

ORIGINAL ARTICLE

ECOLOGICAL STUDY OF THE HIV/AIDS EPIDEMIC IN YOUNG ADULTS: ARE WE PREVENTING OR TREATING?

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ABSTRACT

Objective: to analyze the epidemiological profile and clinical conditions, according to Centers for Disease Control and Prevention Adapted and Rio de Janeiro/Caracas Criteria, of young people aged 20 to 29 years living with HIV/AIDS reported in a city in the Metropolitan Region of Curitiba-PR, Brazil.

Method: ecological study, anchored in Critical Epidemiology, with data from the National System of Notifiable Diseases. There were 309 notifications of HIV/AIDS. For analysis, aggregate measures calculated in Excel© 2016 dynamic spreadsheet were used.

Results: 60% of the reported cases were white; 69% were male; 38% had a homosexual exposure category; 63% were asymptomatic, and 92.6% were defined by the Centers for Disease Control and Prevention Adapted criteria.

Conclusion: It is understood that this study contributes to health professionals' efforts to reverse late diagnosis and prevent HIV transmission.

DESCRIPTORS: HIV; Acquired Immunodeficiency Syndrome; Epidemiology; Epidemics; Public Health Nursing.

ESTUDIO ECOLÓGICO DE LA EPIDEMIA DE VIH/SIDA EN ADULTOS JÓVENES: ¿PREVENIMOS O TRATAMOS?

RESUMEN:

Objetivo: analizar el perfil epidemiológico y las condiciones clínicas, según el Criterio de los Centros para el Control y la Prevención de Enfermedades Adaptado y de Río de Janeiro/Caracas, de jóvenes de 20 a 29 años que viven con VIH/sida notificados en un municipio de la Región Metropolitana de Curitiba-PR, Brasil. **Método:** estudio ecológico, anclado en la Epidemiología Crítica, con datos del Sistema Nacional de Enfermedades de Declaración Obligatoria. **Totalizaron 309 notificaciones de VIH/SIDA. Para el análisis, se utilizaron medidas agregadas calculadas en la hoja de cálculo dinámica de Excel© 2016. Resultados:** de los casos notificados, el 60% eran de raza blanca; el 69% hombres; el 38% con categoría de exposición homosexual; el 63% eran asintomáticos y el 92,6% estaban definidos por los criterios adaptados de los Centers for Disease Control and Prevention. **Conclusión:** se entiende que este estudio contribuye a que los profesionales de la salud se esfuercen por revertir el diagnóstico tardío y prevenir la transmisión del VIH.

DESCRIPTORES: VIH; Síndrome de Inmunodeficiencia Adquirida; Epidemiología; Epidemias; Enfermería en Salud Pública.

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INTRODUCTION

The Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) is a global phenomenon, with 37.9 million people living with HIV/AIDS being reported by 2018⁽¹⁾. In Brazil, around 970,000 cases were reported between 1980 and June 2019⁽²⁾.

The records of the epidemic in Brazil showed an increase in the detection rate among young men aged 15 to 24 years, especially in the period from 2007 to 2017. In this period, the rate among young people aged 20 to 24 years more than doubled, from 15.6 to 36.2 cases per 100,000 inhabitants⁽³⁾. In the country, mortality from AIDS was among the ten leading causes of death among young adults from 2000 to 2002, data that indicated the need to implement actions for diagnosis of the virus and early confrontation of the phenomenon⁽⁴⁾.

For Critical Epidemiology (EP), the understanding of reality occurs in three dimensions: general, particular, and singular; it is historical and dynamic, and the main categories of analysis to understand the determination of phenomena are gender, social class, and ethnicity relations⁽⁵⁾.

Reflecting and discussing the magnitude of the epidemic and the change in the panorama of HIV infections, anchored on the theoretical and methodological assumptions of EP, justifies the present study, since the injury in the age group studied intervenes directly in the health process of these young adults.

In view of the above reflections, the present study aimed to analyze the epidemiological profile and clinical conditions, according to the Centers for Disease Control and Prevention (CDC) Adapted and Rio de Janeiro/Caracas Criteria, of young people aged 20 to 29 years living with HIV/AIDS, reported in a city in the Metropolitan Region of Curitiba.

METHOD

Ecological study with a quantitative approach⁽⁶⁾, anchored in EP⁽⁵⁾. The research was conducted in a municipality of the Metropolitan Region of Curitiba with the second largest population of the 2nd Health Regional Office of Paraná⁽⁷⁾. The setting of this study is among the 100 municipalities with populations above 100 thousand inhabitants with the highest HIV/AIDS detection rates⁽⁸⁾.

Data were collected through the National System of Notifiable Diseases (Sinan) of HIV/AIDS, consulted in the first semester of 2018. The variables used were: General Data (offense/disease, date of notification, UF), Individual Notification (date of birth, age, sex, race/color, education), Residence Data (UF, Municipality of residence, code of the Brazilian Institute of Geography and Statistics - IBGE, street address, street number, country), Epidemiological Background (occupation, sexual, blood) and AIDS Case Definition Criteria (Rio de Janeiro/Caracas Criterion, Adapted CDC Criterion). All people living with HIV/AIDS (PLWHA) between 20 and 29 years old, residents in the municipality, notified in the period from 2007 to 2016, were included in the study.

For the study sample, duplicate notifications were excluded, totaling 312 cases. After coding the cases through the Google Earth Pro software, three cases were excluded from the research due to incorrect filling of the IBGE code of the Municipality of residence of the reported person, totaling in the end 309 cases for analysis.

For organization, treatment and quantitative analysis of data, absolute and aggregate

measures were used, such as frequency (%), rate, proportion, incidence, prevalence, sum (Σ) and sex ratio, presented in tables and graphs, calculated in Excel® 2016 spreadsheet. Data interpretation was anchored in the theoretical assumptions of EP.

This research followed the parameters of Resolution 466/2012 of the National Health Council and was approved by the Ethics Committees of the Health Sciences Sector of the Federal University of Paraná, opinion number 2,435,190, and of the Pontifícia Universidade Católica do Paraná (Pontifical Catholic University of Paraná), opinion number 2,691,350, and followed the recommendations of STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)⁽⁹⁾.

RESULTS

From 2007 to 2016, 1,135 PLWHIV were reported, and in the age group delimited for the research 309 (27.2%) cases were reported, as shown in Figure 1.

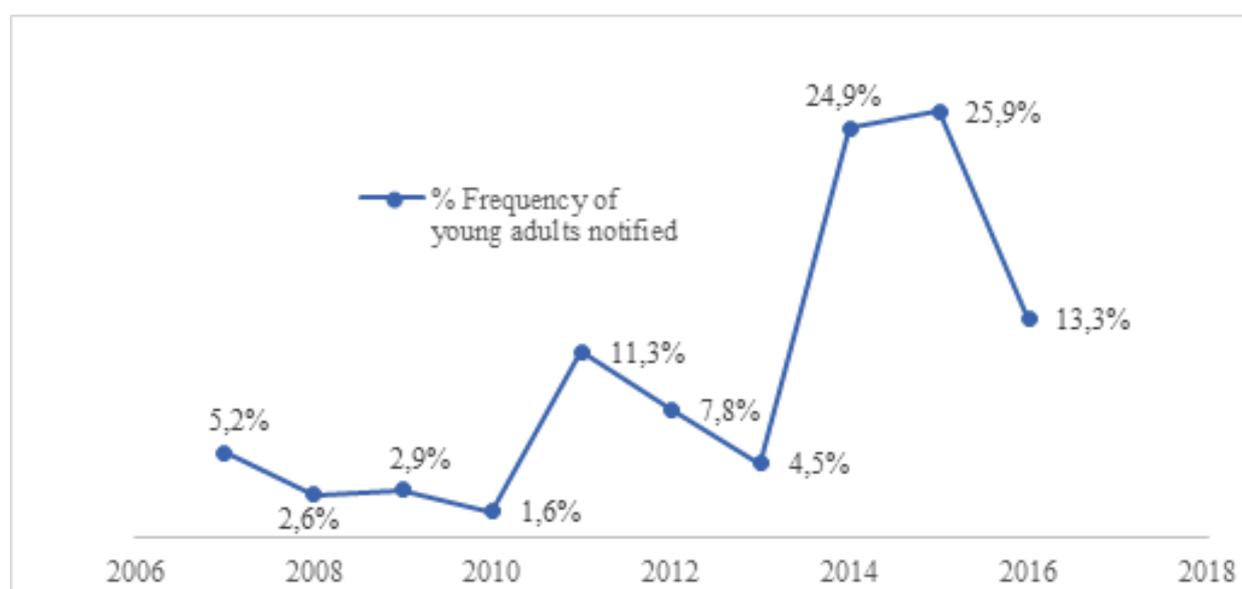


Figure 1 - Frequency of young adults aged 20-29 years notified with HIV/AIDS, according to year of notification - 2007 to 2016. Curitiba, PR, Brazil, 2020
Source: database (Sinan), consulted in the 1st semester of 2018.

Regarding gender distribution, of the 309 (100%) people, 97 (31%) individuals were female. In the year 2016, the sex ratio (M:F) according to the diagnosis of HIV/AIDS, HIV and AIDS in the municipality was 4.1; 4.8 and 3, respectively. Table 1 indicates the distribution of the 147 (47.5%) individuals with HIV according to gender, race, and education.

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Table 1 - Distribution of reported cases with HIV, according to sex, race, and education, in the period from 2007 to 2016. Curitiba, PR, Brazil, 2020

Grade Level	Female											
	White		Black		Asian		Brown		Ignored		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
5 th to 8 th grade incomplete	4	10,5	1	3	-	-	4	10,5	-	-	9	24
Elementary school complete	1	3	-	-	-	-	2	5	-	-	3	8
Middle school incomplete	2	5	-	-	-	-	1	3	-	-	3	8
High school complete	7	18	-	-	-	-	2	5	-	-	9	24
Superior incomplete	-	-	-	-	-	-	-	-	-	-	-	-
Superior complete	-	-	-	-	-	-	1	3	-	-	1	3
Ignored	4	10,5	-	-	-	-	4	10,5	2	5	10	26
Empty	1	3	-	-	1	3	1	3	-	-	3	8
Total	19	50	1	3	1	3	15	39	2	5	38	100
Grade Level	Male											
	White		Black		Asian		Brown		Ignored		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
5 th to 8 th grade incomplete	3	3	1	0,9	-	-	3	3	-	-	7	6
Elementary school complete	1	0,9	-	-	-	-	1	0,9	-	-	2	2
Middle school incomplete	4	4	-	-	-	-	4	4	1	0,9	9	8
High school complete	26	24	-	-	-	-	8	7	1	0,9	35	32
Superior incomplete	7	6	-	-	-	-	1	0,9	-	-	8	7
Superior complete	13	12	-	-	1	0,9	-	-	-	-	14	13
Ignored	14	13	-	-	-	-	7	6	5	4,6	26	24
Empty	4	4	-	-	-	-	1	0,9	3	3	8	7
Total	72	66	1	0,9	1	0,9	25	23	10	9,2	109	100

Source: Database (Sinan), consulted in the 1st semester of 2018.

Among the HIV cases, according to the Rio de Janeiro/Caracas criteria, the signs and symptoms that were most frequently reported were: asthenia in eight (5.4%) people, persistent dermatitis in seven (4.8%), and lymphadenopathy in four (2.7%). It is noteworthy that each reported case may have presented more than one symptom. Among the cases reported for HIV, 111 (75.5%) had no symptoms. The people notified with AIDS corresponded to 162 (52.5%) cases, as shown in Table 2.

Table 2 - Distribution of reported cases with AIDS, according to sex, race and education, in the period from 2007 to 2016. Curitiba, PR, Brazil, 2020

Grade Level	Female											
	White		Black		Asian		Brown		Ignored		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
1 st to 4 th incomplete	-	-	1	1,7	1	1,7	-	-	-	-	2	3,4
4 th grade complete	1	1,7	-	-	3	5,1	-	-	1	1,7	5	8,5
5 th to 8 th grade incomplete	2	3,4	1	1,7	4	6,8	-	-	-	-	7	11,9
Elementary school complete	1	1,7	-	-	1	1,7	-	-	-	-	2	3,4
High school incomplete	1	1,7	-	-	3	5,1	-	-	-	-	4	6,8
High school complete	11	18,6	2	3,4	6	10,2	-	-	-	-	19	32,2
Incomplete higher education	-	-	-	-	1	1,7	-	-	-	-	1	1,7
Completed higher education	-	-	-	-	-	-	-	-	1	1,7	1	1,7
Ignored	9	15,3	-	-	1	1,7	1	1,7	3	5,1	14	23,7
Empty	2	3,4	-	-	-	-	-	-	2	3,4	4	6,8
Not applicable	-	-	-	-	-	-	-	-	-	-	-	-
Total	27	45,8	4	6,8	20	33,9	1	1,7	7	11,9	59	100
	Male											
1 st to 4 th incomplete	1	1	1	1	1	1	-	-	-	-	3	2,9
4 th grade complete	1	1	1	1	1	1	-	-	-	-	3	2,9
5 th to 8 th grade incomplete	4	3,9	-	-	1	1	-	-	-	-	5	4,9
Elementary school complete	6	5,8	-	-	3	2,9	-	-	-	-	9	8,7
High school incomplete	4	3,9	1	1	3	2,9	-	-	-	-	8	7,8
High school complete	18	17,5	-	-	7	6,8	-	-	1	1	26	25,2
Incomplete higher education	9	8,7	2	1,9	-	-	-	-	-	-	11	10,7
Completed higher education	7	6,8	-	-	-	-	-	-	-	-	7	6,8
Ignored	17	16,5	1	1	-	-	-	-	11	10,7	29	28,2
Empty	1	1	-	-	-	-	-	-	1	1	2	1,9
Not applicable	-	-	-	-	-	-	-	-	-	-	-	-
Total	68	66	6	5,8	16	15,5	-	-	13	12,6	103	100

Source: Database (Sinan), consulted in the 1st semester of 2018.

The three most frequent occupations were: "Service workers, store and market salesmen" with 50 (16.2%) people, "Housewives" with 34 (11%), and "Chronically unemployed or whose usual occupation could not be obtained" with 25 (8.1%). In 131 (42.4%) notifications, this field was not filled in.

The highest number of exposure categories in females was heterosexual with 34 (89%) people notified with HIV and 54 (92%) people with AIDS. In males, the category with the highest frequency was homosexual with 68 (62%) notifications with HIV, and 50 (48.5%) people with AIDS.

Regarding the clinical criteria found among those notified of AIDS, 160 (99%) were defined by the Adapted CDC Criterion and two (1%) by the Rio de Janeiro/Caracas Criterion.

The signs and symptoms verified in the AIDS cases, in greater number, according to the Rio de Janeiro/Caracas criteria, were asthenia, 50 (30.9%) persons; cachexia, 40 (24.7%); dermatitis, 19 (11.7%); diarrhea, 19 (11.7%); fever, 18 (11.1%); persistent cough or pneumonia, 17 (10.5%); cavitary or unspecified pulmonary tuberculosis, 14 (8.6%); lymphadenopathy, 13 (8%); herpes zoster, 12 (7.4%) and oral candidiasis, 11 (6.8%). In 75 (46%) cases, no signs and symptoms were present.

According to the Adapted CDC Criteria, the signs and symptoms found in the highest percentage were: CD4T lymphocyte count less than 350 cells/mm³ in 150 (92.6%) cases and mucocutaneous herpes in 18 (11.1%) people.

DISCUSSION

From the year 2014, 64.1% of the cases that occurred in the period from 2007 to 2016 occurred in young adults aged 20 to 29 years in the municipality. The increase was even higher in cases reported with HIV, which represented 82.9% of the notifications. This increase can be justified by the compulsory notification of HIV cases according to Ordinance No. 1,271 of June 6, 2014⁽¹⁰⁾.

During the HIV/AIDS epidemic, changes in age groups and in groups vulnerable to infection are observed. Communicable diseases are generated as great cycles in different historical periods, and are produced by deep deficiencies, such as the lack of equity and cultural achievements that enable gender, ethnocultural and environmental equality, allowing individuals to work and live with dignity⁽¹¹⁾.

As of 2011, the male sex started to represent the largest number of cases notified for AIDS in the municipality. In Brazil, in the age group studied, the HIV sex ratio was 3.8, while the AIDS sex ratio increased from 3.3 in 2016 to 3.4 in 2017⁽²⁾. In the municipality, the sex ratio in HIV cases (4.8) showed a higher average than the national in 2016, indicating greater contamination in men despite the larger population contingent being women⁽⁷⁾.

Studies have shown that drug use, homosexual/bisexual orientation, low income, sexually transmitted infections, multiple partners, low condom use, alcohol use, more than eight sexual partners, and not having been tested for syphilis facilitate HIV infection in men⁽¹²⁻¹³⁾.

Regarding race in males, the white race showed a higher percentage of reported cases, because the region was colonized by groups from European countries and today has a predominance of white individuals⁽⁷⁾. A study carried out in the 10th RS of Paraná⁽¹⁴⁾ also identified that 67.4% of HIV/AIDS notifications were white, which reiterates the data found in this research for HIV infection according to declared race. The female gender showed a higher percentage of mixed race in relation to men but did not exceed the percentage of white women reported. The data differ from international studies in which the black race is more reported⁽¹⁵⁻¹⁶⁾, as well as national studies with a higher percentage of brown and black men and women⁽²⁾.

Regarding education by gender, there is a predominance of males with higher education, complete or incomplete. This finding corroborates research conducted in the northeastern region of Brazil that remains at the national level⁽²⁾. However, other Brazilian studies point out that PLWHA, in most cases, have incomplete primary education, differing from what was found in this study⁽¹⁷⁻¹⁹⁾.

When analyzing the association of the variables gender, race and education, the white female PLWHA had a higher concentration with complete high school education, and 5th to 8th grade incomplete. White male individuals had in higher frequency complete high school, complete and incomplete college education, reinforcing once again a higher education in men according to the national scenario⁽²⁾ and whites due to the predominance of race in the colonization process⁽⁷⁾.

Results of a research conducted in Botswana showed an association between the risk of HIV infection and the number of years of education, with a peak of cases up to 8-9 years of education, a phenomenon that decreased dramatically as the years of education increased, especially in females. Thus, it was demonstrated that education is protective in HIV infection and effective as prevention in facing infection by the virus, besides presenting very high social benefits⁽²⁰⁾.

The most frequent occupations in the group studied indicate a predominance of jobs that require less education. Another relevant issue was the non-filling of this data in the notifications, a phenomenon that demonstrates the need to discuss the importance of this variable in the characterization of diseases, since, even with the regulation of Ordinance No. 3497/1998, there are difficulties in coding the occupation of the individual according to the list of Brazilian Classification of Occupations - CBO⁽²¹⁾. Thus, it is necessary to reflect on the training of professionals to fully fill out the notification instrument⁽²²⁾. It is also worth pointing out that the general conditions for work compromise the actions of epidemiological surveillance due to lack of trained workers, high demand of users in health services, absence of informational technologies in care, among other issues⁽²³⁾.

This incompleteness in the notifications compromises the view on the characteristics and magnitude of the phenomena, since, in order to identify the most vulnerable individuals, it is necessary to describe the epidemiological profile to develop public policies that promote a full life and access to health services⁽¹¹⁾.

The most frequent exposure category in HIV/AIDS notifications in males was the homosexual category, while in females it was heterosexual. National data show that until 2016, the main mode of HIV transmission was sexual. In 2017, there was a predominance of the homo/bisexual category (48.7%) in males, a phenomenon that for the first time in the last decade surpassed the heterosexual category⁽²⁾.

In order to achieve effective HIV prevention in men who have sex with men (MSM), structural barriers related to prejudice, gender diversity, social class differences and inability to access services in the sector must be overcome. Such processes are enhanced by the absence of public policies that ensure the funding of the sector, and also by the lack of friendly services to the MSM population⁽²⁴⁻²⁵⁾.

A study developed with 4,176 MSM between 2006 and 2015, in 12 Brazilian cities about HIV prevalence, had 18.4% of samples reagent for HIV, and an increase in cases among 20 to 24 years old, which initially was 15.9 and went to 33.1 per 100,000 inhabitants at the end of the period. The city of São Paulo had the highest rate (24.8%), followed by Recife (21.5%) and Curitiba (20.2%). The emptying of campaigns for the MSM public, lack of funding for non-governmental organizations, changes in sexual behavior driven by apps that have expanded the ways individuals interact, and also approaches that treat HIV infection as a chronic health condition were pointed out by the study as determinants for the epidemiological changes⁽²⁵⁾.

In this study, there was convergence with results from other studies regarding the identification of the main opportunistic diseases reported in the notifications: oral candidiasis, herpes zoster, persistent cough, pneumonia, tuberculosis and herpes simplex⁽²⁶⁻²⁷⁾. However, it should be noted that there were differences in the frequencies of these diseases in the populations studied.

With the implementation of the notification of HIV cases in 2014, it was expected

that there would be early detection and, consequently, initiation of antiretroviral therapy to reduce the transmissibility of the virus, lower opportunistic infection rates, reduction of deaths from AIDS and improvement of living conditions of PLWHA⁽²⁸⁾.

Of the cases reported for AIDS, 92.6% were defined by Adapted CDC Criterion, with TCD4+ lymphocytes less than 350 cell/mm³. The Informative Note No. 47/2016 instructs nurses to request CD4+ and HIV viral load tests, which helps to define the AIDS case. It is worth noting that, in the notification criteria, the need for closure of the notification by non-medical professionals was demonstrated, since most of the current components of closure criteria are medical diagnoses. The data analyzed corroborates this need for change, since it was evident that the registration has been performed by other professionals in the sector.

As a limiting factor of this study, we point out the divergence between the municipal, state and national levels of cases reported in Sinan. We suggest updating through continuing education and information systems that are connected to minimize errors, inconsistencies and incompleteness in the notifications.

CONCLUSION

Young people aged 20 to 29 years living with HIV/AIDS in the investigated municipality started the follow-up with AIDS diagnosis, even after the implementation of the HIV notification in 2014. The consequences of this process in the health sector determine a higher demand for specialized curative assistance, a phenomenon that concretely expresses the inequity in the conception of Public Policies to face the HIV/AIDS phenomenon.

In this sense, elaborating effective public policies, based on equality and social justice, with the objective of guaranteeing the prevention and early diagnosis of the grievance become fundamental to interrupt the chain of transmission. It is necessary to revert the situation found, because the policy of treatment as prevention currently established in the country is not guaranteeing the reduction in the transmission of the grievance in young adults.

For this, it is necessary to train professionals in the health sector for actions to transform the confrontation of the HIV/AIDS epidemic in Brazil and review the notification process that is currently centered on the doctor, but in practice is carried out by other professionals. Thus, based on these reflections, it is understood that this study contributes to health professionals to act to reverse the late diagnosis and prevent HIV transmission.

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HOW TO REFERENCE THIS ARTICLE:

Limas FM, Brandão ML, Luccas DS de, Nichiata LYI, Larocca LM, Chaves MMN. Ecological study of the HIV/AIDS epidemic in young adults: are we preventing or treating? Cogitare enferm. [Internet]. 2021 [accessed "insert day, month and year"]; 26. Available from: <http://dx.doi.org/10.5380/ce.v26i0.72693>.

*Article extracted from the master dissertation "The epidemiological and clinical profile of young people living with HIV/aids in the Municipality of São José dos Pinhais-PR". Universidade Federal do Paraná, 2018.

Received: 06/04/2020

Approved: 01/02/2021

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Drafting the work or revising it critically for important intellectual content - LYIN, LML, MMNC

Final approval of the version to be published - MMNC

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - FML



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