

Adherence, prescription and follow-up in HIV Post-Exposure Prophylaxis in health services

Adesão, prescrição e seguimento na Profilaxia Pós-Exposição ao HIV em serviço de saúde
Adherencia, prescripción y seguimiento en la profilaxis posexposición al VIH en los servicios de salud

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Abstract

Objective: to analyze the sociodemographic and clinical profiles, as well as the outcomes, of individuals who used post-exposure prophylaxis (PEP) for HIV in a municipality in the central region of Rio Grande do Sul. **Method:** A cross-sectional study based on records of users registered in the Medication Logistics Control System with PEP prescriptions between 2019 and 2021. The analysis was descriptive and utilized association tests. **Results:** 161 records were included, with a mean age of 30.44 years. Sexual exposure was associated with the year 2020, a time interval exceeding 24 hours until the first medical consultation, and the night shift at the time of exposure. Sexual PEP was associated with heterosexual individuals whose partner had unknown serological status. **Conclusion:** Low adherence to follow-up was observed, compromising case closure. The findings point to the need for professional training and strategies that strengthen the bond with users and encourage continuity of care.

Descriptors: HIV; Post-Exposure Prophylaxis; Barriers to Access of Health Services; Integrality in Health; Sexuality

Resumo

Objetivo: analisar o perfil sociodemográfico, clínico e os desfechos das pessoas que utilizaram a Profilaxia Pós-Exposição (PEP) ao HIV em um município da região central do Rio Grande do Sul. **Método:** estudo transversal, baseado nas fichas de usuários cadastrados no Sistema de Controle Logístico de Medicamentos com prescrição de PEP entre 2019 e 2021. A análise foi descritiva e utilizou testes de associação. **Resultados:** incluíram-se 161 fichas, com idade média de 30,44 anos. A exposição sexual esteve associada ao ano de 2020, ao tempo superior a 24 horas para o primeiro atendimento e ao turno noturno da exposição. A PEP sexual associou-se às pessoas heterossexuais, cujo parceiro ou parceira possuía status sorológico desconhecido. **Conclusão:** observou-se baixa adesão ao seguimento, comprometendo o encerramento dos casos. Os achados apontam para a necessidade de qualificação dos profissionais e de estratégias que fortaleçam o vínculo com os usuários e incentivem a continuidade do cuidado.

Descritores: HIV; Profilaxia Pós-Exposição; Barreiras ao Acesso aos Cuidados de Saúde; Integralidade em Saúde; Sexualidade

Resumen

Objetivo: analizar el perfil sociodemográfico y clínico y los resultados de las personas que utilizaron la profilaxis posexposición (PEP) al VIH en un municipio de la región central de Rio Grande do Sur. **Método:** estudio transversal, basado en los registros de usuarios registrados en el Sistema de Control Logístico de Medicamentos con receta PEP entre 2019 y 2021. El análisis fue descriptivo y utilizó pruebas de asociación. **Resultados:** Se incluyeron 161 formularios, con una edad media de 30,44 años. La exposición sexual se asoció con el año 2020, con el tiempo de más de 24 horas para la primera consulta y con el turno nocturno de exposición. La PEP sexual se asoció con personas heterosexuales cuya pareja tenía un estado serológico desconocido. **Conclusión:** se observó baja adherencia al seguimiento, lo que comprometió el cierre de los casos. Los hallazgos señalan la necesidad de cualificar a profesionales y estrategias que refuercen el vínculo con los usuarios y fomenten la continuidad de la atención.

Descritores: VIH; Profilaxis Posexposición; Barreras de Acceso a los Servicios de Salud; Integralidad en Salud; Sexualidad

Introduction

Globally, the Human Immunodeficiency Virus (HIV) remains a public health problem. In 2023, the Joint United Nations Program on HIV/AIDS (UNAIDS) estimated that 39.9 million people were living with HIV worldwide, in addition to 630,000 deaths related to Acquired Immunodeficiency Syndrome (AIDS). Although the incidence of new infections reached its lowest level in decades in 2022, there were still approximately 1.3 million new infections globally, with roughly 110,000 in Latin America and 51,000 in Brazil.¹

In Brazil, a reduction in AIDS mortality rates has been observed over the past ten years, with the rate falling from 5.5 to 4.1 deaths per 100,000 inhabitants in 2022, representing a 25.5% decrease.² However, Rio Grande do Sul (RS) reported 1,245 new HIV cases, the highest number in the Southern Region, making it a priority state for infection control.³ The city of Santa Maria, located in the interior of RS, stood out among Brazilian municipalities with the highest HIV rates in Brazil, ranking 47th among cities with more than 100,000 inhabitants.⁴

Despite advances in public policies to combat HIV, including the availability of rapid tests (RTs) and free treatment through the Brazilian Unified Health System (SUS), infection rates remain high. This situation is primarily due to the stigma associated with HIV, the taboo surrounding sexuality, and barriers to accessing information and prevention technologies.⁵

In response, the HIV prevention strategy has been restructured based on combined prevention. Aligned with the Sustainable Development Goals (SDGs) and UNAIDS' 95-95-95 target, which aims to end the AIDS epidemic by 2030, this approach proposes that 95% of people living with HIV know their status, 95% of them are on antiretroviral therapy, and 95% of those on treatment achieve an undetectable viral load.⁶ In 2023, Brazil reported indicators close to this target (88-83-95), although it still faces significant challenges in ensuring equitable access to prevention and treatment resources.⁶⁻⁷

Among combined prevention technologies, post-exposure prophylaxis (PEP) plays a fundamental role in preventing new infections.⁵ PEP consists of the continuous administration of antiretrovirals (ARVs) for 28 days and should ideally be initiated within the first 72 hours following exposure to risk. This is a comprehensive care approach that requires accessible, welcoming, and responsive health services, as well as the appropriate integration of preventive technologies.⁵⁻⁸

However, the effectiveness of PEP is often compromised by barriers to access and adherence to the treatment regimen. Among the main obstacles are the target population's lack of awareness regarding the existence and operation of PEP, the centralization of medication dispensing in a limited number of facilities, and the resulting reliance on inadequate care. These factors result in delays, dropouts, and the loss of the optimal window for initiating prophylaxis, significantly reducing its effectiveness.⁹

Furthermore, interpersonal relationships within health services marked by neglect, prejudice, or any form of symbolic or structural violence hinder access to and adherence to treatment. HIV-related stigma remains one of the main barriers to preventive actions and the seeking of care.⁹

Despite the importance of PEP, there is a gap in the national and international literature regarding the sociodemographic and clinical profile of users, as well as the

clinical and epidemiological outcomes of PEP use in specific municipal contexts. The lack of detailed local data hinders the development of targeted and effective strategies to optimize this preventive tool, especially in municipalities with high HIV incidence, such as Santa Maria. Ensuring access to quality information and welcoming, effective health services is a crucial element for the effective implementation of PEP and other combined prevention strategies.¹⁰

Given this context, this study aims to analyze the sociodemographic and clinical profiles, as well as the health outcomes, of individuals who used HIV post-exposure prophylaxis (PEP) in a municipality in the central region of Rio Grande do Sul.

Method

This is a cross-sectional, quantitative, and documentary study guided by the recommendations of the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist, with the aim of ensuring transparency and completeness in the methodological description of the research.¹¹

The study was conducted in the city of Santa Maria, in the interior of the state of Rio Grande do Sul, which, in 2023, ranked 47th among Brazilian municipalities with more than 100,000 inhabitants in terms of HIV prevalence.⁴ Care for people living with HIV and those at risk of infection is provided through a Specialized Care Service (SAE, acronym in Portuguese), linked to the Testing and Counseling Center (CTA, acronym in Portuguese), which has a multidisciplinary team and the infrastructure to prescribe antiretrovirals, conduct testing, and provide clinical follow-up. The unit also participates in a multiprofessional residency program in infectious diseases.

The study population consisted of 161 records of users registered in the database of the Drug Logistics Control System (SICLOM), who received PEP prescriptions between 2019 and 2021. Users aged 18 years or older with complete prescription records during the study period were included. Records related to PEP for sexual violence, pregnant women, breastfeeding women, and individuals under 14 years of age (whose care is provided at a tertiary care facility managed by the University Hospital of Santa Maria) were excluded, as were illegible forms or those with missing information that precluded analysis.

The sampling was non-probabilistic and based on convenience, comprising all cases that met the inclusion criteria. No sample size calculation was performed due to the exploratory nature of the study.

Data collection took place between May and June 2022 by one of the authors, who had received prior training, using a database managed by the Municipal Coordination Office for HIV/AIDS, Sexually Transmitted Infections (STIs), and Viral Hepatitis as the source. Data were obtained through standardized forms completed by healthcare professionals (nurses or physicians) at the time of PEP prescription, in emergency care units, primary care settings, or at the SAE/CTA itself. The form includes sociodemographic variables, exposure characteristics, and clinical information regarding the outcome of prophylaxis. The names of the users were not disclosed, ensuring anonymity.

The instrument was developed by researchers based on the Ministry of Health's Clinical Protocol and Therapeutic Guidelines for PEP for risk of infection with HIV, STIs, and viral hepatitis.⁹ After its development, the instrument was reviewed by five specialists in the field and resulted in 15 closed-ended questions.

We collected sociodemographic variables (age, sexual orientation), prescription characteristics (care facility, treatment regimen), exposure characteristics (type of exposure, shift, time to care, serological status of the partner), mode of exposure (bite, receptive oral sex with ejaculation, insertive or receptive anal/vaginal sex), and adherence to clinical follow-up (follow-up visits at 30, 60, and 90 days).

The data were entered into an *Excel* spreadsheet using double data entry and verification to minimize errors. Subsequently, they were analyzed using the *Statistical Package for the Social Sciences* (SPSS), version 24. Descriptive analysis was performed using absolute and relative frequencies, measures of central tendency, and measures of dispersion. To test associations between variables, Pearson's chi-square test was used, and when necessary, Fisher's exact test. A significance level of 5% ($p < 0.05$) was adopted.

This study was approved by the Research Ethics Committee of the Federal University of Santa Maria, under approval No. 5,197,899, issued on October 26, 2021. Since data collection was based on secondary records and there was no direct contact with users, a Free and Informed Consent Form was not required. All procedures

complied with the ethical guidelines established by Resolutions No. 466/2012, No. 510/2016, and No. 580/2018 of the National Health Council.

Results

Of the 161 PEP prescriptions recorded in the municipality between 2019 and 2021, sexual exposure was the primary cause, accounting for 130 (80.7%) cases, with a peak in 2020, when it accounted for 61 (88.4%) of the cases. In contrast, occupational exposure accounted for a smaller proportion, with 31 (19.3%) cases, reaching its highest incidence in 2021, totaling 16 (22.2%) of the PEP dispenses. In terms of timing and access to the service, it was observed that the demand for care more than 24 hours after exposure was predominant, with 93 (60.4%) cases, and the nighttime period accounted for the highest demand, with 99 (64.3%) of the visits.

Most participants, 82 (54.7%), sought emergency services for PEP administration. In contrast, 70 (45.3%) sought care at the municipal referral clinic; nine medical records did not contain this information.

The demographic characteristics of the participants revealed a mean age of 30.44 years ($SD \pm 9.46$), with ages ranging from 18 to 72 years. Regarding sexual orientation, the distribution was as follows: 91 (63.2%) identified as heterosexual, while 53 (36.8%) identified as homosexual or bisexual. A total of 17 participants did not provide this information.

The investigation of sexual or occupational partner status revealed that most exposures, 123 (91.8%), occurred with partners whose HIV serostatus was unknown. Exposures with individuals living with HIV totaled 11 (8.2%). Table 1 details the association between types of exposure and other variables. Among the forms of exposure, receptive anal/vaginal intercourse was the most common, accounting for 65 (43.3%) of the cases, which reinforces the prevalence of sexual transmission in this cohort.

Regarding the outcome of the cases, the majority—136 (84.5%)—of the patients did not attend follow-up appointments, indicating low adherence to the protocol. Only 25 (15.5%) of the patients completed all stages of the PEP and were discharged from the program.

Table 1 - Comparison of Sociodemographic and Clinical Characteristics of Post-Exposure Prophylaxis (PEP) for Sexual and Occupational Exposures, Santa Maria, Rio Grande do Sul, 2019–2021

Variable	Sexual exposure n (%)	Occupational exposure n (%)	p-value*
Year of prescription			0.037[†]
2019	13 (65)	7 (35)	
2020	61 (88.4)	8 (11.6)	
2021	56 (77.8)	16 (22.2)	
First call time after exposure[¶]			0.002[†]
< 24 hours	41 (67.2)	20 (32.8)	
≥ 24 hours	82 (88.2)	11 (11.8)	
Exposure schedule[¶]			0.001[†]
Morning / Evening	36 (65.5)	19 (34.5)	
Night	87 (87.9)	12 (12.1)	
Service shift[¶]			0.665
Morning / Evening	40 (78.4)	11 (21.6)	
Night	81 (81.8)	18 (18.2)	
Customer service[¶]			0.333
Emergency services	64 (78)	18 (22)	
SAE/CTA [‡]	57 (83.8)	11 (16.2)	
Sexual orientation[¶]			0.005[†]
Heterosexual	80 (87.9)	11 (12.1)	
Homosexual/Bisexual	41 (77.4)	12 (22.6)	
Partner's serological status[¶]			0.043[§]
Known HIV	9 (81.8)	2 (18.2)	
Unknown	106 (86.2)	17 (13.8)	
Bite[¶]			1.000
Yes	1 (100)	-	

No	120 (80)	30 (20)	
Receptive oral sex with ejaculation[¶]			0.721
Yes	10 (83.3)	2 (16.7)	
No	109 (71.5)	29 (28.5)	
Anal/vaginal insertive[¶]			0.001[§]
Yes	47 (94)	3 (6)	
No	72 (72)	28 (28)	
Receptive anal/vaginal[¶]			0.002[†]
Yes	59 (90.8)	6 (9.2)	
No	60 (70.6)	25 (29.4)	

*p-value < 0.05 indicates statistical significance; [†]Pearson's chi-square test; [‡]Specialized Care Service (SAE) and Testing and Counseling Center (CTA); [¶]Missing and blank values were excluded from the analysis; [§]Fisher's exact test.

As detailed in Table 1, when analyzing the type of PEP dispensed, it was found that sexual exposure was significantly associated with the year 2020 ($p<0.037$), a time interval of more than 24 hours until the first medical consultation ($p<0.002$), and exposure occurring during the night shift ($p<0.001$). In addition, sexual PEP was associated with heterosexual individuals ($p<0.005$) whose partner had unknown serostatus ($p<0.043$).

Regarding the type of sexual practice, an association was identified between sexual PEP and insertive anal or vaginal sex ($p<0.001$), as well as receptive anal or vaginal sex ($p<0.002$), compared to occupational exposure.

Discussion

An upward trend in PEP searches was observed between 2019 and 2021. This pattern parallels the gradual expansion of PEP indications and availability for HIV in Brazil. Data from the State STI/AIDS Coordination Office of Rio Grande do Sul show significant growth: from 481 cases in 2007 to 2,932 in 2017. This increase can be

attributed to the implementation, in 2010, of the sexual PEP protocol and, subsequently, in 2017, to the expansion of PEP usage recommendations resulting from the launch of a new national protocol.¹²

This increase can also be attributed to multiple factors, such as the wider dissemination of educational campaigns, easier access to the medication in emergency departments, and greater familiarity among healthcare professionals with management protocols.¹³ In addition, the expansion of HIV testing and the greater integration of PEP into combined prevention strategies have contributed to strengthening its use in diverse settings.⁶

The analysis of this data, however, gains greater depth when it incorporates the perspective of cultural studies in health, which view health and illness practices not merely as biomedical phenomena, but as constructs deeply intertwined with values, social norms, stigmas, and power relations.¹³⁻¹⁵ The relevance of this approach lies in challenging the presented results, recognizing that the seeking, use, and adherence to PEP are determined by complex sociocultural dynamics and are not restricted solely to individual or programmatic factors.

However, although PEP represents an important advance, its use must always be coordinated with other preventive measures. The perception of exclusive protection against HIV can lead to risky sexual behaviors, such as reduced condom use and increased exposure to other STIs, such as syphilis, gonorrhea, and chlamydia.¹⁶ An international study conducted in the United States indicates that the increase in the use of PrEP and PEP is linked to a rise in the incidence of bacterial STIs, reflecting gaps in prevention strategies for these infections.¹⁷

In this context, DoxiPEP emerges as a promising biomedical alternative. This prophylaxis consists of administering 200 mg of doxycycline within 24 hours of sexual exposure, with evidence of efficacy in reducing chlamydia and syphilis.¹⁷ However, although such interventions expand the preventive arsenal, consistent condom use remains the primary form of STI prevention.

The trivialization of condom use is a growing concern, especially among young people, a group that was prevalent among PEP users in this study. This finding is corroborated by research conducted in Rio Grande do Sul, which indicated that 45.4% of

users were 29 years old or younger.¹⁸ From a cultural studies perspective, young people's disinterest in or refusal of condoms can be interpreted as a reflection of shifts in prevention cultures within the HIV context, where combined prevention—including PEP—offers new forms of risk management.¹⁹⁻²⁰

Perhaps the decision not to use a condom is linked to a search for greater authenticity or trust in the relationship—a social and symbolic dimension that the biomedical device may be undermining, despite the risk of STIs. In light of this, the importance of integration between health services and schools is reinforced, through the Health in Schools Program (PSE), to promote educational practices regarding sexuality, self-care, and prevention.²⁰

Another relevant finding was the predominance of heterosexual individuals among users of post-exposure prophylaxis (PEP) (87.9%). A similar profile was identified in another study,¹⁸ in which heterosexual individuals showed a stronger association with PEP use, with irregular condom use, and with repeated use of this prophylaxis as a preventive measure.²¹ These findings suggest that PEP is being used repeatedly as a substitute for, rather than a complement to, conventional preventive practices, reinforcing the need for targeted educational strategies.

The high proportion of heterosexuals seeking sexual PEP, many with partners of unknown status (86.2%), highlights the persistence of a diffuse risk in the general population, contrasting with the cultural perception that has historically localized HIV and AIDS within specific groups. This delayed seeking of care (≥ 24 hours) and at emergency services by this group may signal a difficulty in recognizing their own risk and seeking help at services such as SAE/CTA, which are culturally marked by their focus on key populations.²²

In addition to sexual PEP, the use of occupational post-exposure prophylaxis is particularly noteworthy, especially among healthcare workers. In the present study, 22.2% of occupational PEP cases occurred between 2019 and 2021. Occupational exposure to HIV is a globally recognized risk: it is estimated that 3 million healthcare workers are exposed to bloodborne pathogens annually, resulting in approximately 170,000 HIV infections.²³ Furthermore, a study shows that 43% of healthcare professionals have experienced biohazard incidents, which reinforces the need for

surveillance and continuing education.²⁴

Educational status and professional experience also act as protective factors. Professionals with a college degree had a 59% lower risk of exposure.¹⁹ A review conducted in China reinforced the importance of institutional policies to ensure timely access to PEP and adequate case follow-up.²⁵

In this context, Continuing Health Education (CHE) serves as a fundamental strategy for minimizing occupational exposure by promoting the proper use of Personal Protective Equipment (PPE), the safe handling of sharps, and adherence to biosafety protocols.²⁶ At the same time, nurses play a strategic role in the care continuum: from prescribing PEP, supported by Opinion No. 12/2020/COFEN,²⁷ to conducting educational activities and establishing therapeutic relationships during nursing consultations and in the community.²⁶

Regarding the ideal window for initiating PEP, the study findings showed that patients began treatment within the recommended period, that is, within 72 hours. The literature reinforces that the earlier treatment begins, the greater the intervention's effectiveness, with initiation within the first two hours being ideal.²⁸

The increased demand for PEP in emergency departments, rather than in specialized clinics, also warrants attention. This behavior is linked to the stigma associated with HIV and the desire for greater anonymity during care. Studies indicate that many patients avoid referral centers for fear of being mistaken for people living with HIV and, consequently, facing discrimination.^{9,29}

This reality reinforces the need to invest in the continuity of care and in strengthening Health Care Networks (RAS). Failure to attend follow-up visits for PEP, observed in 84.5% of the cases analyzed, compromises the effectiveness of the intervention. Subsequent consultations are essential for monitoring adverse effects, adherence to the treatment regimen, and serial testing.³⁰

Longitudinal care, as an attribute of Primary Care and the RAS, contributes to continuity of care and comprehensive care, especially in chronic and high-risk conditions, such as HIV infection.³⁰ In the context of PEP, this follow-up is essential for therapeutic success and for preventing new exposures to risk.

This study has several limitations, including the use of secondary data derived from forms completed by third parties, which may compromise the reliability of the information. Additionally, the absence of records for certain variables led to excluding incomplete forms, particularly those lacking data considered essential for the study's objectives, to minimize potential analytical biases. Another recognized limitation is the timing of data collection, which coincided with the COVID-19 pandemic, a factor that may have influenced both the demand for health services and the number of post-exposure prophylaxis records.

Notably, multivariate analyses were not performed, which makes it impossible to control for potential confounding factors and limits the interpretation of the observed associations. This absence restricts the ability to infer more complex relationships between variables and reduces the generalizability of the findings, even in a cross-sectional study design.

It is hoped that the findings will contribute to the improvement of strategies related to PEP, especially given the persistent challenge regarding adherence to and completion of treatment, recognized at both the local and national levels. The study also reinforces the need for outreach initiatives that extend beyond the institutional settings of the university and health services, through the promotion of educational initiatives, the expansion of rapid STI testing, the distribution of condoms, and guidance on combined prevention, with the aim of reducing HIV incidence in the context studied.

The results have practical applicability in the daily work of professionals involved in PEP, as they highlight the importance of these workers' educational role in administering prophylaxis. Low adherence to follow-up indicates that many users lack adequate information, which underscores the indispensable nature of health education for the effectiveness of the intervention.

Conclusion

The study indicated that the majority of PEP users were young, heterosexual individuals for whom sexual exposure was the primary reason for being prescribed prophylaxis. Low adherence to follow-up appointments was observed, which

compromises the proper closure of cases and the effectiveness of the intervention.

A key weakness is non-attendance at follow-up appointments, an issue that requires coordinated actions with local management to strengthen user follow-up. There is a need for ongoing training of health professionals in reception and counseling, aiming to increase the population's understanding of the importance of adherence to the full PEP regimen.

Furthermore, it is essential to promote strategies that foster the connection between users and services, ensuring not only timely access to prophylaxis but also its proper administration until completion. The effectiveness of PEP depends on the integration of clinical, educational, and structural aspects in the care of people exposed to HIV. It is crucial that the response to low adherence and atypical service-seeking consider the sociocultural dimensions of risk and stigma. Future interventions must go beyond biomedical information: they must address the symbolic barriers and the social and psychological processes that users encounter when seeking services.

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