



## Epidemiological profile of pregnant women with HIV in a maternity hospital in São Paulo - SP, Brazil

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### ABSTRACT

#### OBJECTIVE

Acquired immunodeficiency syndrome (AIDS) is a pandemic disease that poses a public health challenge. This study aimed to trace the epidemiological profile of pregnant women with the HIV virus treated at a high complexity Maternity Hospital in the north of the city of São Paulo - SP, Brazil.

#### METHODS

Data were obtained through an active search in the medical records of hospitalized patients and in the HIV case notification forms, from the Hospital Infection Control Service (SCIH) in the period from 2019 to 2021.

#### RESULTS

The results showed that the majority of the HIV positive pregnant women seen at the maternity hospital during the study period were young, between 21 and 31 years old, 40% were single and 39% said they were in a consensual union, 60% completed only elementary school, most were unemployed, 58.5% declared themselves to be brown, and 35% were diagnosed with HIV during pregnancy. Of the total, 89.4% adhered to treatment and the main route of delivery was vaginal delivery, which demonstrates the adherence to antiretroviral therapy (ART) prophylaxis. Almost all neonates received antiretroviral prophylaxis.

#### CONCLUSIONS

Early diagnosis and treatment are essential for the healthy birth of the baby. The data obtained in this study allow us to better understand the profile of HIV-positive pregnant women treated at the maternity ward, and thus to develop assistance programs in the gestation and postpartum period.

#### DESCRIPTORS

HIV, Pregnant women, Epidemiological profile.

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## INTRODUCTION

HIV (Human Immunodeficiency Virus) was discovered and isolated in the early 1980s. Transmission takes place through the exchange of body fluids such as blood, milk during breastfeeding, semen, and vaginal secretions. HIV can also be transmitted from mother to child during pregnancy and childbirth<sup>1</sup>. HIV leads to the development of Acquired Immunodeficiency Syndrome, where the immune system is severely altered, with the destruction of CD4+ T lymphocytes being the main target of the virus<sup>2</sup>.

Today, Acquired Immunodeficiency Syndrome is a pandemic disease that represents a major challenge for global public health<sup>2</sup>. Since its inception, there has been an increase in the incidence of cases and the mortality rate. According to the HIV/AIDS epidemiological bulletin, in the last two years there has been a 20.7% drop in notifications. However, despite this drop in the number of cases, the registration of deaths continues, with a decrease of only 2.52%<sup>3</sup>. It is important to remember that early diagnosis is still the best form of treatment, reducing complications from opportunistic diseases and decreasing mortality<sup>1,2</sup>.

The incidence and prevalence of HIV in women have been increasing gradually since the 1980s, when less than 10% of people affected by the disease were female; currently 44% of people infected by the virus are female<sup>4</sup>. Data made available by UNAIDS indicate that in 2020 women and girls accounted for 50% of HIV infections<sup>3</sup>.

In Brazil, from 2000 to June 2020, 134,328 HIV-infected pregnant women were reported. It was observed that 37.7% of pregnant women lived in the Southeast region, followed by the South (29.7%), Northeast (18.1%), North (8.5%), and Midwest (5.8%). According to the Epidemiological Bulletin, young pregnant women with low education and brown color prevail<sup>5</sup>. These women, in addition to low education, are young people living in different situations permeated by fear, suffering, stigma, and prejudice<sup>6</sup>.

In São Paulo, over a period of ten years, between 2010 and 2020 there was a 36.3% increase in the HIV detection rate in pregnant, parturient, and postpartum women, considering that most notifications correspond to the age group from 25 to 29 years (28%)<sup>6</sup>.

Many pregnant women are diagnosed with HIV during prenatal consultations, through rapid tests and laboratory tests, which facilitates treatment throughout the pregnancy period, with the main objective of containing vertical transmission by reducing viral load, indication of delivery, and guidelines for not breastfeeding the newborn<sup>7</sup>.

Pregnant women who received their diagnosis during prenatal care and those who were already aware of HIV before pregnancy should receive guidance on the importance of controlling maternal infection and adherence to drug treatment, to avoid transmission of the virus to the fetus<sup>8</sup>.

When a pregnant woman does not adhere to treatment or has incomplete prenatal care and without any intervention, the result can be vertical transmission of HIV. This transmission occurs in three ways: intrauterine, intrapartum, and through breastfeeding. The rates of contagion to the newborn by vertical transmission are 25%; intrauterine transmission is responsible for 75% of infections, intrapartum for 30%, and infections during breastfeeding correspond to 50%<sup>9,10</sup>.

Antiretroviral therapy (ART) should be extended to all pregnant women with HIV, regardless of viral load, and clinical and immunological condition, because the sooner these women adhere to treatment, the lower the possibility of vertical transmission<sup>10</sup>.

The recommended treatment for the 1st trimester of pregnancy consists of two regimens: the preferential regimen (tenofovir, lamivudine, and raltegravir) and the alternative

regimen (tenofovir, lamivudine, and efavirenz or tenofovir, lamivudine, and atazanavir). In the second trimester of pregnancy, the following regimen is used: tenofovir, lamivudine, and dolutegravir<sup>10,11</sup>.

Adherence to antiretroviral therapy during pregnancy is also relevant in indicating the mode of delivery. In women without adherence to ART, with an unknown viral load or greater than 1,000 copies after the second trimester of pregnancy, elective cesarean section is most indicated, together with the administration of intravenous zidovudine at the time of delivery, or no later than 3 hours before delivery, as this can reduce the risk of vertical transmission of HIV<sup>10,11,12</sup>. Adherence to the use of ART for pregnant women is indicated from 14 weeks of gestation until umbilical cord clamping. The clinical status of the newborn at the time of birth will depend a lot on the mother and the way she deals with this pathology, knowing that prenatal care and complete adherence to drug therapy at the gestational and postpartum period is of paramount importance in preventing mother-to-child transmission and other complications to the baby<sup>11,12,13,14</sup>.

This study aimed to trace the epidemiological profile of pregnant women with the HIV virus treated at a high-complexity Maternity Hospital in the north of the city of São Paulo - SP, Brazil. The monitoring of HIV-infected pregnant women at the Hospital at the time of admission aims to outline prevention strategies, providing monitoring throughout the pregnancy and postpartum period; in care focused on the health of the mother, the newborn, and the care that must be taken in relation to the mother-baby binomial.

## METHODS

This is a retrospective study with a quantitative approach. The study was carried out in a highly complex Municipal Hospital and Maternity School, located in the north of São Paulo. The Maternity hospital provides health care, teaching, and research within the scope of the SUS, meeting demand from pregnant women and residents of the region, performing 670 deliveries per month<sup>15</sup>.

Pregnant women with the HIV virus, admitted to the Maternity Hospital from January 2019 to June 2021, were included in the research. To outline the profile of the pregnant women, the following variables were considered: age group, marital status, education, occupation, ethnicity, consumption of licit and illicit drugs, time of diagnosis, prenatal care, and adherence to treatment.

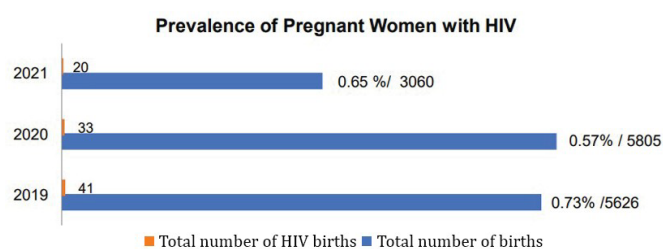
The research project was approved by the ethics committee of the Maternity Hospital under number 45683321.8.0000.5454. After approval by the ethics committee, data were collected through an active search in the medical records of hospitalized patients and in the HIV case notification forms, from the Hospital Infection Control Service (SCIH) in the period from 2019 to 2020.

## RESULTS

During the study period, 102 records of HIV positive pregnant women were identified. Of these records, 8 were excluded because they did not contain sufficient data. Thus, 94 medical records of HIV-positive pregnant women who delivered at the Maternity Hospital in the north of São Paulo were analyzed.

The prevalence of cases of HIV-positive pregnant women with deliveries performed in this maternity hospital, in relation to the total deliveries performed in the period from January 2019 to June 2021, was close to 0.7% and is shown in Figure 1.

**Figure 1.** Number of deliveries of pregnant women with HIV in relation to the total number of deliveries performed in this maternity hospital. Source: Base Network - Presentation of Indicators - Obstetric Center - 2019, 2020, 2021.



The data presented in Table 1 show the age range of pregnant women diagnosed with HIV. The predominant age group was 21 to 31 years, representing 54.26% of the cases, followed by 32 to 41 years (34.04%), 15 to 20 years (10.64%), and 42 years or more (1.06%). The analysis of the education of these pregnant women showed that most of them had only elementary education (58.51%), followed by high school (36.17%), and higher education (5.32%). Regarding marital status, 41.49% said they were single, 39.36% were in a consensual union, 18.09% were married, and 1.06% were widows. The professional occupation included housewives (59.57%) and paid formal work (40.43%). With respect to ethnicity, most of them declared themselves to be brown (58.51%), white (28.72%), black (10.64%), and indigenous (2.13%), respectively.

**Table 1.** Sociodemographic and economic data of HIV positive pregnant women attended from January 2019 to June 2021.

Characteristics of pregnant women with HIV (+)	n	%
<b>Age:</b>		
15-20 Years	10	10,64%
21-31 Years	51	54,26%
32-41 Years	32	34,04%
42 or + Years	1	1,06%
		100,00%
<b>Schooling</b>		
Illiterate	0	0,00%
Elementary school	55	58,51%
High school	34	36,17%
Higher education	5	5,32%
		100,00%
<b>Marital status</b>		
Single	39	41,49%
Married	17	18,09%
Widow	1	1,06%
Consensual Union	37	39,36%
		100,00%
<b>Professional Occupation</b>		
Housewife Trabalho	56	59,57%
Paid work	38	40,43%
		100,00%
<b>Ethnicity</b>		
Black	10	10,64%
White	27	28,72%
Brown	55	58,51%
Indigenous	2	2,13%
HIV positive women	94	100%

Regarding the life habits of the pregnant women (Table 2), 43.62% say they smoked cigarettes during pregnancy. Considering the consumption of alcoholic beverages during pregnancy, 59.57% denied the use, and 40.43% said they had consumed alcohol during pregnancy, while for the use of illicit drugs, 78.72% of the pregnant women reported that they had not used any type of illicit drugs during pregnancy and 21.28% reported the use of illicit drugs during pregnancy.

**Table 2.** Data on life habits of HIV positive pregnant women attended from January 2019 to June 2021.

Characteristics of HIV (+) pregnant women	n	%
<b>Cigarette use during pregnancy</b>		
Yes	41	43,62%
No	53	56,38%
		100,00%
<b>Consumption of alcoholic beverage</b>		
Yes	38	40,43%
No	56	59,57%
		100,00%
<b>Use of illicit drugs</b>		
Yes	20	21,28%
No	74	78,72%
		100,00%

The data presented in Table 3 show the clinical data of pregnant women and newborns. It appears that 64.90% of women were diagnosed with HIV before pregnancy, and of these, 4.26% contracted the virus through vertical transmission from their mothers. The percentage of pregnant women who received this diagnosis during prenatal care was 35.11%.

It was found that 89.36% of the pregnant women underwent treatment during pregnancy, and 10.64% did not undergo any treatment during pregnancy, with 69.15% having between 2 and 10 consultations and 20.21% more than 10 consultations.

Regarding the gestational age at birth, 76.0% delivered at 38 weeks or more, 12.0% delivered between 34 and 37 weeks, and 12.0% delivered at less than 33 weeks of gestation.

**Table 3.** Clinical data of HIV-positive pregnant women and their newborns attended from January 2019 to June 2021.

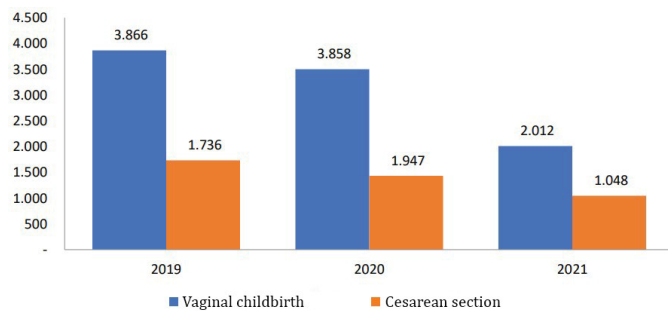
Pregnant women	n	%
<b>Diagnostic moment</b>		
Prenatal	33	35,10%
Before pregnancy	61	64,90%
		100,00%
<b>Attended prenatal care</b>		
Yes	84	89,36%
No	10	10,64%
		100,00%
<b>No. of prenatal visits</b>		
0-2 visits	10	10,64%
2-10 visits	65	69,15%
More than 10 visits	19	20,21%
		100,00%
<b>Pregnancy Treatment</b>		
Yes	84	89,36%
No	10	10,64%
		100,00%
<b>Gestational Age at Birth of NB</b>		
Less than 30 weeks	2	2,0%
30 to 33 weeks	4	4,0%
34 to 37 weeks	12	12,00%
More than 38 weeks	76	76,00%
		100,00%
<b>Type of Delivery</b>		
Vaginal	50	53,19%
Cesarean	44	46,81%
		100,00%
<b>Clinical Status of NB</b>		
Stable	79	84,04%
Unstable	15	15,96%
		100,00%
<b>Use of prophylaxis at NB birth</b>		
Yes	89	94,68%
No information	5	5,32%
HIV positive women	94	100%

With respect to the clinical status of newborns at birth, 84.04% were born stable and 15.96% were born unstable. In total, 94.68% of newborns born to an HIV-positive mother received antiretroviral prophylaxis at birth, and for 5.32%, there was no information on this variable in the patients' medical records.

Figure 2 shows the type of delivery in HIV-positive pregnant women. It can be seen that between 2019 and 2021 the major-

ity of deliveries were vaginal (67.30%), which indicates adherence to ART prophylaxis.

**Figure 2.** Number of deliveries of pregnant women with HIV and type of delivery performed between 2019 and 2021. Source: Base Network - Presentation of Indicators - Obstetric Center- 2019, 2020, 2021.



## DISCUSSION

The HIV virus is a public health problem to be solved and, in the case of seropositive pregnant women, it is even more complex, as there is a need for strict control due to the high risk of vertical transmission, the impact on the outcome of pregnancy, and the well-being of the neonate<sup>6</sup>.

In the current study, the majority of the seropositive pregnant women were young people aged between 21 and 31 years (54.26%). This finding is similar to the data found in the literature, in the research carried out by Campos, in a municipal hospital in Niterói, with an age group from 21 to 30 years (57.54%)<sup>15</sup>, and by Silva et al. in Alagoas<sup>16</sup> demonstrating a certain national trend.

The profile of pregnant women also showed a low level of education, with most having completed only elementary school (58.51%). This low education level was observed in other studies such as in the city of Niterói with 40.8%<sup>15</sup> and Cascavel<sup>17</sup>. This socioeconomic situation demonstrates that low levels of education and lack of financial resources are a factor of vulnerability to HIV infection, perhaps because of the greater difficulties in accessing information, as well as access to health services<sup>10</sup>.

Considering ethnicity, the brown color prevailed in our study, with 58.51% of the pregnant women, as in the research by Teixeira, from the city of Macapá, who found the brown color in 75%<sup>8</sup>.

With respect to the history of HIV diagnosis, the vast majority of pregnant women in our research, almost 65%, knew about the disease before their pregnancy. On the other hand, an epidemiological study carried out in Belém, Pará, showed that most pregnant women were diagnosed at the time of their prenatal care, which reaffirms the importance of good prenatal care for early diagnosis and prevention of vertical transmission<sup>15</sup>. In this study, 35% of pregnant women were diagnosed with HIV infection during pregnancy. This point imposes several challenges on the woman and her family, especially efforts to prevent mother-to-child transmission of the virus.

Early diagnosis and treatment are essential for the outcome of a healthy birth of the baby, and all infected pregnant women should receive antiretroviral therapy during pregnancy to prevent vertical transmission.

When analyzing adherence to prenatal care, it can be seen that the vast majority of pregnant women had an average of 2 to 10 consultations during their pregnancy, and 89% of them adhered to the use of ART. High adherence to prenatal care and the use of ART, as shown in Table 3, are indicative of low viral load in pregnant women with HIV, which may explain the high rate of vaginal deliveries (53%), this route being possible for pregnant women who adhere to antiretroviral therapy

throughout the pregnancy period or from as early as possible<sup>18</sup>.

Vertical transmission can occur during pregnancy, during labor, during delivery, and during breastfeeding, but with appropriate interventions and at the right time, the risk of transmission from mother to baby is reduced to less than 1%. The care needed during pregnancy and during labor is aimed at stabilizing the mother's viral load at a low level and preventing vertical transmission to the baby<sup>10</sup>.

It was possible to observe the clinical profile of the newborns, most of whom were born stable (84%) and 94% received prophylaxis soon after birth. According to the Ministry of Health<sup>11</sup>, even if the mother has partially adhered to the drug treatment, it is possible to carry out antepartum prophylaxis to the newborn, with the use of injectable Zidovudine; in the pregnant woman, from the beginning of labor, and, after birth, still in the delivery room or in the first hours of life, Zidovudine solution is used for the newborn.

Antiretroviral treatment during pregnancy should be maintained and readjusted, if necessary, after delivery, and it is essential to reinforce the beneficial impact of the treatment to the pregnant woman, both for her and her NB<sup>10</sup>.

The approach to pregnant women with HIV should involve multidisciplinary monitoring to ensure a better quality of life for mother and baby. The main cause for viral non-suppression in this group is insufficient adherence, which often exacerbates delivery<sup>10</sup>.

In the current study, it was observed that adherence to ART resulted in vaginal deliveries and stable newborns. Thus, it is necessary that HIV-positive pregnant women receive information about the benefits of adhering to antiretroviral therapy, reducing morbidity and mortality, and improving their quality and expectancy of life<sup>10</sup>.

Adherence to ART is characterized as a broad process that encompasses physical, psychological, social, cultural, and behavioral aspects, requiring shared decisions and co-responsibility between people living with HIV, the health team, and the social network<sup>22</sup>.

The present study showed a very specific profile of infected pregnant women, with high rates of vaginal delivery, which demonstrates the evolution of therapy and adherence to antiretroviral treatment, with a consequent reduction in the pregnant woman's viral load and prevention of neonatal infection.

It can be seen that, despite the similarity of socioeconomic and intellectual characteristics among HIV-infected pregnant women, there is significant adherence to prenatal care and drug therapy. The positive impact found is the prevention of vertical transmission, with high rates of babies born being considered healthy.

Health education and awareness of prevention, whether through lectures, campaigns, or other ways of disseminating information, are the best alternatives for carrying out prenatal care, for adherence to treatment and consequent prevention of vertical transmission of HIV<sup>23</sup>.

## CONCLUSION

The pregnant women with the HIV virus treated at this maternity hospital in the north of São Paulo are mostly young people between 21 and 31 years of age, with low education, without paid employment, single or in a consensual union. The majority had an HIV positive diagnosis before pregnancy and most adhered to antiretroviral therapy and, as a result, the main route of delivery was the vaginal route.

Early diagnosis and treatment are essential for the healthy birth of the baby. The data obtained in the current study enable us to better understand the profile of HIV-positive pregnant women treated at the maternity ward and thus develop assistance programs in the gestation and postpartum period.

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