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RESEARCH

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Use of pre-exposure prophylaxis for HIV among gay and other men who have sex with men

Uso da profilaxia pré-exposição ao HIV por gays e homens que fazem sexo com homens

Uso de profilaxis previa a la exposición al VIH por hombres homosexuales y hombres que tienen relaciones sexuales con hombres

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ABSTRACT

Objective: To estimate the prevalence and factors associated with adherence to and discontinuation of pre-exposure prophylaxis (PrEP) for HIV among gay and other men who have sex with men (MSM). Methods: This is a cross-sectional epidemiological study. Outcomes analyzed were adherence to and discontinuation of PrEP use. Results: The prevalence of PrEP adherence was 73.3%, while discontinuation reached 19.0%. Adherence was associated with factors such as missed medical appointments and diagnoses of sexually transmitted infections (STIs). Discontinuation, on the other hand, was linked to race, missed medical appointments, periods of non-use, switching health care providers, and tobacco use. Conclusion and implications for practice: Adherence was the most prevalent outcome in PrEP use among gay and other MSM. Both adherence and discontinuation were influenced by social, cultural, economic, racial/ethnic, and psychological factors. Identifying these associations may help improve the implementation of health policies, monitor PrEP usage, and strengthen the Brazilian Unified Health System (SUS).

Keywords: Cross-Sectional Studies; HIV; Pre-Exposure Prophylaxis; Sexual and Gender Minorities; Sexually Transmitted Diseases.

RESUMO

Objetivo: Estimar a prevalência e os fatores associados à adesão e à descontinuidade da profilaxia pré-exposição (PrEP) ao HIV por gays e homens que fazem sexo com homens (HSH). Método: Este é um estudo epidemiológico transversal. Os desfechos analisados foram a adesão e a descontinuidade do uso da PrEP. Resultados: A prevalência de adesão ao uso da PrEP foi de 73,3%, enquanto a descontinuidade atingiu 19,0%. A adesão mostrou associação com fatores como faltas às consultas e diagnóstico de infecções sexualmente transmissíveis (ISTs). Já a descontinuidade esteve associada à raça, faltas às consultas, períodos de interrupção no uso, troca de serviço de saúde e consumo de fumo/tabaco. Conclusão e implicações para a prática: A adesão foi o desfecho mais prevalente entre gays e HSH no uso da PrEP. Tanto a adesão quanto a descontinuidade demonstraram relação com fatores sociais, culturais, econômicos, étnico-raciais e psicológicos. Identificar essas associações pode ser útil para aprimorar a implementação de políticas de saúde, monitorar o uso da PrEP e fortalecer o Sistema Único de Saúde (SUS).

Palavras-chave: Estudos Transversais; HIV; Infecções Sexualmente Transmissíveis; Minorias Sexuais e de Gênero; Profilaxia Pré-Exposição.

RESUMEN

Objetivo: Estimar la prevalencia y los factores asociados con la adherencia y la discontinuación de la profilaxis preexposición (PrEP) para el VIH entre hombres gays y otros hombres que tienen sexo con hombres (HSH). Métodos: Este es un estudio epidemiológico transversal. Los desenlaces analizados fueron la adherencia y la discontinuación del uso de PrEP. Resultados: La prevalencia de adherencia a la PrEP fue del 73,3%, mientras que la discontinuación alcanzó el 19,0%. La adherencia se asoció con factores como la ausencia en consultas médicas y el diagnóstico de infecciones de transmisión sexual (ITS). Por otro lado, la discontinuación estuvo vinculada con la raza, la ausencia en consultas médicas, los períodos de no uso, el cambio de proveedores de atención médica y el uso de tabaco. Conclusión e implicaciones para la práctica: La adherencia fue el desenlace más prevalente en el uso de la PrEP entre hombres gays y otros HSH. Tanto la adherencia como la discontinuación estuvieron influenciadas por factores sociales, culturales, económicos, raciales/étnicos y psicológicos. Identificar estas asociaciones puede ayudar a mejorar la implementación de políticas de salud, monitorizar el uso de la PrEP y fortalecer el Sistema Único de Salud (SUS) de Brasil.

Palabras clave: Estudios Transversales; VIH; Profilaxis Preexposición; Minorías Sexuales y de Género; Enfermedades de Transmisión Sexual.

INTRODUCTION

Human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) involves the use of antiretroviral (ARV) drugs to reduce the risk of HIV infection, the cause of acquired immunodeficiency syndrome (AIDS). This strategy is part of combination prevention and has been shown to be effective and safe for people at higher risk of infection, such as gay men and men who have sex with men (MSM), especially when they are in specific contexts that increase the likelihood of exposure to the virus.[1]

The Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates that the total number of people using oral PrEP worldwide increased from just over 233,000 in 2019 to more than 2.5 million in 2022.[2] In Brazil, since the introduction of PrEP in 2017, 149,023 individuals have started using the drug, and 76,997 were using it as of December 2023. Among these individuals, gay men and other cisgender MSM stand out, accounting for 63,152 (82.0%) of PrEP users in Brazil.[3]

The effectiveness of PrEP is strongly associated with adherence, which can be influenced by factors such as social vulnerability and the stigma surrounding AIDS. This stigma can affect the experiences of individuals using PrEP in various ways, hindering both the uptake and adherence to the prophylaxis.[4-6] Additionally, knowledge about the prophylaxis, personal motivations, and racial, ethnic, economic, and psychosocial factors can also impact adherence. Understanding the correct use and effectiveness of PrEP, self-perception of risk, fear of HIV infection, social status, and religiosity may influence adherence to the prophylaxis.[7-10]

Of the 110,429 individuals who received at least one dispensation of PrEP between January and December 2023 in Brazil, 33,432 (30%) discontinued use by the end of the period.[3] Importantly, PrEP is a prevention strategy that can be interrupted and restarted based on changes in lifestyle, sexual practices, and shifts in risk of HIV infection.[11]

In this context, discontinuation is understood as potentially reflecting a modification, even if temporary, in risk behaviors. However, greater discontinuation is observed at the beginning of use, without being linked to a lower risk of infection.[9,12] Estimates suggest that more than one in four gay men and MSM with recently diagnosed HIV infection either had a history of using and discontinuing PrEP or were using it inconsistently or ineffectively.[13]

Although Brazil was the first country in Latin America to implement the use of PrEP through the Unified Health System (SUS), there is still a lack of Brazilian studies on the outcomes of the use of prophylaxis.[14] Additionally, the discrimination experienced by gay men, MSM, and other sexual and gender minorities increases vulnerability to HIV/AIDS and reduces access to prevention tools.[2]

The challenge in the context of PrEP is translating the knowledge about its effectiveness into the reality of health care services and populations vulnerable to HIV infection while considering the factors that influence the use of PrEP. Thus, the current study aimed to estimate the prevalence and factors associated with adherence to and discontinuation of HIV PrEP among gay men and MSM.

METHOD

This cross-sectional, analytical, and exploratory study was conducted at three specialized outpatient services (SOS) for HIV/AIDS in the city of Fortaleza, Ceará, which provide PrEP for HIV. Data were collected between January and December 2023.

SOS are support services for people living with HIV/AIDS, staffed by multidisciplinary healthcare teams. These services offer care and treatment for people with HIV/AIDS as well as prevention initiatives targeting key and priority populations in the fight against HIV. SOS have different institutional configurations, such as general or specialized outpatient clinics, hospital-based outpatient services, primary healthcare units, health posts, polyclinics, and HIV/AIDS specialized services.

Sample was convenience-based, including all gay men and MSM using PrEP who were attended at the participating clinics, had attended at least one consultation related to the use of HIV pre-exposure prophylaxis, whether for follow-up or clinical monitoring, and were 18 years or older. Those who did not complete the survey were excluded.

The participants were approached by the study team after prior agreement with the professionals responsible for the care and coordination of the service. They were informed about the research, and if they expressed interest in participating, they were referred for data collection.

Data were collected by the study team, after training, by using a printed, structured questionnaire developed by the research authors. The questionnaire included: (1) sociodemographic variables, such as age, race, religion, income, education, and marital status; (2) variables related to PrEP use, such as type of use, duration of use, adherence, discontinuation, missed appointments, intervals of non-use, change of service, characteristics of care, sexual practices, self-perception of risk, substance use, adverse events, and diagnosis of sexually transmitted infections (STIs).

Adherence and discontinuation were adopted as outcomes. Regarding adherence, this study used a binary approach (yes/no), considering "yes" for those who reported taking all the PrEP pills in the 30 days prior to the consultation, and "no" for those who missed one or more pills during that period. Discontinuation was defined in this study as the interruption of PrEP use before or at the time of the interview, which could occur for various reasons, such as a reactive HIV test, changes in laboratory results, low adherence to the medication, adverse events, suspected acute viral infection, user decision, or failure to return for care on the scheduled date. All participants with a history of PrEP discontinuation restarted the prophylaxis at some point.

Data were organized in Microsoft Excel 2016 and subsequently tabulated and analyzed by using Jamovi 2.4.8 and Stata 12.0. Data analysis was conducted based on univariate, bivariate, and multivariate statistics. For the univariate analysis, simple and relative frequencies, mean, standard deviation, median, and first and third quartiles were considered. For quantitative variables, the Shapiro-Wilk test was applied, which indicated non-normality ($p<0.05$). Due to the non-normality of these variables, the Mann-Whitney U test was used.

Bivariate analysis was performed by using the Poisson regression with robust variance, considering a 95% significance level. The strength of the association was calculated using the prevalence ratio (PR), with 95% confidence intervals (CI95%) estimated. Next, a multivariate analysis was conducted by using multiple Poisson regression with robust variance. In the initial model, all predictor variables with $p<0.05$ were included, and those with $p\geq0.05$ were removed one by one. Thus, only the statistically significant variables ($p<0.05$) remained in the final model.

The study was conducted in accordance with the guidelines of Resolutions No. 466/2012 and 510/2016 of the National Health Council, which regulate research involving human subjects. The research protocol was submitted to Plataforma Brasil for evaluation by the research ethics committee of the Universidade Estadual do Ceará under CAAE No. 58371722.6.0000.5534. The protocol was approved with opinion No. 6.295.980/2022.

RESULTS

A total of 105 cisgender gay men and MSM using PrEP participated in this study. The sample had a median age of 32 years (Q1-Q3: 28-35). Regarding race, most participants identified as mixed-race, totaling 48 (45.6%) users. In terms of marital status, most participants were single, representing 92 (87.6%) of the gay men and MSM using PrEP. When asked about religion, 50 (47.6%) stated they had no religious affiliation. Regarding education, 68 (64.8%) of the participants reported having completed higher education. The median monthly income of the participants was BRL 3,000.00 (Table 1).

The prevalence of adherence was 73.3%, while the prevalence of discontinuation was 19.0%. The main reason for discontinuation was failure to return for scheduled appointments. Among the PrEP users who participated in this study, the most common usage pattern was daily, accounting for 97 (92.4%) gay men and MSM. The median duration of PrEP use among participants was 18 months (Q1-Q3: 4-48), ranging from 1 to 84 months. Regarding missed appointments, 22 (21.0%) participants reported missing at least one follow-up or clinical appointment. The adoption of non-use intervals for PrEP was reported by 18 (17.1%) users. Additionally, 33 (31.4%) individuals reported experiencing some adverse event during the use of prophylaxis (Table 2).

Age was statistically significantly associated with adherence ($p=0.040$). Factors such as income, duration of PrEP use, and number of sexual partners were not associated with adherence or discontinuation of PrEP.

Reports of missed appointments, even with rescheduling, reduced adherence to PrEP by 50% (95% CI: 0.29-0.83). Regarding sexual practices, users who used dating/sex apps showed a 20% (95% CI: 0.63-0.97) lower prevalence of adherence. The presence of an STI diagnosis after starting PrEP was associated with a 30% (95% CI: 0.43-0.96) reduction in adherence (Table 3).

Factors such as race, religion, education level, non-use intervals, diagnosis of sexually transmitted infections before starting prophylaxis, and the use of alcohol, tobacco, and illicit drugs showed no statistically significant association with adherence to PrEP use among gay men and MSM.

Self-identified mixed-race gay men and MSM using PrEP showed a significant association with discontinuation of the prophylaxis compared to white individuals, with a prevalence 3.6 times higher for discontinuation (95% CI: 1.09-11.86). A history of missed appointments, even with rescheduling, increased the prevalence of discontinuation by 7.0 times (95% CI: 3.16-15.48). The adoption of non-use intervals for the medication was also associated with an 11.3 times higher prevalence of discontinuation (95% CI: 4.99-25.46). Those who reported changing their PrEP service provider had a 4.0 times higher prevalence of interruption of prophylaxis (95% CI: 1.97-8.25) (Table 4).

Table 1 - Sociodemographic characteristics of gay men and men who have sex with men using HIV pre-exposure prophylaxis (n=105). Fortaleza, CE, Brazil, 2023

Variables	n (%)
Race	
White	40 (38.1)
Mixed-race	48 (45.6)
Black	15 (14.3)
Indigenous	1 (1.0)
Asian	1 (1.0)
Religion	
No religion	50 (47.6)
Catholic	39 (37.1)
Evangelical	3 (2.9)
Spiritist	8 (7.6)
Umbanda and/or candomblé	5 (4.8)
Martial status	
Single	92 (87.6)
Married	10 (9.5)
Divorced	3 (2.9)
Education	
Incomplete elementary school	1 (1.0)
Completed elementary or incomplete high school	5 (4.8)
Completed high school or incomplete higher education	31 (29.5)
Completed higher education	68 (64.7)
Paid employment	
Yes	87 (82.9)
No	18 (17.1)
Private health insurance	
Yes	56 (53.3)
No	49 (46.7)

Table 2 - Characterization of the use of HIV pre-exposure prophylaxis among gay men and men who have sex with men (n=105). Fortaleza, CE, Brazil, 2023

Variables	n (%)
Adherence	
Yes	77 (73.3)
No	28 (26.7)
Adherence based on number of pills	
Took all pills	77 (73.3)
Missed 1 to 4 pills	20 (19.1)
Missed more than 5 pills	8 (7.6)
Discontinuation	
Yes	20 (19.0)
No	85 (81.0)
Reason for discontinuation	
Changes in lab tests	2 (10.0)
User decision	6 (30.0)
Failure to return for scheduled appointments	12 (60.0)
Type of use	
Daily	97 (92.4)
On demand	8 (7.6)
Missed appointments	
Yes	22 (21.0)
No	83 (79.0)
Non-use intervals	
Yes	18 (17.1)
No	87 (82.9)
Change of service provider	
Yes	8 (7.6)
No	97 (92.4)
Presence of adverse events	
Yes	33 (31.4)
No	72 (68.6)
Fear of confusing prophylaxis medications with HIV treatment medications	
Yes	30 (28.6)
No	75 (71.4)

Regarding sexual practices, engaging in sex in exchange for money, valuables, drugs, housing, or other services was associated with 2.6 times increase (95% CI: 1.13-5.85) in the prevalence of discontinuation. Participants in this study who reported using tobacco also showed a 2.3 times higher prevalence (95% CI: 1.04-5.00) of PrEP discontinuation (Table 4).

Factors such as religion, education level, diagnosis of sexually transmitted infections before and after the start of prophylaxis, and the use of alcohol and illicit drugs showed no statistically significant association with adherence to PrEP use among gay men and MSM.

Finally, the variables that were statistically significant in the bivariate tests were included in the multivariate model for both outcomes. Regarding adherence, in the final model, it was observed that a history of missed appointments reduced the prevalence of this outcome by 50% (95% CI: 0.32-0.85). The presence of an STI diagnosis after starting PrEP decreased adherence prevalence by 30% (95% CI: 0.49-0.98) (Table 5).

In the model built for the discontinuation outcome, race stood out as an associated factor, with prevalences 3.4 times higher (95% CI: 1.50-7.96) for mixed-race individuals and 4.1 times higher (95% CI: 1.84-9.28) for black individuals, compared to white individuals. The adoption of non-use intervals increased discontinuation by 10.4 times (95% CI: 4.79-22.62), as did changing the PrEP service provider, which increased the outcome by 4.2 times (95% CI: 1.92-9.35). Additionally, the use of tobacco increased the prevalence of discontinuation by 2.6 times (95% CI: 1.43-4.71) (Table 5)

DISCUSSION

The findings of this study regarding the prevalence of adherence to PrEP among gay men and MSM align with international studies, which showed adherence and continuation rates of 96% at 6 months and 67% at 12 months in Kenya, and 74% at 12 months in the United States (USA).[15,16] However, the prevalence of discontinuation observed in this study was lower than in other studies conducted in the USA and Brazil, where discontinuation rates ranged from 33% to 62% after six months of use of PrEP.[8,17-19]

Although the estimated adherence rate to PrEP among gay men and MSM was relatively high, these values are still not ideal. Effectiveness, both at the individual and collective level, depends on correct medication adherence and the continuity of its use as long as specific contexts that increase exposure to HIV persist. Regarding discontinuation, the observed rate was lower than in other studies, which is due to the failure to capture users who interrupted prophylaxis and did not restart it. Due to the dynamic and fluid nature of sexual practices, partnerships, and the specific contexts in which gay men and MSM are embedded, it is crucial that discontinuation be analyzed in a way that identifies those who interrupted prophylaxis but are still vulnerable to HIV, as opposed to those who discontinued use because there are no longer contexts that justify its continuation.

Regarding the factors associated with the outcomes of PrEP use, older age was statistically associated with adherence. Users over 45 years old showed a consistent and high coverage trajectory of prophylaxis, while those 24 years old or younger tend to experience immediate discontinuation.[16] Older individuals are more likely to follow an adherence trajectory to prophylaxis than one of discontinuation.[20,21]

The use of dating/sex apps was associated with lower adherence to PrEP. This result is consistent with findings from a study on PrEP continuity patterns, where sex with multiple partners or maintaining

Table 3 - Association of adherence to HIV pre-exposure prophylaxis use among gay men and men who have sex with men with social, cultural, economic, ethnic/racial, and psychological factors (n=105). Fortaleza, CE, Brazil, 2023

Variables	Adherence		p-value*	PR	95% CI
	Yes	No			
	n (%)	n (%)			
Missed appointments					
Yes	9 (40.9)	13 (59.1)	0.008	0.5	0.29-0.83
No	68 (81.9)	15 (18.1)			
Non-use intervals					
Yes	9 (50.0)	9 (50.0)	0.067	0.6	0.39-1.03
No	68 (78.2)	19 (21.8)			
Change of service provider					
Yes	5 (62.5)	3 (37.5)	0.542	0.8	0.48-1.46
No	72 (74.2)	25 (25.8)			
Presence of adverse events					
Yes	23 (69.7)	10 (30.3)	0.584	0.9	0.71-1.20
No	54 (75.0)	18 (25.0)			
Casual sex					
Yes	57 (71.3)	23 (28.7)	0.347	0.9	0.69-1.13
No	20 (80.0)	5 (20.0)			
Use of dating/sex apps					
Yes	44 (66.7)	22 (33.3)	0.032	0.8	0.63-0.97
No	33 (84.6)	6 (15.4)			
Engagement in sex for money, valuables, drugs, housing, or other services					
Yes	7 (58.3)	5 (41.7)	0.312	0.7	0.47-1.27
No	70 (75.3)	23 (24.7)			
Self-perception of HIV/AIDS risk					
None	19 (86.4)	3 (13.6)		1	
Low	49 (70.0)	21 (30.0)	0.070	0.8	0.64-1.01
Medium	9 (75.0)	3 (25.0)	0.453	0.8	0.60-1.25
High	0 (0.0)	1 (100.0)			
Diagnosis of STI after starting prophylaxis					
Yes	13 (52.0)	12 (48.0)	0.032	0.7	0.43-0.96
No	64 (80.0)	16 (20.0)			

*Poisson bivariate test with robust variance.

sexual relationships with high-risk HIV partners, or with unknown HIV status, was linked to discontinuation of the use of PrEP.[16]

Missed appointments and non-use intervals of the medication were also found to be associated with adherence and discontinuation outcomes in this study. Lifestyle factors, such as a busy schedule and frequent travel, can make PrEP use a constant challenge.[22] International studies on adherence indicate that the most common barriers are "disruptions in routine" and "forgetting to bring or take the pills".[23,24]

Regarding stigma and discrimination, this study did not identify an association between these factors and the analyzed outcomes. However, these elements may be barriers to PrEP adherence.[22] Stigma is a negative factor for quality of life, especially when related to HIV/AIDS.[25] Stereotypes about PrEP users, such as the idea that they engage in high-risk sexual behaviors, the association of prophylaxis with promiscuity, and the fear of being mistaken for people living with HIV/AIDS, must be addressed and overcome to promote adherence to prophylaxis.

Table 4 - Association of discontinuation of HIV pre-exposure prophylaxis use among gay men and men who have sex with men with social, cultural, economic, ethnic/racial, and psychological factors (n=105). Fortaleza, CE, Brazil, 2023

Variables	Discontinuation		p-value*	PR	95% CI
	Yes	No			
	n (%)	n (%)			
Race					
White	3 (7.5)	37 (92.5)		1	
Mixed-race	13 (27.1)	35 (72.9)	0.034	3.6	1.09-11.86
Black	4 (26.7)	11 (73.3)	0.072	3.5	0.89-14.15
Indigenous	0 (0.0)	1 (100.0)			
Asian	0 (0.0)	1 (100.0)			
Missed appointments					
Yes	13 (59.1)	9 (40.9)	<0.001	7.0	3.16-15.48
No	7 (8.4)	76 (91.6)			
Non-use intervals					
Yes	14 (77.8)	4 (22.2)	<0.001	11.3	4.99-25.46
No	6 (6.9)	81 (93.1)			
Change of service provider					
Yes	5 (62.5)	3 (37.5)	<0.001	4.0	1.97-8.25
No	15 (15.5)	82 (84.5)			
Presence of adverse events					
Yes	7 (21.2)	26 (78.8)	0.702	1.2	0.51-2.68
No	13 (18.1)	59 (81.9)			
Casual sex					
Yes	19 (23.8)	61 (76.3)	0.076	5.9	0.82-42.5
No	1 (4.0)	24 (96.0)			
Use of dating/sex apps					
Yes	16 (24.2)	50 (75.8)	0.101	2.4	0.84-6.59
No	4 (10.3)	35 (89.7)			
Engagement in sex for money, valuables, drugs, housing, or other services					
Yes	5 (41.7)	7 (58.3)	0.023	2.6	1.13-5.85
No	15 (16.1)	78 (83.9)			
Self-perception of HIV/AIDS risk					
None	3 (13.6)	19 (86.4)		1	
Low	15 (21.4)	55 (78.6)	0.441	1.6	0.49-4.95
Medium	1 (8.3)	11 (91.7)	0.655	0.6	0.07-5.30
High	1 (100.0)	0 (0.0)			
Use of tobacco					
Yes	7 (35.0)	13 (65.0)	0.038	2.3	1.04-5.00
No	13 (15.3)	72 (84.7)			

*Poisson bivariate test with robust variance.

Table 5 - Robust Poisson regression model to estimate prevalence ratios of factors associated with adherence and discontinuation of HIV pre-exposure prophylaxis use among gay men and men who have sex with men (n=105). Fortaleza, CE, Brazil, 2023

Variables	Adherence		Discontinuation	
	Final model PR (95% CI)	p-value PR (95% CI)	Final model	p-value
Missed appointments				
Yes	0.5 (0.32-0.85)	0.010		
No	1			
STI diagnosis after starting prophylaxis				
Yes	0.7 (0.49-0.98)	0.043		
No	1			
Race				
White			1	
Mixed-race			3.4 (1.50-7.96)	0.003
Black			4.1 (1.84-9.28)	0.001
Indigenous				
Asian				
Non-use intervals				
Yes			10.4 (4.79-22.62)	<0.001
No			1	
Change of service provider				
Yes			4.2 (1.92-9.35)	<0.001
No			1	
Use of tobacco				
Yes			2.6 (1.43-4.71)	0.002
No			1	

Sexual practices directly influence adherence to and discontinuation of PrEP. The evidence found suggests that casual sex and the use of geolocation-based apps for encounters are associated with discontinuation. In a study conducted in Africa, maintaining sexual relationships with partners living with HIV/AIDS was shown to be favorable to adherence. On the other hand, having sexual partners with unknown HIV status, multiple sexual partners, or engaging in sex under the influence of alcohol and/or drugs was associated with discontinuation of prophylaxis.[16]

The diagnosis of STIs after starting prophylaxis was also a factor associated with reduced adherence. People often associate sex with feelings of fear, which can immobilize and hinder preventive actions. Additionally, such a diagnosis carries feelings of guilt and deep sadness, exacerbated by the stigma perpetuated by society.[26] Beyond the care and attention related to HIV/AIDS serological status and other STIs during PrEP consultations, it is important to consider the psychosocial repercussions of the diagnosis on users' adherence to prophylaxis.

With regard to alcohol use, no association was observed with the outcomes analyzed, but there was an association between tobacco use and the outcome of discontinuation. However, there is inconsistency regarding the use of alcohol and other drugs as risk or protective factors for PrEP adherence. Evidence suggests that alcohol use and the practice of using chemicals to increase pleasure during sex (chemsex) lead to significant disruptions in routine, negatively impacting the ability to take PrEP.[15,22]

In contrast, there is also the possibility that substance use is not associated with decreased adherence to PrEP, and therefore, the use of these substances should not be considered a reason to suspend prophylaxis due to concerns about adherence.[24,27]

In this study, discontinuation was associated with the occurrence of non-use intervals of the medication, which may directly reflect

self-perception and risk compensation. A significant proportion of PrEP users have alternated between the daily regimen and on-demand use during follow-up, indicating the various needs and preferences of users over time.[28]

These results suggest that, in practice, PrEP regimens, both daily and on-demand, may be more fluid than rigid. Therefore, rather than strictly recommending daily or on-demand PrEP, it may be more useful to guide a daily regimen that can be interrupted and adapted based on short or long periods of need for protection.

Risk assessment by healthcare professionals can also be incorporated during consultations to predict and strengthen adherence to prophylaxis. However, prescriptive and standardized risk assessment tools and practices for HIV infection may cause gay men, MSM, and other PrEP users to feel stigmatized.[11,22]

Besides the effectiveness of PrEP in preventing HIV infection, it is crucial to consider the psychosocial benefits of prophylaxis, such as the reduction of stress and anxiety associated with sex.[9] There is a need to strengthen the social sense that values autonomy and the freer, safer expression of human sexuality.

Understanding the factors associated with adherence and discontinuation outcomes in PrEP use is essential to define its effective use at both the individual and collective levels. The dynamics adopted by users to maintain prophylaxis and the reasons for discontinuation must be analyzed and considered in the formulation of policies, development of clinical protocols, and therapeutic guidelines. In addition to estimating the occurrence rates of these outcomes, it is also necessary to estimate the rates of PrEP restart and the motivations behind this practice.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The most prevalent outcome in this study regarding HIV pre-exposure prophylaxis use among gay men and MSM was adherence. A statistically significant association was identified between the outcomes of adherence and discontinuation and social, cultural, economic, ethnic/racial, and psychological factors.

The prevalence of adherence and discontinuation outcomes was 73.3% and 19.0%, respectively. Factors such as a history of missed appointments and STI diagnoses after starting HIV PrEP were associated with adherence. Regarding discontinuation, factors such as race, history of missed appointments, non-use intervals of the medication, change of service provider, and use of tobacco showed a statistically significant association.

This study has some limitations, such as the cross-sectional approach, which, while suitable for describing the variables and their influences on the outcomes, does not allow for establishing causality between the investigated variables and outcomes. Another limitation was the lack of a widely accepted definition in the literature for adherence to HIV PrEP. The discontinuation outcome may have been underestimated due to the inability to capture those who interrupted prophylaxis and did not restart it. Additionally, statistical associations may have been influenced by random errors due to the convenience sampling, which limits the generalization of the findings.

The results of this study can guide policies, updates in clinical management, new research, and the monitoring of HIV PrEP outcomes. Identifying the association between social, cultural, economic, ethnic/racial, and psychological factors and PrEP use outcomes is useful for health care workers, health managers, and policymakers within the SUS, in monitoring the use of PrEP. This allows for the adoption of strategies for those with a higher prevalence of discontinuation, as well as the identification of those with greater potential for adherence. The study suggests the need for a better understanding and evaluation of the adherence outcome, recommending that it be measured not by the number of pills taken over a specific period, but by the rate of risk exposures covered by PrEP use. Risk assessment for HIV infection, conducted by health care workers, can be adopted during consultations as a way to predict and strengthen adherence to PrEP.

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DATA AVALIABILITY

Data are available on demand to authors.

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