

# EPIDEMIOLOGICAL PROFILE OF AIDS IN ADULTS IN THE STATE OF BAHIA FROM 1984 TO 2013

*PERFIL EPIDEMIOLÓGICO DA AIDS EM ADULTOS NO ESTADO DA BAHIA NO PERÍODO DE 1984 A 2013*

*Jane Cleide de Oliveira Modesto<sup>1</sup>, Danielle Cristina Garbuio<sup>2</sup>*

## ABSTRACT

**Introduction:** The Acquired Immunodeficiency Syndrome (AIDS) is an infectious disease that causes extensive damage to the population. **Objective:** To evaluate the epidemiological profile of AIDS in adults in the state of Bahia. **Methods:** An exploratory and ecological study of time series was conducted with data provided by the Departamento de Informática do Sistema Único de Saúde (DATASUS) from 1984 to 2013. **Results:** 24,213 cases of AIDS were diagnosed in adults with informed sex. Of this total, 15,261 (63%) were male, but there was a trend of epidemic growth in the female population over time, with a decrease in the sex ratio. The number of registered cases increased from 1990 to 1995 for both sexes. As for the exposure category, a change in the patient profile was revealed during the diagnostic periods. However, there was a predominance of sexual transmission, corresponding to 53.8% (13,017) of the cases diagnosed during the whole period with reported exposure category. Of the total cases, 8,918 (36.8%) corresponded to the heterosexual transmission via. **Conclusion:** The demonstration of the heterosexualization and feminization phenomena of the AIDS epidemic in Bahia shows the need for controlling measures such as educational campaigns including prevention, diagnosis and assistance to stop the epidemic. It is worth mentioning the need to improve epidemiological surveillance actions due to the large number of ignored information and the need for information qualification that allows the generation of more accurate data. However, the data obtained allow us to know the profile of the epidemic and its specificity.

**Keywords:** acquired immunodeficiency syndrome; health profile; epidemiology.

## RESUMO

**Introdução:** A Síndrome da Imunodeficiência Adquirida (AIDS) é uma doença infecciosa que causa danos de grande extensão na população. **Objetivo:** O presente estudo objetivou avaliar o perfil epidemiológico da AIDS em adultos no estado da Bahia. **Métodos:** Foi realizado um estudo exploratório de delineamento ecológico de série temporal com dados disponibilizados pelo Departamento de Informática do Sistema Único de Saúde (DATASUS) entre 1984 e 2013. **Resultados:** Foram diagnosticados 24.213 casos de AIDS em adultos com sexo informado. Desse total, 15.261 (63%) eram do sexo masculino, entretanto constatou-se tendência de crescimento da epidemia na população feminina ao longo do tempo, com diminuição da razão dos sexos. O número de casos registrados aumentou a partir do período entre 1990 e 95 para ambos os sexos. No que diz respeito à categoria de exposição, foi revelado que, ao longo dos períodos diagnósticos, houve uma mudança no perfil dos doentes, porém ocorreu a predominância da transmissão sexual, correspondendo a 53,8% (13.017) dos casos diagnosticados durante todo o período com categoria de exposição informada. Do total de casos, 8.918 (36,8%) corresponderam à via de transmissão heterossexual. **Conclusão:** A demonstração dos fenômenos de heterossexualização e feminização da epidemia da AIDS na Bahia evidencia a necessidade de medidas de controle como campanhas educativas abrangendo a prevenção, o diagnóstico e a assistência para deter a epidemia. Vale ressaltar a necessidade de aprimoramento das ações de vigilância epidemiológica em virtude do grande número de informações ignoradas e da qualificação da informação que possibilite a geração de dados mais precisos. No entanto, os dados obtidos permitem conhecer o perfil da epidemia e sua especificidade.

**Palavras-chave:** síndrome de imunodeficiência adquirida; perfil de saúde; epidemiologia.

## INTRODUCTION

The Acquired Immunodeficiency Syndrome (AIDS) is an infectious disease that causes great and large damages to population, strong impact on the economy and on family and social structures, and means a serious public health problem in the world<sup>(1)</sup>. That is the reason why this high magnitude disease has been a society's discussion subject, especially in the international scientific community, which has been exhaustively debating its characteristics and implications since its discovery, three decades ago<sup>(2)</sup>. Over the years, the epidemic's profile and dissemination underwent profound changes in the country<sup>(2-4)</sup>. The inequality of the cities' development and urbanization process has given rise to various peculiar AIDS "microregional" epidemics or "sub-epidemics" affecting the various groups, layers and segments of the society<sup>(5)</sup>. As the cases multiply, distinct groups of people are affected, keeping the epidemic constantly changing<sup>(6)</sup>.

At first, the registered cases were focused on the homosexuals' group, then spread among intravenous drug users and people who had received blood and/or blood products. Nowadays, however, we observe a situation marked by processes of heterosexualization, feminization and pauperization<sup>(2)</sup>.

In the early 1980s, São Paulo and Rio de Janeiro were the first Brazilian cities to have cases of AIDS identified. However, due to rapidly growing, the epidemic reached all regions of the country as time went on, although lacking homogeneity<sup>(5)</sup>.

Therefore, an analysis of the epidemic in every region of the country has a highlighted relevance in view of the different existing dynamics<sup>(7)</sup>. Among the regions of the country, the Northeast, with 14.6% of the total cases, comes second only to the Southeast (53.8%) and South (20%) regions, in a proportional distribution of cases identified during the period from 1980 to June, 2015<sup>(8)</sup>.

For the reasons mentioned, it is important to characterize the AIDS epidemic in the state of Bahia, since the epidemiological symptoms are not much studied. In addition, the number of cases has considerably increased over the years in the state<sup>(9)</sup>.

<sup>1</sup>Ministry of Health – Salvador (BA), Brazil.

<sup>2</sup>Universidade Anhanguera – Valinhos (SP), Brazil.

## OBJECTIVE

To verify the epidemiological AIDS profile in the state of Bahia from 1984 to 2013 seeing that it is relevant to predict possible changes in its epidemiology and, therefore, generate information that might contribute to the planning of actions to control the disease.

## METHODS

This is an exploratory time series study of ecological design, with secondary data source obtained by querying the official information system called Sistema de Informação de Agravos de Informação (Information System of Reportable Diseases — SINAN), provided by the Department of Information and Informatics of the Sistema Único de Saúde (Public Health System — SUS), known as DATASUS<sup>(10)</sup>, in the following electronic address: <<http://www2.datasus.gov.br/DATASUS/index.php?area=0203>>. From the site mentioned, in the “epidemiológicas e morbidade” link, it is possible to access the data on AIDS cases since 1980. It should be noted that this database is public property.

This study aimed at the inhabitants of the state of Bahia aged 13 years or more, as this population is considered an adult population, according to the Definition Criteria of AIDS Cases in Adults and Children of the Ministry of Health<sup>(11)</sup>. The period of the present study covers since the first AIDS case, in 1984, until December, 2013. Data were consolidated until June 30, 2014, but we decided to analyze data available until 2013, in order to minimize the tendency resulting from the delay of notification.

The variables included in this study were: periods of diagnosis, gender, age group, and exposure category. Sex, age group and exposure category variables are classified in the DATASUS and comply with the following classification: the age group variable chosen for the study was the number 11, and classified according to DATASUS electronic page: 13 to 19 years old, 20 to 24, 25 to 29, 30 to 34, 35 to 39, 40 to 49, 50 to 59, and 60 years old and more. The exposure category variable covered the main routes of transmission of the disease, *i.e.*, sexual (homosexual, bisexual, heterosexual) and blood (injecting drugs users — IDUs, blood transfusion and haemophilia), besides vertical transmission (VT) and accident with biological material.

Finally, the diagnoses were categorized every five years, namely: 1984 to 1989, 1990 to 1995, 1996 to 2001, 2002 to 2007, 2008 to 2013. Data obtained from DATASUS were compiled and analyzed by Microsoft Excel 2010 software.

## RESULTS AND DISCUSSION

From 1984 to 2013, 24,213 cases of AIDS were diagnosed in adults in the state of Bahia with sex informed. Of this total, 15,261 (63%) were male. Such data show the reality of the state, seeing that, from 1984 to October, 2015, 26,268 AIDS cases have occurred, 16,488 (63%) of them in males<sup>(12)</sup>.

**Table 1** shows the distribution by gender of the number of cases of AIDS in the studied population and the sex ratio during different diagnosis periods. The number of registered cases increased from 1990 to 1995 in both sexes. Such fact agrees with the study by Souza<sup>(13)</sup>, which verified the epidemic’s expansion in the state of Bahia opposing to the disease stabilization in the country. According to Souza,

“the growing tendency in Bahia is similar to what happens in the Northeast and North regions”<sup>(13)</sup> and shows the different profiles of AIDS. It becomes evident that, despite the intense prevention campaign for the disease, we still have a lot to advance to control the transmission in the referred regions, and in the state as well<sup>(13)</sup>.

The number of AIDS cases in males was higher than in the females in all periods studied. From this confirmation, it is important to mention that men still have a higher risk of infection by AIDS than women<sup>(12)</sup>.

A growth epidemic tendency is observed in the female population over time, and there was a considerable increase of the number of cases (more than double) in this population from 1996 to 2013. This period is marked by the development of the feminization of the epidemic. These results agree with the national reality, in which the feminization phenomenon of the epidemic has been observed and highlighted by the continued increase of the number of cases among women since the 1990s decade<sup>(1)</sup>.

The clear decline in sex ratio, from 9.0, in the initial years, and the stabilization in 1.5 in the penultimate and last diagnosis periods, confirms the feminization phenomenon. Such findings about sex ratio agree with the epidemic profile in Bahia, in which stability is noticed, with the average of 1.5 case in men for every case diagnosed in woman<sup>(12)</sup>.

**Figures 1 and 2** show the numbers of AIDS cases in male and female adults, respectively, according to the reported exposure category. There was a significant increase in the number of cases classified as “ignored” during the periods, which correspond to 40.1% (9,704) of the total cases in the studied periods. This reality confirms the need to improve the epidemiological surveillance system in order to get close to the database with the actual existing dynamics of the state<sup>(13)</sup>.

Considering the reported exposure category, the prevalence of sexual transmission in both sexes was revealed, corresponding to 53.8% (13,017) of cases diagnosed during the entire period. Of the total cases, 8,918 (36.8%) corresponded to heterosexual transmission. These findings are in accordance with Bahia<sup>(12)</sup> and Souza<sup>(13)</sup> and equivalent to the Northeastern reality, in which occurs the predominance of sexual transmission via for both sexes<sup>(3,14)</sup>.

Over the diagnosis period, there was a change in the patients’ profile. As evidenced in **Figure 1**, that illustrates the two initial periods (1984 to 1995) of the epidemic in the state of Bahia, the largest number of cases in males was concentrated among homosexuals. In parallel, from 1996 to 2013 a significant increase in the heterosexual group

**Table 1** – Number of AIDS cases in adults by diagnosis period according to gender and gender ratio in the state of Bahia, from 1984 to 2013.

Diagnosis periods	Male		Female		Total	Ratio (M:F)
	n	%	n	%		
1984–1989	242,000	90.0	27,000	10.0	269.000	9.0
1990–1995	1,264	79.6	325,000	20.4	1.589	3.9
1996–2001	2,678	67.4	1,297	32.6	3.975	2.1
2002–2007	4,571	59.6	3,093	40.4	7.664	1.5
2008–2013	6,506	60.7	4,210	39.3	10.716	1.5
Total	15,261		8,952		24.213	1.7

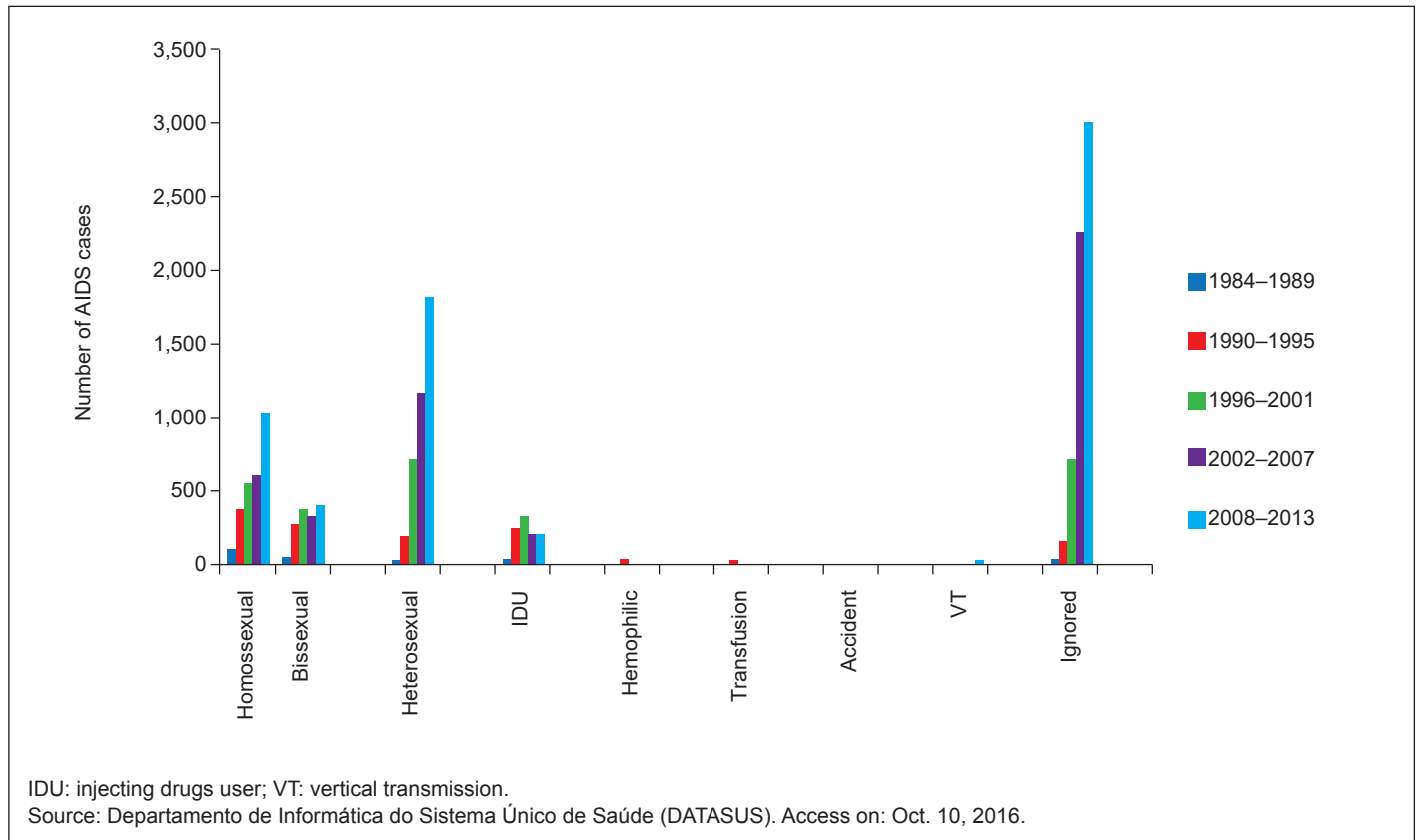
Source: Departamento de Informática do Sistema Único de Saúde (DATASUS). Access on: Oct. 10, 2016.

was observed, and this category became predominant. The heterosexualization phenomenon in the state is, then, verified.

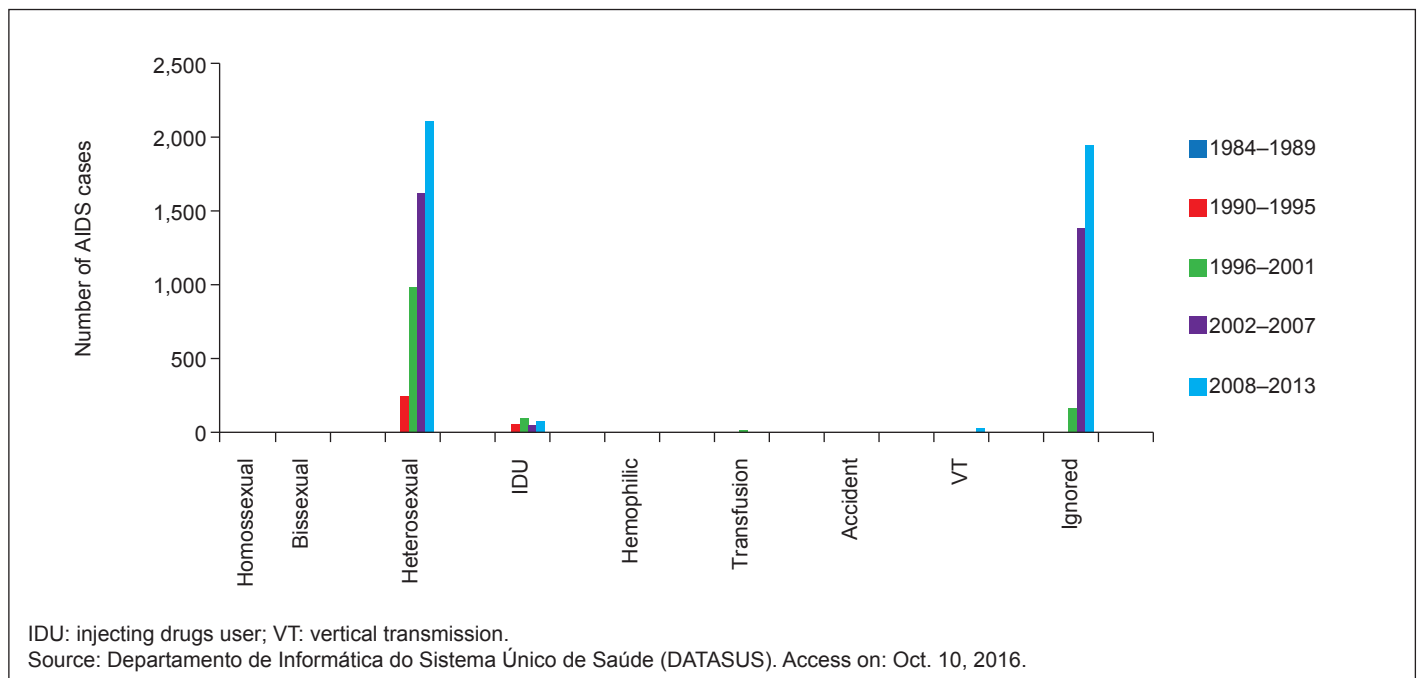
The change of the epidemiological profile in the state of Bahia related to the exposure category also occurred in the national dynamics, as at the beginning of the epidemic the homosexual group was

the most affected. However, from the mid-1990s, the epidemic spread among heterosexuals, as described by Dourado<sup>(15)</sup>.

**Figure 2** shows that the disease transmission to the female population in the first period (1984 to 1989) occurred through the IDUs and the heterosexual routes. However, from 1990 on, the heterosexual



**Figure 1** – Number of AIDS cases in adult male individuals according to the exposure category in the state of Bahia from 1984 to 2013.



**Figure 2** – Number of AIDS cases in adult female individuals according to the exposure category in the state of Bahia from 1984 to 2013.

transmission started to prevail. The heterosexualization is indicated as the reason for the rise in the number of cases among women (feminization)<sup>(2)</sup>, since this is the main route of transmission among the female population in the state of Bahia.

It is very important to emphasize that in general society, due to socio-economic and cultural reasons, the younger women, whose genital tract is more fragile, usually have sex with mature men, who have higher indexes of HIV prevalence, thus increasing the risk of infection during unprotected intercourse<sup>(16)</sup>.

The blood transmission way revealed an important decline, especially the one related to blood transfusion and haemophilia, second only to mother-to-child transmission and accident with biological material, indicating an insignificant number of cases for both sexes. These results agree with Souza's ones<sup>(13)</sup>.

The reduction in the number of cases of transfusion and hemophilia transmission ways in these segments of the population can be explained by the control over the blood and blood products, especially after 1986, when laboratory tests for anti-HIV antibodies became available<sup>(2)</sup>.

Regarding the IDUs exposure category, it was observed that there was a significant reduction of this way of transmission, following the Northeastern dynamic, where a low number of cases with this transmission route is observed<sup>(2,3,14)</sup>. According to Rodrigues Júnior and Castilho study<sup>(17)</sup>, the highest proportions of IDUs category cases were registered in the Central-West, Southeast and South regions of Brazil.

According to Souza<sup>(13)</sup>, the mother-to-child transmission showed an important decrease in the state of Bahia, which may result from the early knowledge of the serological status and appropriate treatment of pregnant women.

The studies that search the evaluation of the epidemiological profile of AIDS based on the notifications of cases are considered very important by several authors. Castilho et al.<sup>(18)</sup> confirm that the integrated analysis of reported cases of AIDS in various diagnoses periods and the circumstances of their manifestation serve not only to those populations subject to a greater risk of exposure to HIV, but also to the general population undoubtedly with a greater vulnerability nowadays than at the beginning of the epidemic. In this sense, Szwarcwald et al.<sup>(3)</sup> highlight that analyses using AIDS cases notifications as a source of information are essential elements to assess the dynamics of the epidemic.

## CONCLUSION

It can be affirmed that the AIDS epidemic in the state of Bahia is expanding since the first cases record, in 1984, and one of the main findings of the present study is the growing increase in the number of cases for both sexes. Hence it follows, there is a need for controlling measures such as educational campaigns including prevention, diagnosis and assistance to stop the epidemic. Add to that the insertion of patients in the society due to the stigma of the disease.

The feminization phenomenon was also identified in the epidemic in the state of Bahia, with a significant increase in the number of cases, especially since 1996, with the consequent ratio reduction of the number of cases between the male and the female.

Changes have been observed over the years regarding the profile of the AIDS epidemic due to the heterosexualization phenomenon. Such a finding is related to the feminization of the epidemic, as it denotes the highest transmission of the disease to females.

It is worth mentioning the need for improvement of epidemiological surveillance actions in view of the large number of ignored information, as well as the qualification of information that enable the production of more accurate data. However, despite the limitations, the data obtained allow to know the epidemic profile and its specificity in the state.

## Conflict of interests

The authors declare no conflict of interests.

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**Address for correspondence:****DANIELLE CRISTINA GARBUIO**

Rua Eugênia Accácio, 413 – Planalto Paraíso

São Carlos (SP), Brazil

CEP: 13562-300

E-mail: danigarbuio@anhanguera.com

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