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DOI

10.54620/cadesp.v20i1



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# Epidemiological profile of HIV post-exposure prophylaxis consultations (2017–2023)

*Perfil epidemiológico dos atendimentos de  
profilaxia pós-exposição ao HIV (2017-2023)*

*Perfil epidemiológico de las atenciones de  
profilaxis post-exposición al VIH (2017–2023)*

## ABSTRACT

**Objective:** To assess the epidemiological profile of HIV PEP consultations at Hospital São José de Doenças Infecciosas from 2017 to 2023. **Method:** Retrospective study with medical record review and descriptive analysis of epidemiological variables: sex, age, and type of exposure. **Results:** Of the 29,868 HIV PEP consultations, 66.7% resulted from sexual exposures. Of these, 3.7% involved sexual violence, mostly among females < 18 years old. Consensual sexual exposure (CSE) was the main reason for HIV PEP (64.3%), being more common among men aged 25–29. A steady increase in consultations was observed over the years, both for occupational accidents and for CSE. **Final considerations:** Demand for HIV PEP has been increasing. The main form of risk exposure is CSE among young men, followed by occupational accidents. These results highlight the importance of expanding access to PEP services, conducting campaigns addressing correct condom use and information about PEP, and providing ongoing training on the prevention of occupational accidents.

**Keywords:** HIV; Post-exposure prophylaxis; Prevention.

## RESUMO

**Objetivo:** avaliar o perfil epidemiológico dos atendimentos de PEP-HIV no Hospital São José de Doenças Infecciosas, de 2017 a 2023. **Método:** Estudo retrospectivo de revisão de prontuários com análise descritiva de variáveis epidemiológicas: sexo, idade e tipo de exposição. **Resultados:** Dos 29.868 atendimentos de PEP-HIV, 66,7% foram de exposições sexuais. Destes, 3,7% foram de violência sexual, a

maioria em mulheres <18 anos. Exposição sexual consentida (ESC) foi o principal motivo para PEP-HIV (64,3%), sendo mais comum em homens dos 25- 29 anos. Observou-se aumento constante dos atendimentos ao longo dos anos, tanto de acidentes ocupacionais quanto das ESC. **Considerações finais:** A demanda por PEP-HIV vem crescendo. A principal forma de exposição de risco é a ESC em homens jovens, seguida dos acidentes ocupacionais. Esses resultados mostram a importância da ampliação da oferta de atendimentos de PEP, da realização de campanhas que abordem o uso correto do preservativo e informações sobre PEP e de treinamentos continuados sobre prevenção de acidentes ocupacionais.

**Descritores:** HIV; Profilaxia pós-exposição; Prevenção.

## RESUMEN

El absentismo en las consultas nutricionales en la Atención Primaria de la Salud compromete la continuidad de la atención y la eficiencia de los servicios. Este estudio tuvo como objetivo analizar los índices de ausencias en las atenciones nutricionales realizadas en una Unidad Básica de Salud de un municipio del estado de Paraná, entre febrero y junio de 2025. Se trata de una investigación cuantitativa y descriptiva, basada en el análisis de datos secundarios de programación y asistencia. De los 176 turnos programados, el 63,6% se concretó y el 36,4% registró ausencia, principalmente en las consultas de seguimiento. Los resultados indican la necesidad de implementar estrategias para reducir las ausencias, como las teleconsultas, los recordatorios automatizados y la reorganización de la agenda mediante el acceso avanzado. Estas medidas pueden optimizar los recursos, fortalecer el vínculo con los usuarios y mejorar los resultados en salud. Asimismo, se recomienda la realización de estudios multicéntricos y cualitativos sobre los factores asociados al absentismo y la evaluación de las intervenciones propuestas.

**Descritores:** Salud Pública; Alimentos, Dieta y Nutrición; Absentismo.

## INTRODUCTION

HIV transmission prophylaxis comprises several strategies that, combined, aim to reduce the occurrence of new cases. It is with this purpose that Brazil adopted combined prevention, also known as the "Mandala of Combined Prevention," with the objective of expanding intervention measures to reduce HIV transmission<sup>1</sup>.

Among the pharmacological strategies for preventing HIV transmission are pre- and post-exposure prophylaxis, respectively named PrEP and PEP. Both consist of administering antiretroviral medication to patients, both those at considerable risk of exposure (for whom PrEP would be indicated) and those who have had recent risk exposure (situations with possible indication for PEP)<sup>2,3</sup>. Although the use of PEP as a prevention strategy began in cases of occupational accident exposure, several studies have shown its effectiveness in reducing transmission also in cases of non-occupational exposure<sup>4-6</sup>.

In Brazil, PEP is indicated for people who have been proven not to be HIV-positive and who have had a risk exposure, provided that it is started within 72 hours of the time of exposure. The currently recommended regimen is a combination of three antiretroviral drugs: Tenofovir Disoproxil Fumarate (TDF)/Lamivudine (3TC)/Dolutegravir (DLT)<sup>1</sup>.

According to the Ministry of Health's HIV prophylaxis monitoring report, there was a 654% increase in PEP prescriptions in the last decade, with the number of dispensations rising from 25,465 in 2012 to 192,089 in 2023. The age group with the highest PEP use was 25 to 39 years. Cisgender women represented the majority of cases (40%) in 2018; however, there was an increase in the number of dispensations for gay patients and other MSM (men who have sex with men), rising from 24% in 2018 to 34% in 2023.

Considering that PEP is currently identified as one of the important strategies in reducing HIV transmission, knowledge about the epidemiological profile of its users becomes essential to guide the implementation of new strategies, with the aim of expanding its scope. Furthermore, considering the scarcity of studies evaluating the epidemiological profile of PEP users in Northeast Brazil, this study was conducted with the objective of analyzing the epidemiological profile of patients who received care for the initiation of PEP from 2017 to 2023 at a reference center in Northeast Brazil.

## METHODS

This is a retrospective, descriptive study of all care provided in the Emergency Department of Hospital São José for Infectious Diseases/CE to patients who were indicated for PEP initiation between January 2017 and December 2023.

Data collection was performed by reviewing emergency room records in patient charts. The following variables were collected: sex, age, origin, type of exposure (sexual violence, consensual risky sexual exposure, or occupational risky accident with biological material), International Classification of Diseases (ICD-10) code, and date of exposure.

For the identification of risk exposure, the criteria determined by the Ministry of Health were considered. For classification as sexual violence, all non-consensual risky sexual exposure was considered. The classification of the cases was carried out by two of the researchers, specialists in infectious diseases, after reviewing the emergency room care record.

All consultations conducted for PEP initiation analysis between 2017 and 2023 were included.

Cases with incomplete medical records were excluded, making it impossible to obtain sufficient data to determine if PEP initiation was indicated and to categorize the exposure. Additionally, cases where the exposure did not constitute a risk exposure according to the Ministry of Health's criteria were excluded. These were classified as "Other" and excluded from the analysis.

For data collection, a specific form developed by the researchers was used. Data analysis was performed using Microsoft Excel and SPSS 16.0. Frequency and central tendency measures were calculated. For the analysis of the distribution of consultations over the years, linear regression analysis was performed, with  $p < 0.05$  considered significant.

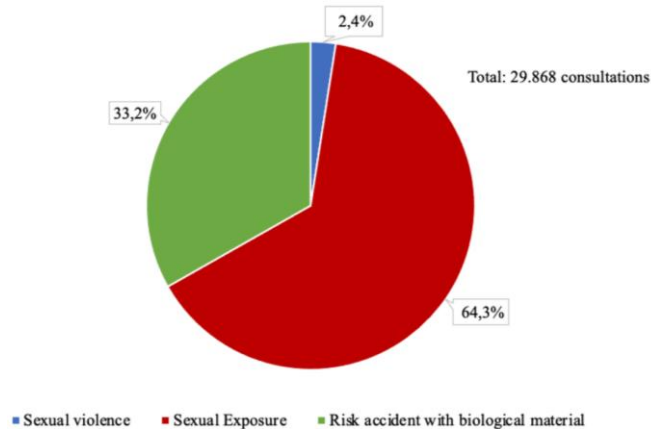
The study was approved by the ethics and research committee of Hospital São José, under opinion number 6.113.810. The confidentiality of the information collected from the medical records was ensured, with no identification of the patients treated in the database and access to the collected information restricted exclusively to the researchers involved.

## RESULTS

Between 2017 and 2023, 30,126 medical records related to patients eligible for PEP were identified. Of these, 258 were classified as "Other" and excluded from the analysis for various reasons: incomplete records (with insufficient data for correct classification), cases of assault that did not fit the definition of "accident" (especially situations involving physical fights and puncture wounds inadvertently caused by strangers), and a miscellaneous range of other situations that did not clearly fit the classification (cases of non-genital erotic contact such as fomite sharing and French kissing, injuries of negligible or uncertain biological risk, self-intoxication involving loss of consciousness and presumed sexual contact, and unauthorized breastfeeding of infants by third parties). The remaining records were classified into three main categories: consensual sexual exposures, accidents involving occupational biological material, and sexual violence. Most of the cases were handled by patients residing in Fortaleza. Sexual exposures accounted for approximately two-thirds of the total cases. Within the category of sexual exposures, situations of sexual violence corresponded to approximately 3.6% of the cases (Graph 1).

The most prevalent codes used in coding these cases are mostly grouped in category "Z" of the International Classification of Diseases. The subcategory Z20 - contact with unspecified infectious disease, more specifically, Z20.9 - contact with unspecified infectious disease, Z20.2 - contact with sexually transmitted disease and Z20.6 - contact with and exposure to HIV, accounted for 47.1% of the cases. Except for the "Z" coding, the most commonly used subcategory was that related to penetrating injuries (Y28, 4.51%).

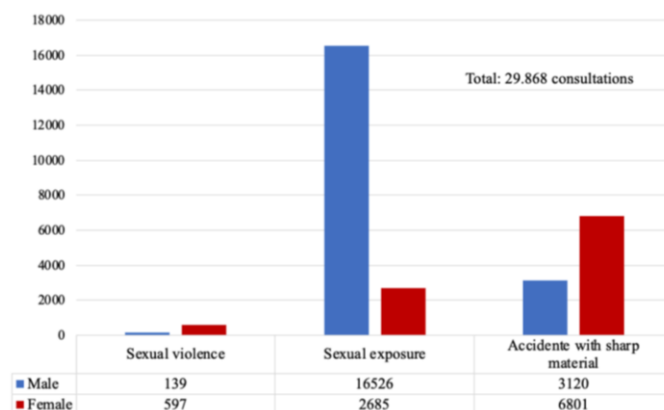
**Graph 1** – Categories of risk exposure to biological material in patients treated at São José Hospital -2017 to 2023.



Source: prepared by the authors.

The study found a predominance of female biological sex in cases of sexual violence (81%) and accidents involving biological material (68%), while a higher prevalence of males was observed in cases related to consensual sexual exposure (86%). The greater male representation in this majority group was also reflected in the preponderance of males in cases in general (64%) (Graph 2). It was observed that some patients sought more than one consultation for PEP indication assessment during the study period, this situation being more frequent in the category of consensual sexual exposure (16.7% of consultations). This percentage was 9.7% and 1.4% in the categories of accidents involving biological material and sexual violence, respectively.

**Graph 2** – Consultations for patients with risk exposure to biological material at Hospital São José from 2017 to 2023 - Distribution by sex.

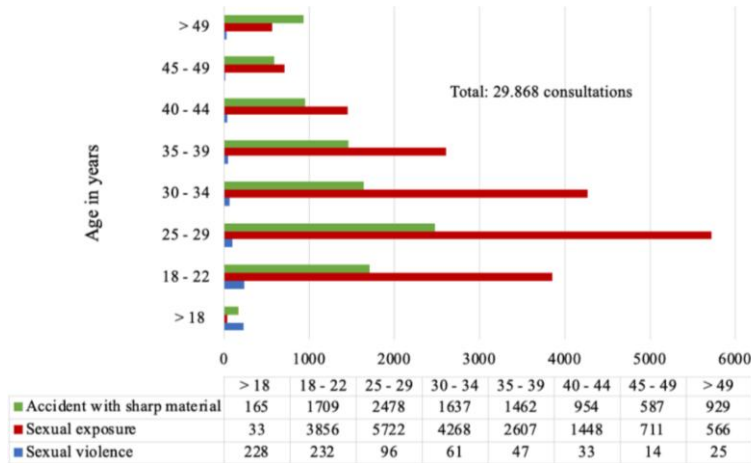


Source: prepared by the authors.

Consensual sexual exposure was the main reason for PEP-HIV demand, except in the extreme age groups. Among those under 18, sexual violence predominated, while for those over 50, accidents with biological material were more common. Both consensual sexual exposure and accidents involving biological material showed an increase in demand with advancing age, peaking between 25 and 29 years, followed by a decline. A further increase was observed after age 50 for cases of occupational accidents. Sexual violence, in

turn, was most prevalent between 0 and 24 years, also showing a gradual decline thereafter (Graph 3).

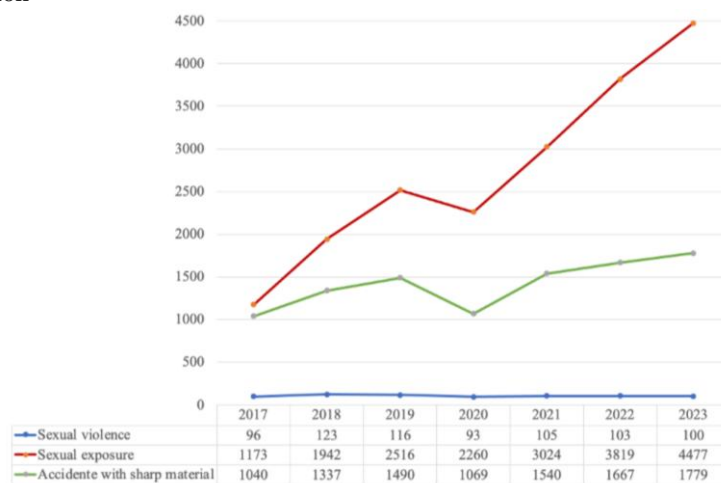
**Graph 3** – Patient visits risk of exposure to biological material at Hospital São José from 2017 to 2023 - Distribution by age group



Source: prepared by the authors.

With the exception of a sharp drop in 2020, a consistent and relatively constant increase in the number of cases is observed throughout the analyzed period, both in cases of consensual sexual exposure ( $R^2 = 0.94$ ;  $p < 0.001$ ) and in accidents involving biological material ( $R^2 = 0.56$ ;  $p < 0.03$ ), with the increase being more pronounced in the former case. The number of cases of sexual abuse remained relatively stable during the period, also interrupted by a drop in 2020 (Graph 4). The analysis of the distribution of cases throughout each year suggests a seasonal pattern, with an increase in the number of cases in the second half of the year. This increase was more pronounced in cases of sexual exposure and sexual abuse, while in cases of exposure to biological material the growth was less evident.

**Graph 4** – Consultations carried out at Hospital São José for patients with risk exposure to biological material (2017-2023) - Annual distribution



Source: prepared by the authors.

## DISCUSSION

The data from this study reveal that sexual exposures accounted for approximately two-thirds of all PEP-HIV demand cases, with consensual sexual exposure being the most prevalent.

This data is consistent with the literature, which indicates that most HIV-related risk exposures occur in the context of consensual sexual relations, in both men and women <sup>8-10</sup>.

In the present study, a predominance of the female biological sex was observed in cases of sexual violence and accidents involving biological material, in contrast to the higher prevalence of male cases involving consensual sexual exposures.

The high incidence of sexual violence against women has been widely documented in the literature. A study conducted in the state of Ceará demonstrated a predominance of reported cases of sexual violence against women between the ages of 10 and 14<sup>11</sup>. These differences may reflect social and cultural dynamics related to gender. In the current context, women are frequently victims of sexual violence, while men take more risks in consensual sexual practices <sup>6, 10, 12, 13</sup>. Recent studies demonstrate that people of the male biological sex, especially those with multiple sexual partners, are in a situation of greater vulnerability regarding HIV infection, with unprotected sexual practices being one of the main causes <sup>14,15</sup>. Furthermore, some authors have shown a greater perception of risk regarding HIV infection, especially among populations that identify themselves as part of risk behavior groups, such as men who have sex with men (MSM) <sup>16</sup>. This finding may explain a greater predisposition of men, especially men who have sex with men, to seek PEP care, leading to a higher prevalence of males among people seeking PEP for this type of exposure. Furthermore, while men are frequently exposed to a greater number of risk situations associated with external and sexual practices, the predominance of the female biological sex in cases related to occupational accidents involving hazardous biological material suggests the existence of a distinct reality regarding the work environment. This may be due to women's greater occupation of professions where exposure to hazardous biological material is high, such as the healthcare field. In this context, healthcare professionals, such as nurses and nursing assistants, frequently perform procedures in which they handle hazardous biological materials (blood and bodily fluids), placing them in a more vulnerable situation for occupational accidents <sup>17-19</sup>.

In our analysis, we observed duplicate visits for PEP initiation assessment — 1.4% in cases of sexual violence, 9.7% in accidents involving biological material, and 16.7% in consensual sexual exposures — indicating that some patients sought the service more than once during the study period. From a methodological standpoint, this pattern implies that some individuals were counted in more than one record. Although this study considers the visit as the unit of analysis, the presence of duplicates represents a limitation, as it may have introduced bias into the descriptive estimates and the comparative interpretation between the analyzed groups, more specifically in the sex distribution of patients during the visit.

In the present study, sexual violence was more prevalent in cases involving patients under 24 years of age, being the most common form of exposure in those under 18 years of age.

The occurrence of sexual violence in younger populations has already been demonstrated by other authors<sup>20</sup>. In a study conducted in Brazil, Pedroso *et al.* observed that sexual violence was present in more than 40% of the notifications registered in the state of Espírito Santo between 2011 and 2018, being most common among children, especially in younger age groups (average age 3 years)<sup>21</sup>. These findings reveal a worrying fact and reinforce that children and adolescents constitute a centrally vulnerable group and, therefore, a priority for integrated prevention and support actions. It also points to an urgent need for the development of support strategies for these patients, beyond the prevention of transmission of sexually transmitted infections, such as psychological and social support, in addition to the implementation of public policies aimed at protecting these young people, with the mobilization of the rights guarantee network (primary and specialized care of the SUS, Tutelary Council and justice system). In this context, providing qualified listening, immediate prevention and protection, and psychosocial support is essential. This is coupled with the integration of reporting mechanisms into health services, strengthening public policies focused on protecting this age group, with the goal of reducing the risk of revictimization.

In the present case study, there was an increase in cases of consensual sexual exposure in patients over 18 years of age, with the largest number of cases occurring in those aged between 18 and 34 years.

Similar results have been found by other authors and are possibly related to the social context and factors associated with sexuality in this age group<sup>10, 22</sup>. The increased prevalence of risky sexual practices in younger age groups may also be associated with this growing number of patients under 35 seeking HIV PEP. Rocha *et al.*, in a study that analyzed the sexual behavior of 3,738 men, found that risky sexual practices were more prevalent in the age group under 25 years and that almost half of these participants had never undergone HIV serology before (49.4%). Factors such as being MSM, having started sexual activity before the age of 15, using psychoactive substances or alcohol before sexual intercourse, or using dating apps were associated with greater risk exposure<sup>14</sup>.

In the present study, a higher prevalence of PEP-HIV demand was observed for cases of occupational accidents involving hazardous biological material in patients over 18 years of age, especially in the 25-29 age group. With increasing age, there was a decline in this prevalence, with a tendency to increase again after 50 years of age.

Data from the Ministry of Health, from 2018-2020, show that occupational accidents were more frequent among female healthcare professionals, aged 17-29 years old. However, depending on the region analyzed, slightly different realities are observed. Studies conducted in Pernambuco and Bahia showed a higher prevalence of occupational accidents among professionals generally older than the age indicated by the Ministry of Health. In the former, the average age was 37 years. In the latter, the most prevalent age group was 30-49 years. These findings possibly reflect situations associated with social dynamics in the labor market of each region. Furthermore, possibly with advancing age, physical and cognitive limitations may end up putting these professionals at greater risk of

occupational accidents, which may explain this prevalence at older ages indicated by some authors and the occurrence of the increasing trend in the number of cases in the population over 50 years old observed in the present study.

In the present case study, a consistent and relatively continuous increase in the number of cases of consensual sexual exposures was observed throughout the analyzed period, this being the most common form of exposure (70.4%) in 2023.

National data show similar results. According to the Ministry of Health Bulletin, from 2012 to 2023, a higher proportion of PEP-HIV dispensing was recorded due to consensual sexual exposure (17% and 68.4%, respectively). In 2023, this category of exposure was the most prevalent among MSM and transgender women/transvestites (96% and 88%, respectively). In the state of Ceará, in 2023, consensual exposure was also the most prevalent form, with 70% of users seeking PEP-HIV for this reason<sup>7, 26</sup>. These findings may be associated with a greater dissemination of sexual risk information, especially among populations with a higher perception of risk, suggesting that campaigns targeting these higher-risk populations carry significant weight.

A decrease in the number of consultations was observed during 2020. This reduction was possibly due to the initial impact of the COVID-19 pandemic on the functioning of health services and the behavior of the population. Restrictions on movement, fear of contamination in hospital environments, and the prioritization of care for respiratory cases may have led to less demand for PEP even when there was risk of exposure.

## FINAL CONSIDERATIONS

The demand for PEP-HIV has been growing over the years. These results show the importance of expanding the availability of PEP services for the population of the state of Ceará. They also suggest the need for more informational campaigns about PEP as a strategy for preventing HIV transmission, with a special focus on young, sexually active women with high-risk sexual exposure who are not seeking this type of care. In this context, the need for sex education, addressing not only the correct use of condoms but also PEP options, is urgent.

They also point to the need for ongoing training on the prevention of high-risk occupational accidents, even among professionals in older age groups.

The search for PEP (post-exposure prophylaxis) after an episode of sexual violence is constant, especially among female children and adolescents. This data points to the need for the implementation of more effective public policies, focused on protecting this age group, aiming to reduce harm to the health of these patients and the risk of revictimization.

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Genilton da Silva Faheina Junior, Bruno Neves da Silva, Sofia de Moraes Arnaldo e Janaildo Soares de Sousa

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#### How to Cite

Távora LGF, Eulálio TFCB, Oliveira ALP. Perfil epidemiológico dos atendimentos de profilaxia pós-exposição ao HIV (2017-2023). *Cadernos ESP*. 2026;20:e2477.

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**Conflicts of Interest**

The authors declare no conflicts of interest.

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**Received:** september 20, 2025

**Published:** June 8, 2026

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**Funding**