

Epidemiological profile of children infected with the Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome

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Abstract

Newborns exposed to the virus need to have clinical follow-up from birth, maintaining control and permanent health care in specialized multiprofessional services that meet the specific demands of their serological condition. Thus, the aim of the study was to analyze the epidemiological profile of children with the Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome attended at a Reference Center in the city of Belém, Pará, Brazil. This was a descriptive, cross-sectional epidemiological study with qualitative and quantitative variables on the profile of infected children from secondary data, in the period from 2014 to 2019 in the State of Pará. 1,270 children exposed to the virus by vertical transmission, between 0 and 12 years of age, were identified, 06 (0.47%) of which tested positive for the Human Immunodeficiency Virus and 60 (4.72%) children who developed the Acquired Immunodeficiency Syndrome, with an average time of 3.5.7 years for disease progression and 8 years for death. In view of the results obtained, it is clear that there is a need to expand health programs in primary care, aiming at health promotion and prevention, as qualified care generates improvements in the quality of life of patients, since most of the transmission is vertical. Thus, it is necessary to carry out further studies in the area, aiming to improve the fight against the disease and reach in more detail the epidemiological profile of HIV/AIDS in children in the State of Pará.

Keywords: HIV; AIDS; Epidemiological Profile; Kids; Vertical Transmission.

1. INTRODUCTION

The Human Immunodeficiency Virus (HIV) is a retrovirus capable of converting Ribonucleic Acid (RNA) into Deoxyribonucleic Acid (DNA)¹. There are two types of the virus, HIV-1 and HIV-2. HIV-1 is the most prevalent, which is responsible for 95% of infections worldwide, while HIV-2 is infrequent, concentrated only in western parts of the African continent, differing from HIV-1 by its genetics. , in addition to being slower than HIV-1 and being less infectious².

The Acquired Immunodeficiency Syndrome (AIDS) is a serious and chronic pathology that manifests from an infection by the HIV virus³. There is a significant amount of research on HIV and AIDS in adults. However, little is related to information about the manifestations regarding the children's group. Despite the alarming rate of 1.7 million children infected and the increase in infant mortality in the world since the beginning of the virus discovery until today⁴.

According to the epidemiological bulletin on HIV/AIDS (2019), which recorded a total of 300,496 cases of HIV infection in Brazil were reported in the Notifiable Diseases Information System (SINAN) between 2007 and 2018. The highest prevalence in the Southeast region with 136,902 (45.6%), and in the North region with 21,979 (7.3%) of the notified cases⁵. Despite the seriousness of the disease, low access to antiretroviral treatment, coupled with limited prevention efforts, are the main causes of child mortality. In 2018, the estimate of children living with HIV was only 54%, up to 14 years of age — or 790,000 children — were receiving antiretroviral therapy. It is noteworthy that about 320 children and adolescents die every day, 13 per hour, as a result of causes related to AIDS⁶.

Vertical transmission is the main route of HIV infection in children under 13 years of age worldwide, being from mother to baby during pregnancy, parto, parto propriamente dito (contacto com secreções cervico-vaginais e sangue materno), ou amamentação. About 35% occur during pregnancy, 65% in the peripartum, and 7-22% in the breastfeeding period⁷.

Newborns (NB) exposed to HIV need to have specialized clinical monitoring, being performed monthly in the first semester of life, bimonthly from the second semester on, and annually in adolescence. To exclude the diagnosis of HIV infection in children, Viral Load (VC) should be requested two weeks after the end of prophylaxis with antiretrovirals (ARVs). If the VC is up to 5,000 copies/mL, the VC must be repeated six weeks after the end of the prophylaxis and if the VC is greater than 5,000 copies/mL, the child is considered to have probably not been infected by the virus⁸.

Children and adolescents who have been living with HIV/AIDS since birth, suffer various impacts from the disease, including the need for treatment with antiretroviral medication for prolonged periods. In addition to the serological test to detect HIV in the prenatal period, there are measures to treat and prevent viral infection, such as the use of antiretroviral drugs during pregnancy, as well as the guidance of cesarean delivery, the use of adequate Iqueto-zidovudine (AZT) to the RN. Therefore, monitoring by the multidisciplinary health team is recommended for the total replacement of breastfeeding^{7,9}.

The children under 13 years old need control and care, maintaining permanent health monitoring in specialized multidisciplinary services, which meet the specific demands of their serological condition. In this age group, predominantly, they develop a bond with the professionals who serve them. This social support established mainly by health professionals is characterized as a facilitator in revealing the diagnosis, allowing them not to feel alone in coping with the disease and the particularities of HIV¹⁰.

Thus, the aim of the study was to analyze the epidemiological profile of children infected with HIV and AIDS, attended at the Referenced Health Center in the city of Belém, Pará, Brazil.

2. METHOD

This is a cross-sectional, retrospective, descriptive study with a quantitative-qualitative approach on the epidemiological profile of children with HIV/AIDS in the State of Pará. The study was carried out in a Mother and Child Reference Unit (UREMIA), located in Belém from Pará, from January 2014 to December 2019, with the study population obligatorily under 13 years old.

Data were analyzed through patient records, based on systematized information from medical records and compulsory notification forms for pediatric patients. In addition, positive HIV diagnoses were included in

the survey, along with the evolution to AIDS; the defaulters; in a situation of abandonment; the transferred ones; those that evolved to death; patient of both genders and the assiduous who undergo treatment and follow-up at the Reference Unit. Records of patients co-infected with other pathologies were excluded.

The variables included in the form prepared by the researchers for data analysis were: gender, age, type of delivery, type of exposure, performance and/or absence of breastfeeding, performance and/or absence of the pregnant woman's pre- and postpartum drug treatment and NB, attendance status, geographic location, notification of HIV/AIDS diagnosis. To determine the classification of the disease, information from the medical records regarding the criterion for the diagnosis of HIV/AIDS was used.

The research was approved by the Research Ethics Committee with Human Beings, under n° 4.398.966, submitted to the Research Ethics Committee, under CAAE 37640820.3.0000.5173. The study was carried out following the rules that regulate research involving human beings contained in resolution n°. 466/12 of the National Health Council.

The collected data were entered into the public domain Excel program, and the statistical analysis was performed using the BioEstat 5.3 software (Brazil). To analyze the association between the variables of interest, Pearson's chi-square test was used for categorical variables and the Kruskal Wallis test, with a significance level of 95% ($p > 0.05$). For the analysis of qualitative data, the Bardin method was used, which systematically analyzed and described the content collected by the researchers.

3. RESULTS

In this study, 1270 children exposed to the virus between 2014 and 2019 were identified, including positive cases. Sixty-six (5.19%) cases of children between 0 and 12 years were analyzed, where 60 (4.72%) of them are affected by AIDS and six (0.47%) are HIV positive. During the period analyzed, children exposed to the HIV virus were admitted to a Reference Unit for testing, monitoring and control of cases.

Data collection was carried out from the medical records of patients, in which the distribution of cases of vertical exposure is observed in (Table 1), resulting in the demonstration of the largest number of exposed individuals recorded during 2018, with 253 (19, 92%) cases. In relation to other years such as 2016 and 2017, they represented a quantity of 441 (34.72%) of the cases of children exposed to HIV/AIDS.

Table 1. Distribuição dos casos de exposição.

Year	No. of Exposed	Percentage (%)
2014	206	16,22
2015	208	16,38
2016	228	17,95
2017	213	16,77
2018	253	19,92
2019	162	12,76
Total	1270	100

Source: Research data on the distribution of cases/year of exposure in Belém/PA, Brazil.

Of the 66 (100%) medical records, vertical transmission was identified in childbirth (natural or cesarean), whether the mother underwent or undergoes treatment (Pregnancy/delivery, did not perform, pregnancy, childbirth) and whether there was breastfeeding (yes or no), totaling 60 (91%) with AIDS and six (9%) with HIV. In this regard, patients underwent vertical exposure, resulting in 36 (55%) through natural delivery, 30 (45%) in cesarean delivery.

In the analysis of drug treatment with AZT performed by the parturient, five (7.5%) during pregnancy and childbirth, 49 (74%) did not perform it, two (3%) only during pregnancy, 10 (15%) performed it only during childbirth. Regarding postpartum breastfeeding, 43 (65%) mothers breastfed, 23 (35%) did not breastfeed. For identification and distribution of 66 patients by gender, with 36 (60%) males and 24 (40%) females. This distribution made it possible to explore the gender most infected with AIDS, based on the proportions of the sexes analyzed per year ($p = 0.87$).

The age groups of children affected by HIV/AIDS are distributed between 0 and 12 years. However, when tested for differences between the mean ages of patients per year, it was identified that there are significant differences between the mean age ($H=20.9409$, $p=0.0008$), with children registered in the years 2017 and 2018 are the youngest with average ages of 4.9 and 4.3 years. In relation to those registered for the years 2014, 2015, 2016 and 2019, their average ages were 7.6 years; 8 years; 7 years and 8.7 years, respectively in (Figure 1).

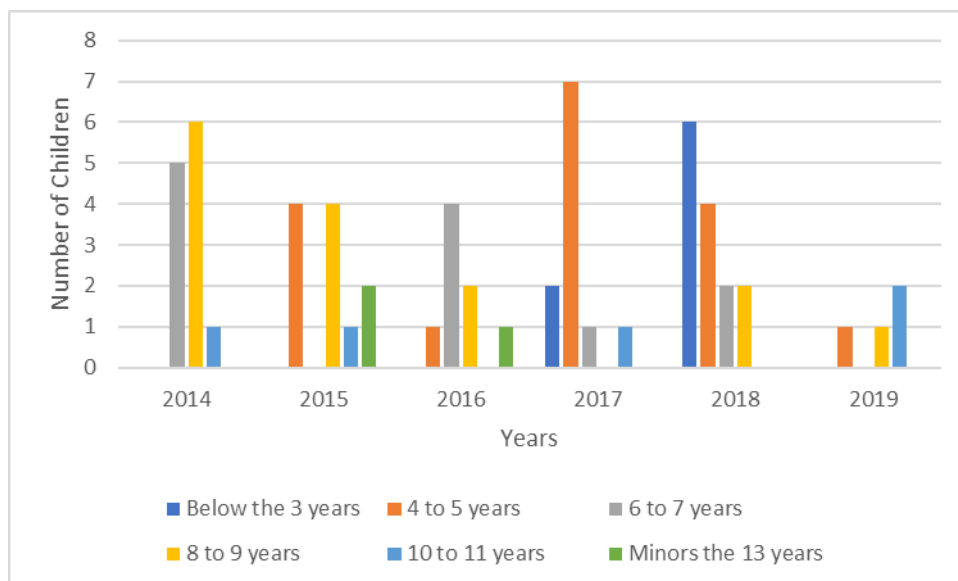


Figure 1. Distribution of HIV/AIDS patients by age group in Belém-PA, 2021.

According to the data analyzed in the State of Pará, it was observed that registered cases of HIV-infected children evolved to AIDS. Featured are 28 municipalities and one district, in which they presented notifications of the evolution to AIDS. In (Table 2), it shows the distribution by municipality/district and year. Among the municipalities analyzed, it was identified that the municipality of Belém recorded more cases for the period, with 17 (28.33%) in total, highlighting one of its eight districts, Outeiro presented four (6.66%) of the notifications of evolutions to AIDS. Followed by the municipalities of Paragominas and Mãe do Rio, which indicated the amount of four (6.66%) of registered cases.

Table 2. Research data on the distribution of cases by municipality/district and by year for the State of Pará, from 2014 to 2019. Belém-PA, 2021.

Regions	2014	2015	2016	2017	2018	2019	Total
Abaetetuba	1	0	0	0	0	0	1
Acará	0	0	1	0	0	1	2
Ananindeua	2	0	0	0	0	0	2
Baião	1	0	0	0	0	0	1
Belém	4	5	0	5	3	0	17
Barcarena	0	0	2	0	0	0	2
Bragança	0	1	0	0	0	0	1
Breves	0	0	0	0	1	0	1
Bujaru	0	0	0	1	0	0	1
Cametá	0	0	0	0	1	0	1
Colares	0	0	0	1	1	0	2
Currálinho	0	0	1	0	1	0	2
Garrafão Do Norte	0	1	0	0	0	0	1
Gurupá	1	0	0	0	0	0	1
Mãe Do Rio	0	1	1	1	1	0	4
Marabá	1	0	0	0	0	0	1
Maracanã	0	0	0	1	0	0	1
Marituba	0	0	0	0	1	0	1
Oeiras Do Pará	0	1	0	0	0	0	1
Ourilândia do Norte	0	0	0	0	1	0	1
Paragominas	0	0	1	0	2	1	4
Ponta De Pedras	0	0	0	0	1	0	1
Salinópolis	1	0	0	1	0	0	2
Santana do Araguaia	0	0	0	0	0	1	1
Soure	0	1	0	1	0	0	2
Tailândia	1	0	1	0	0	1	3
Tomé Açu	0	1	1	0	0	0	2
Viseu	0	0	0	0	1	0	1
Total	12	11	8	11	14	4	60

When analyzing the total number of cases notified by municipality/district and year, it was found that in 2018 there were more records of cases with AIDS, totaling 14 (23.33%) of the children (Figure 2). Of the children registered for the period, 04 (four) of them had their diagnosis confirmed only in 2020, when notifications were made.

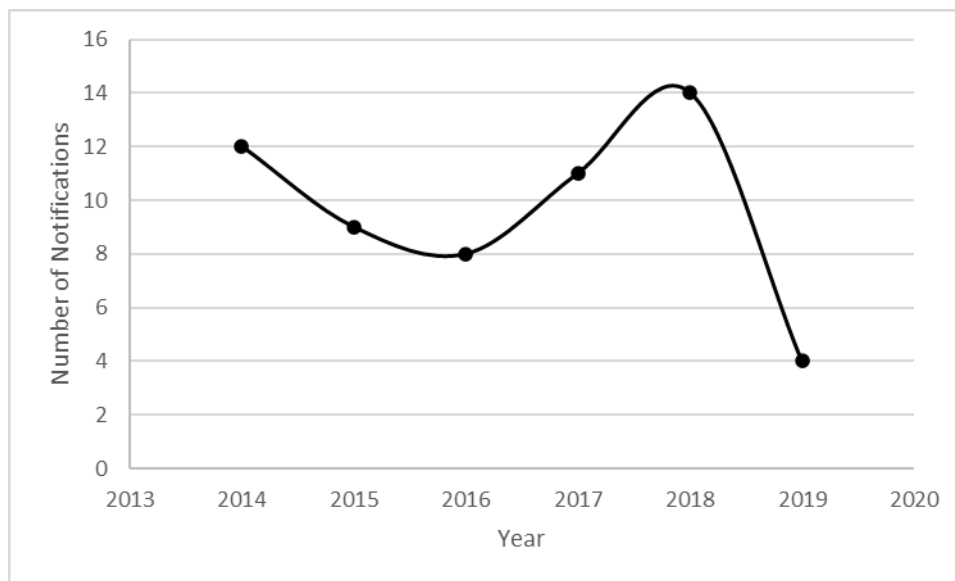


Figure 2. Evolution of the number of AIDS cases notified between the years 2013 to 2020 in Pará, 2021.

When identifying the characteristics of the time of evolution between the positive HIV test and the development of AIDS, it was analyzed by year, for the entire period, and it was identified that for the children analyzed there was no significant difference in the time of disease evolution ($p=0,82$), which lasts an average of 3.5.7 years.

The results obtained in 2014 to 2019 on the registered situation/year of child patients notified with HIV, were 01 (one) treatment abandonment and 05 (five) deaths. in relation to the records of children with AIDS, most data showed low rates of death and abandonment and active status (Table 3). It is noteworthy that 2018 had the highest concentration of records with 13 (21.67%) of assets and one (1.67%) death, however, in 2019 there was a decline in growth among assets in the reference unit, totaling 4 (6.67%) regarding the analyzed variables.

Table 3. Survey data on the situation of children notified per year with AIDS, during the period 2014 to 2019, in the Metropolitan Region of Belém-PA, 2021.

Status/Year	2014	2015	2016	2017	2018	2019	Total
Active	8	8	7	9	13	4	49
Absent	2	1	1	0	0	0	4
Abandonment	1	2	0	0	0	0	3
Transfer	1	0	0	2	0	0	3
Death	0	0	0	0	1	0	1
Total	12	11	8	11	14	4	60

4. DISCUSSION

For this study, cases of children aged 0 to 12 years attended at a Reference Unit in the Metropolitan Region

of Belém-PA were analyzed, for the period from January 2014 to December 2019. The reported cases related to 66 children were analyzed. 6 children tested positive for HIV and 60 who developed the Acquired Immunodeficiency Syndrome - AIDS. Therefore, the present study sought to explore all children aged 0 to 12 years exposed to the virus, according to the medical records, it can be seen that vertical exposure results in the difficulty of the pregnant woman in presenting or revealing a positive diagnosis.

Children exposed to HIV/AIDS in the last year resulted in (12.76%) of the cases. Compared to the data obtained, the Ministry of Health (MS) shows that in 2019 there was exposure (25%) of pregnancies of HIV-infected women, reinforcing that when the pregnant woman does not undergo prophylaxis, transmission to her child occurs. It is up to the health professional to be cautious about underreporting and monitoring children exposed to the virus to confirm the diagnosis and forms of contagion^{5,11}.

When it comes to vertical transmission, the gestational period stands out, resulting in (74%) of the parturients did not undergo preventive drug treatment during prenatal care, (55%) underwent natural childbirth, and (45%) were exposed to cesarean delivery, highlighting that (65%) of the mothers who breastfed their newborns. However, this information contrasts with data obtained in other studies, revealing the main moments of vertical transmission, in which it occurred during pregnancy (35%), in the peri-partum (65%), in addition, the contagion during breastfeeding it can vary from (7%) to (22%) per feeding^{12,13,14}.

This infection follows the contact of blood or fluid between the infected mother and child, that is, cesarean section is the most common occurrence when the pregnant woman is diagnosed during prenatal care, a measure that reduces the chances of contamination of the baby, together with the provision of artificial milk to the newborn as a primary source of food. To prevent HIV transmission, it is necessary to guide the infected pregnant woman to the beginning of drug treatment^{14,15}.

Regarding the identification and distribution of patients by gender, the data showed that there were no significant differences in the proportions of sexes analyzed per year ($p = 0.87$) in vertical contagion. In line with the data collected in the literature, a study on the epidemiological profile of children with AIDS also showed that there are no differences in the proportions between infected boys and girls. However, another study showed that there was controversy regarding gender, as there are reports that the number of infected girls can be up to three times greater than that of boys who contract the virus^{15,16}. These data reveal that there may be differences in proportions when the form of contagion, which includes sexual abuse and contact with contaminated blood.

Regarding the survival of infected children in the State of Pará, the mean age (0 to 2 years) was identified in the notifications, which resulted in death. The other children in care are distributed, mainly in the age groups of 4-5, 6-7 and 8-9 years, demonstrating that they can exceed the 8-year survival period. However, one study evaluated the survival of children and obtained the result of 7-8 years, referring to those infected vertically with HIV/AIDS, however other studies revealed the 3-4 year age group as predominant, which may be related with the data source or reference center and its operating time¹⁶.

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By analyzing the survival time and according to the age group and the factors associated with death in children and young people vertically infected with HIV, it was found that the average time varied between 8 and 10 years, when under treatment with antiretrovirals, the reduction was to 06 years without the use of medications, with opportunistic infections being the ones that most contributed to the evolution to death. Demonstrating the importance of adherence and compliance with treatment by children and adolescents to increase their life expectancy after diagnosis^{16,17}.

The data that corroborate the distribution of cases by municipality and district revealed that the highest incidences of AIDS in children fall on the metropolitan region of Belém. to urban centers, due to the situation of social vulnerability and the lack of resources for distant municipalities. Therefore, there will be an increase in the number of notifications for children with AIDS^{13,18}.

Analyzing the records of notifications of HIV cases that evolved to AIDS, it was possible to identify through the Kruskal-Wallis test that there was no significant difference in the time of disease evolution ($p=0.82$), with an average duration of 3.5, 7 years. To achieve a comparative data analysis, another Brazilian epidemiological study shows that there was a temporal difference between the HIV diagnosis and the year of notification of AIDS, as (18.8%) of the children notified corresponded to cases of HIV infection¹⁹.

After extensive data analysis, relevant gaps were detected during the collections, which were prominent in the absence of information in the analyzed medical records. The authors observed that the notes referring to the mother and child (pre-partum, delivery and postpartum) were adequate in terms of form, but with regard to the situations of patients with HIV/AIDS, they were incomplete in relation to the contents of abandonment, transference and deaths, with a variation of (18.33%) to (81.67%) of the cases. The guidance of the MS that emphasizes the complete filling of the records of children admitted to the service units, who are under 13 years old and born to HIV-infected mothers, is contradictory^{5,20}.

As for the medical and therapeutic conduct, the authors were not able to obtain in-depth access to the procedures performed and the justification for the conduct adopted, as the information was not specified in most of the medical records. This made it difficult to analyze the treatment of AZT performed during

pregnancy and postpartum. In other words, making it impossible to carry out a more detailed search for therapeutic approaches to children infected with HIV/AIDS. However, the recommendations of the Ministry of Health are the administration of antiretroviral drugs as part of a prophylactic scheme for mother-to-child transmission of HIV²⁰.

5. CONCLUSION

The present study allowed an analysis of the epidemiological profile of HIV-infected children and the evolution to AIDS, which allowed to characterize the population of affected children. The study elucidated the particularities of the children who were monitored at the Reference Center located in Belém, Pará.

The lack of notes in the medical records did not allow us to understand if, in fact, the majority is in an active situation and undergoing the appropriate treatments. The absence of records compromises the care provided to patients with HIV/AIDS, as well as the institution and the health team. Showing how urgent it is to update the medical records, as it covers several Ethical aspects and legally supports the professional responsible for the care, as well as the patient, making it possible to analyze the evolution of health care.

In view of the results obtained, it is clear that there is a need to expand health programs in primary care, aiming at health promotion and prevention, as qualified care generates improvements in the quality of life of patients. Since most cases of transmission occur vertically, which could be avoidable if the mothers had, in their entirety, access to health services in the prenatal period, as, based on previous exams, they could have been diagnosed and medicated for avoid the evolution of the condition and the contagion of your children. Thus, it is necessary to carry out further studies in the area, aiming to improve the fight against the disease and reach in more detail the epidemiological profile of HIV/AIDS in children in the State of Pará.

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