of the Ribeirão Preto College of nursing, as per report 1,523,003.

Informed consent

All participants in this study provided online informed consent prior to enrollment. They were also informed that participating in the study was voluntary and that participants could at any time and without any given reason withdraw their consent to participate. Contact information was provided for any issues.

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Figures

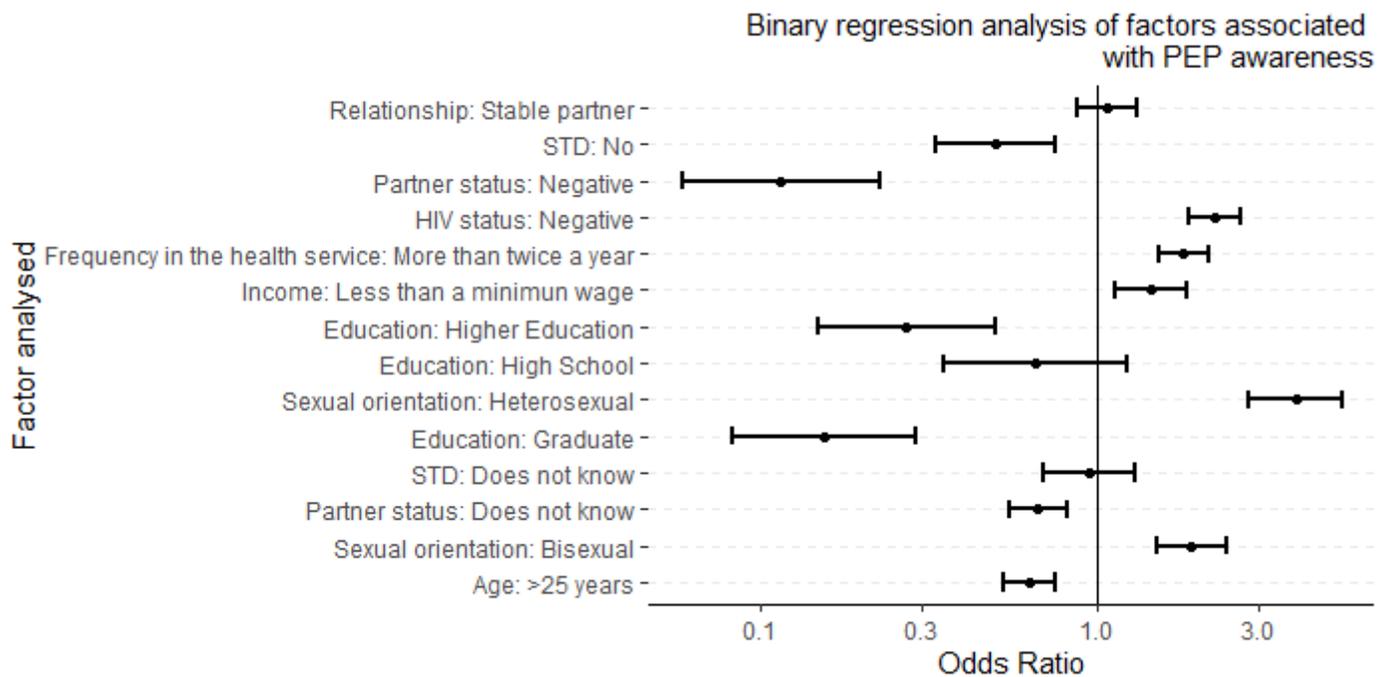


Figure 1

analysis of the associated factors on PEP awareness

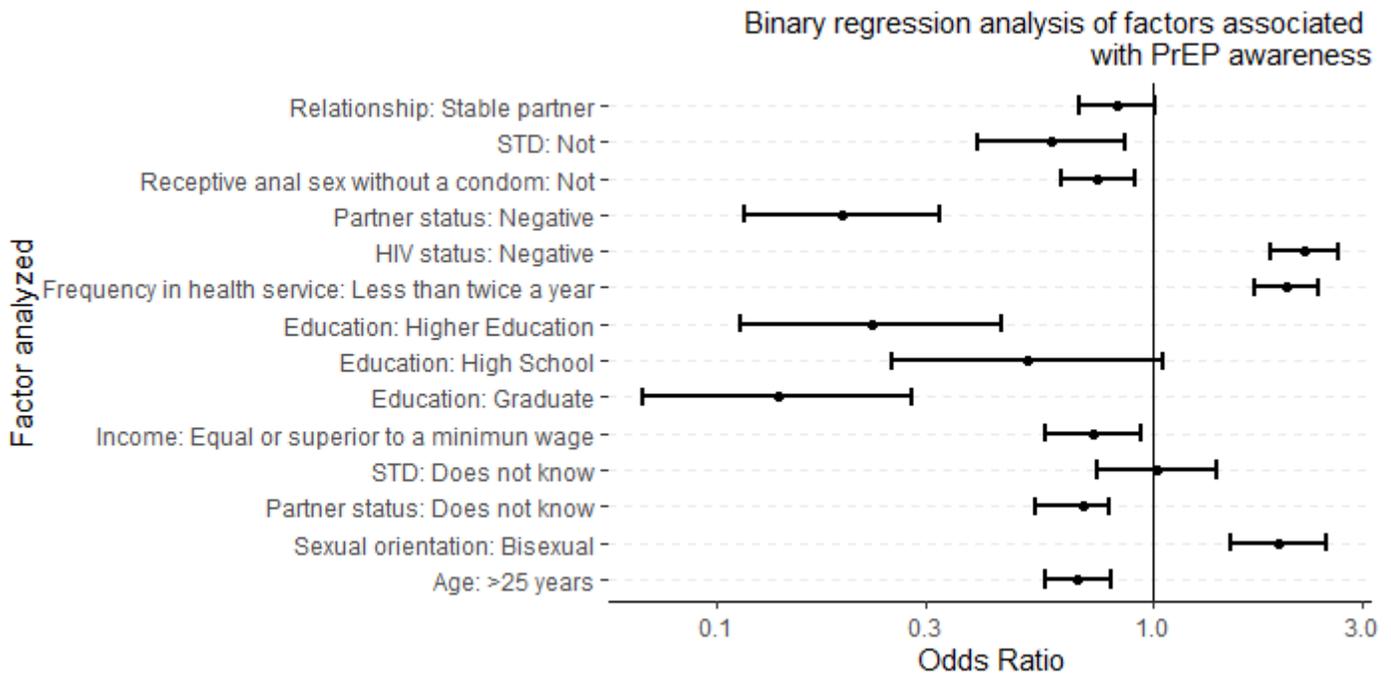


Figure 2

analysis of the factors associated with the studied PrEP awareness cohort

Supplementary Files

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