Cases of HIV/AIDS during a decade in a municipality in the metropolitan region of Porto Alegre, state of Rio Grande do Sul

Casos de HIV/AIDS durante uma década em uma cidade na região metropolitana de Porto Alegre (RS)

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ABSTRACT

To identify HIV/AIDS prevalence in a municipality from the metropolitan region of Porto Alegre, state of Rio Grande do Sul, and describe characteristics of infected individuals. Descriptive study in Sapucaia do Sul with data from the Notifiable Diseases Information System, from 2009 to 2018. Notifications from individuals aged ≥13 years were included and observations with inadequate filling and pregnant women were excluded. Temporal trend of HIV/AIDS cases was presented through absolute frequency and sociodemographic characteristics through absolute and relative frequencies832 cases of HIV/AIDS were reported in the municipality and 43.4% corresponded to AIDS. During the evaluated period, HIV notification increased by 4,000% and AIDS notification, by 230%, with a predominance of men, young adults, white, with incomplete elementary education. These results are extremely relevant in the public health field as they can help to guide and strengthen strategies to combat and control the disease.

Keywords: HIV. Acquired Immunodeficiency Syndrome. Incidence. Health profile.

RESUMO

Identificar as prevalências de HIV/AIDS em uma cidade da região metropolitana de Porto Alegre-RS e descrever características dos indivíduos infectados. Estudo descritivo em Sapucaia do Sul, com dados do Sistema de Informações de Agravos de Notificação de 2009 a 2018. Foram incluídas notificações de indivíduos com ≥13 anos e excluídas observações com preenchimento inadequado e gestantes. Tendência temporal dos casos de HIV/AIDS foi apresentada por frequência absoluta e características sociodemográficas por frequências absoluta e relativa. Foram notificados 832 casos de HIV/AIDS no município, sendo 43,4% correspondentes à AIDS. Durante o período avaliados, a notificação de HIV aumentou 4000% e a de AIDS 230%, com predominância no sexo masculino, em adultos jovens, brancos e com ensino fundamental incompleto. Os resultados encontrados são de relevância no âmbito da saúde coletiva, pois auxiliam a nortear e fortalecer estratégias de combate e controle da doença.

Palavras-chave: HIV. Síndrome de Imunodeficiência Adquirida. Incidência. Perfil de saúde.

INTRODUCTION

Infection with the human immunodeficiency virus (HIV) and the consequent development of the Acquired Immunodeficiency Syndrome (AIDS) is a major concern for the global public health sphere. Despite many achievements and advances, coping with AIDS remains a challenge[1].

Transmission is predominantly sexual, although there are other forms of exposure to HIV, such as blood and vertical transmission[2]. According to the Ministry of Health[3], in Brazil, with regard to susceptibility, vulnerability and immunity, homosexuals and other men who have sex with men, female sex workers, transvestites, transsexuals and drug addicts are the most vulnerable populations. Furthermore, cases of infection have also increased among children and adolescents[3].

Linkage, retention and adherence to treatment, as well as continuous HIV care, can be understood as the process of health care for infected users. This process goes through the following moments: timely diagnosis, linking the HIV-positive individual to a health service, their retention in the follow-up through monitoring and periodic examinations, initiation of Antiretroviral Therapy (ART) and their promotion for good adherence to the treatment, in order to achieve the final goals of care, that is, the suppression of the viral load and the achievement of a quality of life comparable to that of people who do not have HIV. These five moments are represented as a sequence of steps in the so-called "Continuous HIV Care Cascade". In the Unified Health System (SUS), Primary Care (AB) plays a key role in dealing with this health condition, by expanding access to diagnosis and treatment for People Living with HIV (PLHIV)[4].

In Brazil, between 2007 and June 2022, 434,803 new cases of HIV infection were reported in the Notifiable Diseases Information System (SINAN). In 2021 alone, 40,880 new cases were reported[5]. Specifically in relation to AIDS, the detection rate was 21.9 cases per 100,000 inhabitants in the country in 2020, with the states of Amazonas, Roraima, Amapá, Pará and Rio Grande do Sul accounting for the highest detection rates in the country in 2021[5].

In the national territory, when evaluating municipalities with 100,000 inhabitants or more, of the twenty municipalities with the highest HIV/AIDS rates in the country, ten belong to the southern region, six of which are in the state of Rio Grande do Sul (RS). The capital of this state, Porto Alegre, had an average AIDS detection rate between 2017 and 2021 of 49.8 per 100,000 inhabitants, a value higher than the rate of the state of Rio Grande do Sul (25.2 per 100,000 inhabitants between 2017 and 2021)[5].

Given this scenario and aiming to contribute to the improvement of disease prevention and care actions, the objective of this study was to identify the prevalence of HIV/AIDS in a municipality in the metropolitan region of Porto Alegre, state of Rio Grande do Sul, and to describe the characteristics of infected individuals.

METHODOLOGY

This was a descriptive, quantitative study, carried out in the municipality of Sapucaia do Sul, state of Rio Grande do Sul, with data from the period between 2009 and 2018. The municipality is located in the metropolitan region of Porto Alegre, 25 km from the capital. The population, according to the 2010 Demographic Census, was 130,957 inhabitants and its demographic density was 2,245.91 inhabitants/km²[6]. The municipal Health Care Network is made up of the Municipal Health Secretariat (SMS), the Health Surveillance Coordination and institutions linked to Primary, Secondary and Tertiary Care[7].

This study was carried out at the Health Surveillance Coordination of the municipality, specifically in the Epidemiological Surveillance sector. Data were obtained from the SINAN database, which contains HIV/AIDS notification/investigation forms. The notification/investigation forms used by SINAN are different for each case and age, thus, there are forms for patients aged 13 or over, for children, for pregnant women or for children exposed to HIV[8]. Thus, as inclusion criteria, only the notification/investigation forms corresponding to individuals aged 13 years or older, diagnosed and notified at SINAN with HIV/AIDS, from 2009 to 2018 in the municipality of Sapucaia do Sul (RS) were selected. In the case of forms with registration errors or inadequate completion, only the observations with errors were excluded from the analysis, the others were kept.

To obtain the data, SINAN operational reports were generated using TABWIN, a data analysis program of the system itself. Subsequently, a spreadsheet was created in Excel® software with the data obtained. The temporal trend of HIV/AIDS cases was presented through absolute frequency. A descriptive analysis of HIV and AIDS cases was carried out separately, since the data corresponded to notifications and not to each individual. Thus, it was not possible to jointly describe the HIV and AIDS data, since there was no way to determine whether an AIDS notification was previously reported as HIV in the period studied, in the same individual. The notification could have occurred in a previous period or even not have occurred due to the lack of search for health services. Thus, it is not possible to assume that the AIDS cases include the HIV cases presented in that period (2009-2018), and it is more appropriate to present these data separately.

In addition, the sociodemographic characteristics of the infected individuals were described for each of the years studied, through the presentation in absolute and relative frequencies of the variables gender, age, schooling, and skin color. Analyses were performed using the statistical software IBM SPSS version 23.0.

The research followed the recommendations and ethical precepts of Resolution 466/2012 of the National Health Council. The project was submitted and approved by the Permanent Education Technical Group of the Municipal Secretariat of Health of Sapucaia do Sul (RS) and by the Research Ethics Committee of the University of Extremo Sul Catarinense (UNESC), the latter under protocol number 3344722. Although there is no need to apply the Informed Consent, as it is secondary data, the Confidentiality Term was used, with the aim of preserving the confidentiality of the data.

RESULT

From 2009 to 2018, 832 cases of HIV and AIDS were reported to SINAN of the SMS in the municipality of Sapucaia do Sul. Of these, 362 (43.4%) were AIDS cases. Figure 1 illustrates the number of HIV and AIDS cases notified in the municipality during the last decade. In 2009, only 2 HIV cases were reported, however, a decade later (2018), 89 cases were reported, representing an increase of more than 4,000% in HIV cases in the municipality. Regarding AIDS cases, the increase was 230% in the same period (2009-2018), reaching, in 2018, the notification of 69 cases of the disease.
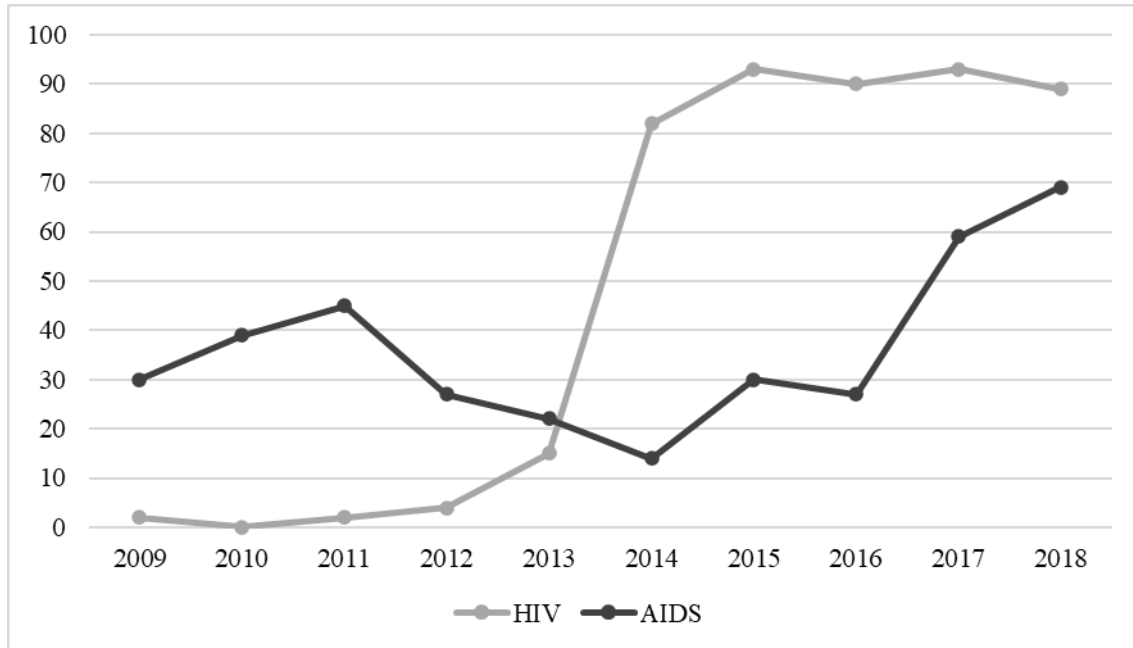
Figure 1. Number of HIV and AIDS cases in the last decade in the municipality of Sapucaia do Sul, state of Rio Grande do Sul, 2019.

With regard to sociodemographic characteristics of individuals notified with HIV, more than half of the cases were identified in men, with this difference being more pronounced until 2017, since in 2018 the frequency of cases in women (47.2%) was close to males (52.8%). Regarding the age group, individuals between 20 and 39 years old represented 61.8% HIV cases in 2018. It is also possible to observe that throughout the study period, almost all individuals with HIV had white skin color, representing 87.7% individuals in 2018. In addition, individuals who did not complete elementary school accounted for about half of HIV cases throughout the period, despite some fluctuations in this result over the years (Tables 1 and 2).

Table 1. HIV cases between 2009 and 2013 according to sociodemographic variables in the municipality of Sapucaia do Sul, state of Rio Grande do Sul, 2019

(Continued)

Variables	2009	2010	2011	2012	2013
	N (%)	N (%)	N (%)	N (%)	N (%)
Sex					
Male	2(100.0)	0(0.0)	0(0.0)	3(75.0)	9(60.0)
Female	0(0.0)	0(0.0)	2(100.0)	1(25.0)	6(40.0)
Age (complete years)					
13 - 19	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
20 – 29	0(0.0)	0(0.0)	1(50.0)	1(25.0)	5(33.4)
30 – 39	1(50.0)	0(0.0)	0(0.0)	1(25.0)	4(26.7)
40 – 49	0(0.0)	0(0.0)	1(50.0)	0(0.0)	2(13.3)
50 – 59	0(0.0)	0(0.0)	0(0.0)	1(25.0)	2(13.3)

(Conclusion)

Variables	2009 N (%)	2010 N (%)	2011 N (%)	2012 N (%)	2013 N (%)
60 or more	1(50.0)	0(0.0)	0(0.0)	1(25.0)	2(13.3)
Skin color					
White	1(50.0)	0(0.0)	2(100.0)	4(100.0)	14(93.3)
Non-white	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(6.7)
Ignored	1(50.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Schooling					
No schooling	0(0.0)	0(0.0)	0(0.0)	1(25.0)	0(0.0)
Incomplete Elementary School	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(20.0)
Complete Elementary School	1(50.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Incomplete high school	0(0.0)	0(0.0)	1(50.0)	3(75.0)	8(53.3)
Complete high school	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Incomplete Higher Education	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Complete Higher Education	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(6.7)
Ignored	1(50.0)	0(0.0)	1(50.0)	0(0.0)	3(20.0)

Table 2. HIV cases between 2014 and 2018 according to sociodemographic variables in the municipality of Sapucaia do Sul, state of Rio Grande do Sul, 2019

(Continued)

Variables	2014 N (%)	2015 N (%)	2016 N (%)	2017 N (%)	2018 N (%)
Sex					
Male	50(61.0)	47(50.5)	61(67.8)	51(54.8)	47(52.8)
Female	32(39.0)	46(49.5)	29(32.2)	42(45.2)	42(47.2)
Age (complete years)					
13 - 19	6(7.3)	12(12.9)	5(5.6)	9(9.7)	4(4.5)
20 – 29	27(32.9)	25(26.8)	25(27.7)	26(28.0)	22(24.7)
30 – 39	21(25.6)	20(21.5)	26(28.9)	28(30.0)	33(37.1)
40 – 49	16(19.5)	18(19.4)	26(28.9)	15(16.1)	19(21.3)
50 – 59	9(11.0)	9(9.7)	5(5.6)	13(14.0)	8(9.0)
60 or more	3(3.7)	9(9.7)	3(3.3)	2(2.2)	3(3.4)
Skin color					
White	72(87.9)	81(87.1)	77(85.6)	76(81.7)	78(87.7)
Non-white	8(9.7)	11(11.8)	12(13.3)	17(18.3)	9(10.1)
Ignored	2(2.4)	1(1.1)	1(1.1)	0(0.0)	2(2.2)
Schooling					
No schooling	0(0.0)	1(1.1)	0(0.0)	2(2.1)	1(1.1)
Incomplete Elementary School	41(50.0)	58(62.3)	52(57.8)	37(39.7)	44(49.4)

(Conclusion)

Variables	2014 N (%)	2015 N (%)	2016 N (%)	2017 N (%)	2018 N (%)
Complete Elementary School	5(6.1)	5(5.4)	5(5.6)	14(15.1)	12(13.5)
Incomplete high school	20(24.4)	11(11.8)	3(3.3)	6(6.5)	8(9.0)
Complete high school	9(11.0)	13(14.0)	19(21.1)	21(22.6)	12(13.5)
Incomplete Higher Education	0(0.0)	0(0.0)	4(4.4)	4(4.3)	3(3.4)
Complete Higher Education	1(1.2)	1(1.1)	0(0.0)	3(3.2)	2(2.2)
Ignored	6(7.3)	4(4.3)	7(7.8)	6(6.5)	7(7.9)

Tables 3 and 4 lists the sociodemographic characteristics of individuals notified with AIDS. Throughout the studied period, more than half of the cases were men, representing 53.6% cases in 2018, and that the vast majority of individuals had white skin color, totaling 92.8% in 2018. Regarding age group, 1 out of 3 cases of AIDS occurred in young people aged 20 to 29 years and that one fifth of cases were evidenced in individuals aged 50 years or older. In addition, during the entire period, about half of the reported cases corresponded to individuals who did not complete elementary school, totaling 55.1% cases in 2018, although fluctuations in this data were observed over the years.

Table 3. AIDS cases between 2009 and 2013 according to sociodemographic variables in the municipality of Sapucaia do Sul, state of Rio Grande do Sul, 2019

(Continued)

Variables	2009 N (%)	2010 N (%)	2011 N (%)	2012 N (%)	2013 N (%)
Sex					
Male	12(40.0)	23(59.0)	28(62.2)	16(59.3)	11(50.0)
Female	18(60.0)	16(41.0)	17(37.8)	11(40.7)	11(50.0)
Age (complete years)					
13 - 19	0(0.0)	0(0.0)	2(4.4)	1(3.7)	0(0.0)
20 – 29	7(23.3)	9(23.1)	8(17.8)	7(25.9)	6(27.3)
30 – 39	8(26.8)	14(35.9)	11(24.4)	11(40.8)	7(31.8)
40 – 49	7(23.3)	8(20.5)	12(26.7)	7(25.9)	6(27.3)
50 – 59	4(13.3)	7(17.9)	9(20.0)	1(3.7)	1(4.5)
60 or more	4(13.3)	1(2.6)	3(6.7)	0(0.0)	2(9.1)
Skin color					
White	24(80.0)	30(77.0)	39(86.6)	24(88.9)	22(100.0)
Non-white	6(20.0)	7(17.9)	3(6.7)	3(11.1)	0(0.0)
Ignored	0(0.0)	2(5.1)	3(6.7)	0(0.0)	0(0.0)

(Conclusion)

Variables	2009 N (%)	2010 N (%)	2011 N (%)	2012 N (%)	2013 N (%)
Schooling					
No schooling	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Incomplete Elementary School	10(33.3)	13(33.4)	9(20.0)	9(33.3)	1(4.5)
Complete Elementary School	5(16.7)	7(17.9)	4(8.9)	0(0.0)	3(13.6)
Incomplete high school	1(3.3)	3(7.7)	19(42.2)	10(37.1)	15(68.3)
Complete high school	3(10.0)	7(17.9)	3(6.7)	3(11.1)	1(4.5)
Incomplete Higher Education	1(3.3)	0(0.0)	1(2.2)	0(0.0)	0(0.0)
Complete Higher Education	2(6.7)	0(0.0)	1(2.2)	0(0.0)	0(0.0)
Ignored	8(26.7)	9(23.1)	8(17.8)	5(18.5)	2(9.1)

Table 4. AIDS cases between 2014 and 2018 according to sociodemographic variables in the municipality of Sapucaia do Sul, state of Rio Grande do Sul, 2019

Variables	2014 N (%)	2015 N (%)	2016 N (%)	2017 N (%)	2018 N (%)
Sex					
Male	9(64.3)	23(76.7)	17(63.0)	34(57.6)	37(53.6)
Female	5(35.7)	7(23.3)	10(37.0)	25(42.4)	32(46.4)
Age (complete years)					
13 - 19	1(7.1)	0(0.0)	2(7.4)	2(3.4)	4(5.8)
20 – 29	1(7.1)	8(26.7)	2(7.4)	11(18.6)	22(32.0)
30 – 39	4(28.6)	10(33.3)	10(37.1)	16(27.2)	17(24.6)
40 – 49	5(35.8)	9(30.0)	8(29.6)	15(25.4)	11(15.9)
50 – 59	3(21.4)	3(10.0)	2(7.4)	13(22.0)	9(13.0)
60 or more	0(0.0)	0(0.0)	3(11.1)	2(3.4)	6(8.7)
Skin color					
White	10(71.4)	24(80.0)	21(77.8)	53(89.8)	64(92.8)
Non-white	4(28.6)	4(13.3)	5(18.5)	4(6.8)	4(5.8)
Ignored	0(0.0)	2(6.7)	1(3.7)	2(3.4)	1(1.4)
Schooling					
No schooling	0(0.0)	0(0.0)	0(0.0)	2(3.4)	1(1.4)
Incomplete Elementary School	8(57.2)	17(56.7)	16(59.3)	23(39.0)	37(53.7)
Complete Elementary School	2(14.3)	1(3.3)	2(7.4)	10(16.9)	7(10.1)
Incomplete high school	1(7.1)	2(6.7)	0(0.0)	3(5.1)	2(2.9)
Complete high school	2(14.3)	6(20.0)	2(7.4)	11(18.6)	17(24.7)
Incomplete Higher Education	0(0.0)	1(3.3)	1(3.7)	2(3.4)	0(0.0)
Complete Higher Education	1(7.1)	1(3.3)	1(3.7)	1(1.7)	0(0.0)
Ignored	0(0.0)	2(6.7)	5(18.5)	7(11.9)	5(7.2)

DISCUSSION

This study, which aimed to describe the prevalence of HIV and AIDS in a municipality in the metropolitan region of Porto Alegre, showed important data on the growth of the disease between 2009 and 2018.

It is important to consider that HIV notifications began in the health system from 2014, which justifies the considerable increase in cases from that year onwards, as evidenced in this study. This action took place based on Ordinance 1,271, of June 6, 2014, which expanded the National List of Compulsory Notification9. Therefore, it is speculated that such facts have corroborated the increase in the number of cases after 2014.

It is also worth highlighting some sociodemographic data from the municipality of Sapucaia do Sul. In 2021, the estimated population of the municipality was 142,508 people (11,551 people more than data from the 2010 Demographic Census). About 16.9% population was employed in 2020, ranking 294th in the state of Rio Grande do Sul (RS) and 1,858th in Brazil, with the average monthly salary corresponding to 2.7 minimum wages. Its GDP per capita was R$ 24,638.78 in 2020 and its Human Development Index was 0.726 in 2010 (211th position in RS and 1,133rd position in Brazil)[6].

Notifications at SINAN, during the period studied, showed that a significant proportion of cases corresponded to the disease itself (AIDS) and not just to infection with the HIV. This corroborates data from RS, the state in which the municipality of Sapucaia do Sul is located. Information published by the RS State Health Secretariat (SESRS) shows that the AIDS detection rate in the state is higher than in Brazil. Despite a progressive decline in the disease in recent years, from 43.3 cases per 100,000 inhabitants in 2009 to 28.3 cases per 100,000 inhabitants in 2020,

RS still has the third highest AIDS rate among Brazilian states[7].

Moreover, the state of Rio Grande do Sul also has a high AIDS mortality rate, almost twice the mortality rate in Brazil, with Porto Alegre being the Brazilian capital with the highest rate. The municipality of Sapucaia do Sul is among the state's priorities with regard to mortality from HIV, since in 2019, 12.1 deaths from AIDS were recorded per 100,000 inhabitants in that municipality[7]. In comparison, the state capital, Porto Alegre, had a mortality rate of 22.0 per 100,000 inhabitants, and Itaqui, the municipality with the highest AIDS mortality in RS, had 23.9 deaths per 100,000 inhabitants in 2019[7]. Despite the lower mortality in Sapucaia do Sul, compared to these other municipalities, it is noteworthy that it is the twentieth municipality with the highest mortality from AIDS[7], the priority municipalities for the Surveillance, Prevention and Control of STIs, HIV/AIDS and Viral Hepatitis in RS, defined by Resolution 037/22 - CIB/RS10. Furthermore, Sapucaia do Sul is among the municipalities with the highest prevalence of HIV in the state, which may influence its mortality rate for AIDS[7].

These data are extremely important considering the current scenario of mortality from HIV/AIDS in Brazil. According to Cunha and Cruz (2022), between 2000 and 2018, there was a reduction in mortality from HIV/AIDS-defining illnesses in Brazil, while an increase in mortality from non-HIV/AIDS-defining illnesses was also observed. Even so, the death rate from defining illnesses continues to be higher in the population affected by HIV/AIDS (7.4 to 4.4 deaths per 100,000 inhabitants, compared to 0.4 to 0.8 deaths per 100,000 inhabitants in non-defining illnesses)[11].

Another interesting observation found is the increase in HIV notifications in the municipality between 2009 and 2018, even with some fluctuations in the number of cases of infection

in some years. This highlights that despite having passed four decades since the discovery of the disease and the development of several national health policies for its control, infection rates remain high and remain an important challenge for public health. The complexity of individual, collective and social aspects related to the risk of contagion by the disease continue to challenge the formulation of effective and decisive intervention strategies to combat it[12].

Grangeiro *et al.*[13] address the re-emergence of the AIDS epidemic in Brazil, pointing out that the disease has presented its worst indicators in recent years in the country. The authors state that, according to national data, AIDS is far from being controlled and the number of cases has grown again among homosexuals and in urban centers. An increase in the number of cases in the male/female ratio and alarming mortality rates have also been observed.

According to the Communities at the center report, key populations and their sexual partners account for more than half (54%) of new HIV infections worldwide[14]. In 2018, injecting drug users, gay men and other men who have sex with men, transgender people, sex workers and persons deprived of their liberty, accounted for around 95% of new HIV infections in Eastern and Central Europe in the Middle East and North Africa[14].

As for the oscillation in the number of cases of HIV and AIDS found in the present study, this highlights important aspects related to the history of the disease. In the analyzed period, Ordinance MS/GM 77 of January 2012, implemented rapid tests for diagnosis of HIV infection in AB, as part of a set of MS strategies, which aimed to qualify and expand population's access to diagnosis[16].

With respect to the sociodemographic description of the cases, in the present study, a higher prevalence of HIV was identified in men. This is in line with national data, in which between 2007 and 2020, the sex ratio remained higher for men. In 2007, the ratio was 14 men to 10 women and in 2020, it was 28 men to 10 women. In 2022, data reveal that, among men, 46.4% cases were due to homosexual exposure, 8.9% bisexual, 27.7% heterosexual and 1.2% occurred among Injecting Drug Users (IDU)[5]. Regarding cases of AIDS, it was also evidenced, higher prevalence in men. According to MS, the sex ratio for AIDS presents important regional differences, however, in all Brazilian regions, there is a predominance of men[5].

It is important to point out that the mode of exposure was not the object of research here, despite that, national data indicate that homo/bisexual relationships have the highest rates of HIV/AIDS. Still, according to the MS, susceptibility to the HIV/AIDS epidemic in the country is concentrated in some population segments that account for most new cases of the infection, such as homosexuals and other men who have sex with men, transgender people and sex professionals. Also noteworthy is the growth of infection in adolescents and young people[5].

Current data indicate that the main route of transmission in Brazil in 2021 was sexual in both men (77.8%) and women (84.7%). Among men, there was a predominance of the homo/bisexual exposure category (42.9%), surpassing the proportion of cases notified as heterosexual exposure (34.9%)[5].

Considering the epidemic of the disease in other countries, epidemiological data similar to those of Brazil are found. The Centers for Disease Control and Prevention (CDC) of the United States of America points out that homosexual and bisexual men and other men who have sex with men are the population most affected by HIV[16]. Similarly, in Canada, the HIV surveillance report identified the infection as a global public health problem and revealed that the number and rate

of HIV cases reported in the country increased in 2018. Homosexual and bisexual and other men who have sex with men also accounted for the highest proportion of all cases in adults[17].

In the present study, the age group most affected by HIV infection was 30 to 39 years old, followed by individuals in the 20 to 29 age group, which together represented about 60% cases in 2018. Similarly, national data from 2007 to 2022 showed that most cases of HIV infection are in the age range of 20 to 34 years, totaling 52.2% cases[5]. In Canada, the age group from 30 to 39 years old also represented the highest number of cases[17].

Regarding the age range of individuals notified with AIDS, it was observed that 1 out of 3 cases occurred in young people aged 20 to 29 years and that one fifth of cases were evidenced in individuals aged 50 years or older. The prevalence of the disease in young adults found in this study is in line with recent MS publications. In Brazil, the highest prevalence of AIDS cases is found in individuals aged between 25 and 39 years, of both sexes[5].

The growth in the number of cases among young people shows the vulnerability of this population. Emotional factors, the sexuality of the development phase, the lack of sexual affective ability, as well as the social and family context lead young people to expose themselves to risk situations, often making them vulnerable to sexually transmitted infections[18]. In the same direction, Gomes *et al.*[19] argued that the understanding and interventions for HIV prevention in the context of alcohol and/or drugs is still challenging, since studies show that condom use is low in groups especially vulnerable under the influence of alcohol and other drugs. In addition, other issues such as low knowledge are facilitating conditions that predispose to HIV infection[19].

Although the number of cases of HIV/AIDS is lower in individuals over 50 years, there was an important representativeness in the number of cases notified in this population. According to the MS, there was a worrying increase in the AIDS mortality rate among individuals aged 60 and over, between 2011 and 2021[5]. According to Ferreira *et al.*[20], Brazil is moving towards an aging population profile and this scenario requires policy adaptations aimed at this population group, especially in health care.

Regarding skin color, the present study showed that the vast majority of individuals with HIV were white, confirming data from the 2019 HIV/AIDS epidemiological bulletin which, in the period from 2007 to 2018, reported that the white skin color corresponded to 67.2% cases[7].

Likewise, notified cases of AIDS showed that most individuals have white skin color. Data for the state of Rio Grande do Sul indicate that, from January 1980 to June 2018, there was a predominance of infection in individuals with white skin color, which represented 55.5% total cases[7]. This result can be partially explained by the population in southern Brazil, region of the studied municipality and in which the majority of the population has white skin color[21-22].

Also noteworthy is the high prevalence of HIV/AIDS notification in individuals with less than four years of schooling. According to state data, in the period from 2007 to 2018, individuals notified with HIV without schooling and with incomplete elementary education totaled 1.0% and 28.8%, respectively, in RS. However, 30.2% cases did not have information about education, making it difficult to accurately analyze the level of education of these individuals[7].

The same scenario is observed in individuals diagnosed with AIDS. Data published by the State Department of Health of RS show that the highest concentration of cases of the disease is among individuals who had incomplete 5th - 8th grades (24.6%), followed by those who had incomplete 1st - 4th grades (13.5%) and

those who had completed the 4th grade (3.8%), totaling 41.9% cases. In turn, individuals with no schooling accounted for 2.2% reported cases. As in the cases of HIV, AIDS also presented a high rate of missing information for the education variable (21.9%)[7]. Similarly, MS data show that the highest concentration of AIDS cases occurred among individuals with incomplete 5th to 8th grade (20.5%)[5].

In Brazil, the level of education has been used as a proxy variable for the socioeconomic situation, thus showing a relationship between the worst socioeconomic situation and the increase in cases of HIV/AIDS[23]. Data collected from DATASUS, referring to the period from 1986 to 2016, related low education and economic vulnerability with higher prevalence of HIV/AIDS, demonstrating that the level of education directly influences the understanding of the disease, increasing the risk of contagion[24].

Some limitations of the present study need to be highlighted. Because secondary data were analyzed, potential errors in recording or properly completing the variables under study could not be resolved. In addition, the underreporting of health conditions is a problem with an impact on the Brazilian territory, which can make important information remain unknown[9]. These factors may affect the HIV/AIDS incidence estimates; however, it is noteworthy that the results presented here are in accordance with data presented by state and national surveys. Finally, the lack of a statistical analysis to identify statistical differences in HIV/AIDS cases according to sociodemographic characteristics is highlighted, although the aim of the article was to describe HIV/AIDS cases, considering such characteristics.

As strengths, it should be noted that this is the analysis of an important health situation that covered a significant period (2009-2018). The results presented here are essential for the epidemiological follow-up of HIV/AIDS and can help in decision-making in the health sectors and in the development of public policies aimed at confronting the situation.

CONCLUSION

The results revealed that, among the notified cases, a significant proportion corresponded to AIDS. Furthermore, cases of HIV/AIDS were predominant in men, among young people between 20 and 49 years of age, with white skin color and incomplete elementary education.

Apparently, the HIV/AIDS epidemic is concentrated in populations at greater risk and vulnerability, which represents an important challenge for public health. Developing awareness for changing risk behavior in these populations involves several social and individual factors that require extensive interventions.

Importantly, Sapucaia do Sul is one of the priority municipalities for HIV/AIDS Surveillance, Prevention and Control Actions in the state of Rio Grande do Sul, due to its considerable HIV prevalence and AIDS mortality rate. Monitoring the epidemiological profile of HIV/AIDS in this population is, therefore, essential for maintaining control strategies, as well as for prioritizing actions for the most vulnerable populations and for promoting the population's health. Furthermore, the description of the data as presented in this study facilitates access to these data by the population and by health professionals, especially in the municipality of Sapucaia do Sul. The access and knowledge of the population about the data presented here is essential to health promotion and disease prevention, with regard to the theme.

By describing the sociodemographic profile of the population with HIV/AIDS reported to SINAN in the study period, the present

research can serve as a guide for achieving more positive indicators, through the consolidation and planning of strengthening policies and the development of strategic actions to combat and control infection in vulnerable groups.

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