

## Prevalence of Aids in the Elderly in Bahia: Ecological Study

### Prevalência de Aids em Idosos na Bahia: um Estudo Ecológico

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#### Abstract

The life expectancy of the Brazilian population has increased and, with this, there is a need to reflect on public policies that address and improve the quality of this population. The objective of the study is to characterize the epidemiological profile of the elderly with AIDS, in Bahia, between the years 2008 to 2018. Ecological time series study, with data obtained from the Information System for Notifiable Diseases (SINAN) provided by the Department of Informatics of the Unified Health System (DATASUS), from 2008 to 2018, with elderly and analyzed from the following variables: sex, race/color, education and hierarchical category (Homosexual, Bisexual, Heterosexual, Ignored). In the period studied, there were 20,931 cases, of which 963 refer to people over 60 years old, representing 4.6% of the total population. It presented a positive linear correlation  $r = 0.794$  ( $p = 0.004$ ), when comparing the years of diagnosis with the prevalence of AIDS in the age group of 60-69 years, demonstrating that over the years the number of AIDS cases in this age group increases. The epidemiological profile of the elderly with AIDS in Bahia consists of an individual aged between 60 and 69 years, male, heterosexual and with a low level of education.

**Keywords:** Epidemiology. Aged. HIV.

#### Resumo

*A expectativa de vida da população brasileira tem aumentado e, com isso, surge a necessidade da reflexão acerca de políticas públicas que contemplem e melhorem a qualidade de vida desta população. O objetivo do estudo é caracterizar o perfil epidemiológico dos idosos com AIDS, na Bahia, entre os anos de 2008 a 2018. Estudo ecológico de série temporal, com dados obtidos no Sistema de Informações de Agravos de Notificação (SINAN) disponibilizados pelo Departamento de Informática do Sistema Único de Saúde (DATASUS), no período de 2008 a 2018, com idosos e analisados a partir das seguintes variáveis: sexo, raça/cor, escolaridade e categoria hierárquica (Homossexual, Bissexual, Heterossexual, Ignorado). No período estudado, foram 20.931 casos, dos quais 963 se referem a pessoas acima de 60 anos, representando 4,6% da população total. Apresentou uma correlação linear positiva  $r = 0,794$  ( $p = 0,004$ ), quando comparamos os anos de diagnóstico com a prevalência de AIDS na faixa etária de 60-69 anos, demonstrando que com o passar dos anos aumentam o número de casos de AIDS nesta faixa etária. O perfil epidemiológico do idoso com AIDS na Bahia consiste em um indivíduo com idade entre 60 a 69 anos, do sexo masculino, heterossexual e com baixo nível de escolaridade.*

**Palavras-chave:** *Epidemiologia. Idoso. HIV.*

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#### 1 Introduction

The rapid and progressive aging of the Brazilian population, reflecting the increase in quality and life expectancy<sup>1</sup>, has called attention to the need to implement public health policies that have this population share as a focus. It is before this background that there is a need to review some culturally rooted social concepts that portray the stereotype of “asexual old age”. It is therefore imperative that sexual function becomes an essential component for the achievement of successful aging, and more so that this population, benefited by the demystification of sex with changes in sexual attitudes and behaviors<sup>2</sup>, be also targeted at vulnerabilities associated with sexual practice without proper protection.

According to the Epidemiological Bulletin published by the Ministry of Health in December 2019<sup>3</sup>, an increase in

the rate of AIDS detection was observed in people aged 60 years or older, between 2008 and 2018, in Brazil. This datum, however, may represent more than just an increase in the number of cases of the disease. In an attentive observation to studies addressing the topic – the profile of people aged 60 or over living with AIDS –, it was possible to realize that many studies portray and analyze data related to Brazil<sup>4</sup> or specific states<sup>5</sup>. None of these studies, however, addressed the epidemiological scenario of the elderly living with AIDS in Bahia, in a longer and more recent period, from 2008 to 2018.

As a state of Northeastern Brazil, a demographic region that showed a growth trend in the detection of cases between 2008 and 2018<sup>3</sup>, the analysis of the profile of elderly living with AIDS in Bahia becomes relevant, as it provides the knowledge of the epidemiological aspects of the disease, contributing to the adoption of measures aimed at reducing the

number of cases, but above all, the health promotion related to this population cut-off, considering aspects of sexuality as fundamental to the full care practice. Finally, the objective of the present study is to characterize the epidemiological profile of the elderly with AIDS in Bahia between 2008 and 2018.

## 2 Material and Methods

An exploratory study was carried out with data on the elderly with AIDS in the State of Bahia. The population consisted of all people with AIDS found in the age groups used in the definition adopted by the elderly Statute, which defines elderly people aged 60 or over<sup>6</sup>.

The data were extracted by consultation in the database of the Notification Records Information System (SINAN) made available by the Department of Informatics of the Unified Health System (DATASUS), at the electronic address (<http://www.datasus.gov.br>). SINAN is an information system of the Ministry of Health implemented throughout the national territory to monitor the problems of compulsory notification. This system mentioned above is fed by the notifications sheets and investigations of diseases, used in the entire Unified Health System (SUS).

The elderly were classified by age group in intervals, thus grouping the ages between 60-69 years, 70-79 years and 80 years or older, available in SINAN. The following variables were analyzed in this study: sex, race/color, schooling and sexual orientation (Homosexual, Bisexual, Heterosexual, Ignored). The information was accessed in September 2020, in the “epidemiological and morbidity” section, in the “AIDS Cases – since 1980” group, from 2008 to 2018.

In the analysis of the age groups chosen for the study, the “ignored” classification was discarded. In the Hierarchical Exposure Category variable, injecting drug users (IDU), hemophiliacs, and Vertical Transmission were excluded.

Later, the data were converted to Microsoft Excel<sup>®</sup> software for the process of analysis and calculation of prevalence (per 100,000 inhabitants), as well as tables construction. For the prevalence calculation, resident population was used, in Population Projection 2000-2030 (TABNET) mathematically obtained by the formula:

$$\text{PREVALENCE RATE} = \frac{\text{NUMBER OF EXISTING CASES}}{\text{NUMBER OF PEOPLE STUDIED IN THE POPULATION}}$$

Pearson’s correlation test was used to correlate the year of diagnosis with the prevalence (per 100 000 inhabit.) of the age group between 60 and 69 years. And statistical significance was always defined by  $p < 0.05$ .

## 3 Results and Discussion

In appreciation of the absolute numbers of people living with AIDS in Bahia, between 2008 and 2018, collected from the DATASUS database, a total of 20,931 cases were found, of which 963 refer to people aged 60 or over living with AIDS in Bahia, Brazil, in the period examined, representing 4.6%

of the total population. Analyzing the prevalence rates in the period from 2008 to 2018 of the elderly living in Bahia, it is observed that the values presented alternances that reflect the variations presented in the cases diagnosed in the same period.

**Table 1** - Percentage of AIDS in elderly individuals in relation to gender, age group, race/color, schooling and hierarchical category, in the state of Bahia, between 2008 and 2018

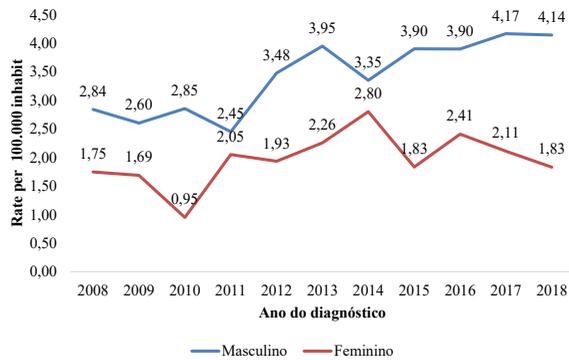
Variables	Period	Prevalence
	2008-2018	(%)
Sex		
Male	613 (63.35)	3.47
Female	350 (36.35)	1.98
TOTAL	963	5.45
Age range		
60-69	775 (80.47)	4.39
70-79	155 (16.09)	0.88
80 or more	33 (34.38)	0.19
TOTAL	963	5.45
Race		
White	108 (11.21)	0.61
Black	99 (10.28)	0.56
Yellow	1 (0.10)	0.01
Brown	263 (27.31)	1.49
Indigenous	4 (0.41)	0.02
Ignored	488 (50.67)	2.76
TOTAL	963	5.45
Schooling		
Illiterate	48 (14.03)	0.27
1 <sup>st</sup> to 4 <sup>th</sup> incomplete grade	82 (23.98)	0.46
4 <sup>th</sup> complete grade	33 (9.65)	0.19
5 <sup>th</sup> to 8 <sup>th</sup> incomplete grade	64 (6.65)	0.36
Complete Elementary Education	24 (7.01)	0.14
Incomplete High School	23 (6.72)	0.13
Complete High School	41 (11.98)	0.23
Incomplete Higher Education	4 (1.17)	0.02
Complete Higher Education	23 (6.72)	0.13
Total	342	1.94
Hierarchical Category		
Homosexual	36 (3.80)	0.20
Bisexual	23 (2.43)	0.13
Heterosexual	369 (38.97)	2.09
Ignored	519 (54.80)	2.94
Total	947	5.36

Source: Resource data.

Relating the occurrence of the disease cases to gender, a higher number of notifications among male individuals were found in the age group studied (Table 1), in a proportion of 1.75:1, representing 3.47% of the total population of the State.

Among male individuals, the highest rate of infection was recorded in 2017, with 4.17 per 100,000 inhabitants. Whereas in the female sex, 2014 was the year with the highest prevalence, with 2.80 patients per 100,000 inhabitants (Figure 1).

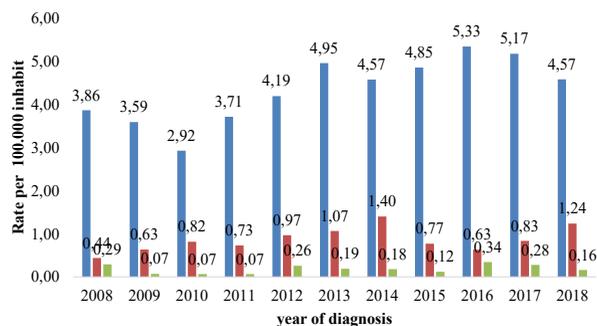
**Figure 1** - Prevalence of AIDS (per 100,000 inhabit.) according to sex, per year of diagnosis in the state of Bahia, 2008 to 2018



Source: Resource data.

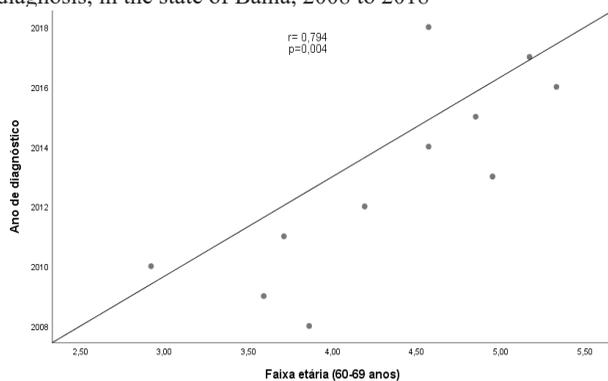
It is possible to realize that the prevalence of cases per age group, both in absolute numbers and in relation to the percentage, is higher in individuals aged 60 to 69 years, who, in the years 2016 and 2017, mainly, had a high representativeness in the total number of infected individuals in this population (Figure 2). There was a positive linear correlation of  $r = 0.794$  ( $p = 0.004$ ) when we compared the years of diagnosis with the prevalence of AIDS in the 60-69-year-old age group (Figure 3).

**Figure 2** - Prevalence of AIDS (per 100,000 inhabit.) according to age range, per year of diagnosis in the state of Bahia, 2008 to 2018



Source: Resource data.

**Figure 3** - correlation between the prevalence of AIDS (per 100,000 inhabit.) in the 60-69-year-old age group and the year of diagnosis, in the state of Bahia, 2008 to 2018



Pearson correlation.  $p = 0.004$ .

Source: Research data.

Among the individuals with declared schooling, a total of 342, the observation of the data indicates that most people

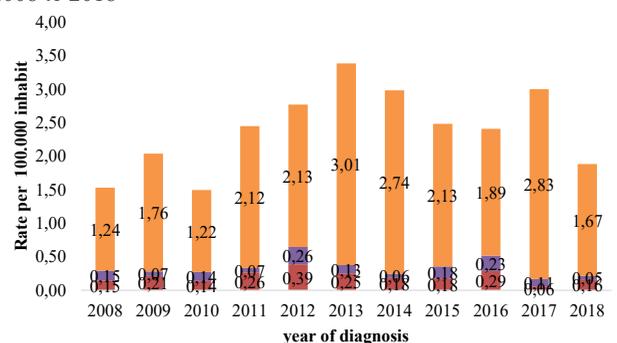
living with AIDS, aged 60 or older, in Bahia, are characterized by low schooling, with incomplete elementary education, as indicated in Table 1.

Regarding the hierarchical exposure category, it was possible to observe that heterosexual individuals contribute, among the categories expressly declared, with a large portion of the cases, in the frequency 38.97% of the population with the disease in the age group of analysis. However, much of the data collected was omitted in relation to sexual orientation, which ultimately represents an absolute value of 519 individuals aged 60 years or older with AIDS, that is, 2.94% of the elderly with the disease in Bahia.

According to the race/color variable, there is a predominance of the disease in the ignored race/color group, totaling 488 individuals, representing 2.76% of the total population of the State. However, among the people who had the race/color pointed out, those who were self-declared as brown, presented a percentage of 27.31% in relation to the elderly with AIDS in Bahia.

Heterosexuals are the population with the greatest relevance for the analysis of the study (disregarding the percentage of people who did not have sex orientation declared), being 2013 the year with the highest prevalence of heterosexuals diagnosed with the disease, with the rate of 3.01 per 100,000 inhabitants. (Figure 4).

**Figure 4** - Prevalence of AIDS (per 100,000 inhabit.) according to sexual orientation, per year of diagnosis in the state of Bahia, 2008 to 2018



Source: Resource data.

Currently, on the world stage and in Brazil, there is an increase in the number of HIV/AIDS diagnoses in elderly people<sup>1-4,7</sup>. Analyzing the extent of this disease, it is possible to perceive the relevance of this disease to the general population, due to its great epidemiological impact<sup>1,4,7,10</sup>. This study observed that the group of elderly people living with AIDS in the state of Bahia grew significantly in the last 10 years.

It is noteworthy that the absolute number of Bahia state elderly population identified in 2008 was 63. Already in 2018, this number practically doubled and reached the range of 111 individuals. In this study, as in other studies developed in the country, the majority of the elderly are male<sup>11</sup>. In 2008, 62% of the infected patients were men, whereas in the accumulated

period up to 2018, this figure rose to 64%, which represents a small variation, but reinforces the epidemiological profile in this category.

It should be noted that, despite the predominance of male elderly individuals, studies show that the number of HIV cases among females has increased considerably over the years in the country in all age groups<sup>11</sup>. Such growth reveals female vulnerability, determined by biological aspects and social, economic and cultural factors, with emphasis on gender roles, unbalanced power relationships and the naturalization of violence against women<sup>10,11</sup>. However, in this study, the data found do not corroborate this scenario, since despite the number of infected elderly women increased over the years, the number of elderly men prevailed<sup>4,11,17</sup>.

The observation that the age group from 60 to 69 years was the most prevalent among the elderly with AIDS corroborates the findings of other studies. Several causes justify the predominance of the disease in the range 60 to 69 years of age, and many authors attribute this to the increase in life expectancy and sexual activity provided by hormone replacement therapy and the use of drugs for the treatment of sexual impotence, in addition to the non-recognition of risk by the elderly<sup>4,17,18</sup> the resistance in the use of condoms is revealed.

On the other hand, some studies have attributed the higher prevalence of the disease in the range from 60 to 69 years to late diagnosis, since a period of 5 to 10 years usually elapses from infection until the person has AIDS manifested<sup>4</sup>. Other studies also show that the advance of antiretroviral therapy has modified the natural evolution of the disease, reducing the lethality associated with immunodeficiency, and with this it has provided a higher survival rate for patients<sup>19</sup>.

Regarding education, it was identified in the present study that most individuals presented incomplete Elementary School, which reinforces the data showing an epidemiological profile of low education in years among AIDS patients in Brazil. There is a close correlation between unfavorable socioeconomic indicators and the increase in the disease in the country. Individuals with low education, low income and inhabitants of geographical areas with low human development rates have been the most affected by the disease<sup>11,13-15</sup>.

From this perspective, studies indicate that the level of schooling can influence attitudes toward sexuality in aging, since people with more advanced schooling tend to have a more favorable attitude about sexuality, because they better assimilate information, they have greater ease of access to health services and the acquisition of condoms<sup>11</sup>. In addition, access to education is linked to the reduction of risk behaviors. Within this context, it is important to point out that the degree of information on AIDS is not sufficient for a person to adopt protective behavior, but it is clear that the lack of basic information contributes substantially to increasing the individual's vulnerability to HIV/AIDS<sup>16</sup>.

In the variable race/color, it was observed that most

individuals did not specify it, with the share of self-declared brown individuals being the second most representative, a result that corroborates the data found in another study carried out in the Northeast,<sup>7</sup> which demonstrated that approximately 61% of elderly people living with HIV between 2012 and 2016 were brown. However, it should be emphasized that this variable may present factors that make it difficult to analyze correctly, since it is a field that is sometimes not filled, as identified in this study, besides being an information that depends on the patients' self-perception, which may present variations. Moreover, the classification of race may be different depending on the source used, such as the combination of the "brown" and "black" categories, resulting in "negroes", generating possible impacts on the interpretation of this epidemiological data<sup>20</sup>.

In relation to the hierarchical variable it is important to emphasize a great possibility of bias, since the number of ignored was representative and, within the accounts, the category of heterosexual was the most affected, a fact that deserves prominence, since historically and in the social imaginary, HIV/AIDS is usually linked to the category of homosexuals. In this context, data from the epidemiological Bulletin of 2018 show the trend in the growth of infected heterosexuals. This reality can be explained by patterns of hegemonic masculinity, according to which "real men" are immune to this disease<sup>21</sup>.

The results of this study suggest, therefore, that the majority of elderly people living with AIDS are included in the age group between 60 and 69 years of age. It is estimated that of a total of 600 people infected with HIV, 14 thousand are aged 60 years or over. Currently, Brazil is experiencing an aging process, which has an important impact and changes for the socio-cultural and political life of the country<sup>22</sup>.

According to study<sup>23</sup>, there is a significant increase in the number of AIDS cases in elderly people regardless of the social class, which demands the planning of public policies that establish universal measures before this new scenario. Currently, there is low accessibility to health services, a shortage of campaigns aimed at this specific portion of the population, in addition to the invisibility with which its exposure to risk is treated. These factors together help the elderly to inform themselves less about HIV and not develop the necessary awareness of protection.

Thus, the importance of the present study is demonstrated, due to the need to extend preventive measures to this more vulnerable public, with educational campaigns to prevent STIs, which must be in line with the social evolution of the decline of taboo on sexuality in the third age. In 2008<sup>22</sup>, the World AIDS Day campaign was launched, promoted by the Ministry of Health, the first national initiative in this context, which aimed to prevent the disease among the elderly, with the slogan "Sex has no age, and neither does protection". However, much still needs to be done so that this initiative can be continued and consolidated.

#### 4 Conclusion

According to the data analyzed, it was identified that the epidemiological profile of the elderly with AIDS in Bahia consists of an individual between 60 and 69 years of age, male, heterosexual and with a low level of schooling.

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