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ORIGINAL ARTICLE

EPIDEMIOLOGICAL AND SPACE ANALYSIS OF HIV/AIDS IN CHILDREN AND PREGNANT WOMEN*

ANÁLISE EPIDEMIOLÓGICA E ESPACIAL DE HIV/AIDS EM CRIANÇAS E GESTANTES

ANÁLISIS EPIDEMIOLÓGICO Y ESPACIAL DEL VIH/SIDA EN NIÑOS Y MUJERES EMBARAZADAS

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ABSTRACT

Objective: to analyze the epidemiological profile and spatial distribution of reported cases of HIV/AIDS in children and pregnant women. *Method:* this is a quantitative, descriptive, retrospective, epidemiological, cross-sectional study. The sample consisted of all cases of seropositive pregnant women reported as infected with HIV in SINAN and children with AIDS registered in SIM, between January 1, 2008 and December 31, 2016. Data were obtained through the System. Reporting Disease Information and Mortality Information System in residents of the municipality. ***Results:*** a total of 37 cases of seropositive pregnant women were reported, being these young women aged 16 to 20 years (32.5%), brown (70.3%), with less than eight years of study (70.3 %) and housewives (59.5%). There were only three cases of children with AIDS. ***Conclusion:*** it is concluded that the increase in the incidence rate of HIV in pregnant women, as well as the reported cases of deaths in children by AIDS, shows the failure in the care provided to these individuals. ***Descriptors***: Pregnant Women; Children; Communicable Diseases; Epidemiology; Public Health; Cross-Sectional Studies.

RESUMO

Objetivo: analisar o perfil epidemiológico e a distribuição espacial dos casos notificados de HIV/AIDS em crianças e gestantes. ***Método:*** trata-se de um estudo quantitativo, descritivo, retrospectivo, epidemiológico, transversal. Compôs-se a amostra por todos os casos de gestantes soropositivas notificadas como infectadas com o HIV no SINAN e crianças com AIDS registradas no SIM, entre 1º de janeiro de 2008 e 31 de dezembro de 2016. Obtiveram-se os dados por meio do Sistema de Informação de Agravos de Notificação e do Sistema de Informação sobre Mortalidade, em residentes no município. ***Resultados:*** notificou-se um total de 37 casos de gestantes soropositivas, sendo estas jovens com idades entre 16 e 20 anos (32,5%), pardas (70,3%), com menos de oito anos de estudo (70,3%) e donas de casa (59,5%). Registraram-se apenas três casos de crianças com AIDS. ***Conclusão:*** conclui-se que o aumento na taxa de incidência de HIV em gestantes, bem como os casos registrados de óbitos em crianças pela AIDS, evidencia a falha na assistência prestada a esses indivíduos. ***Descritores:*** Gestantes; Crianças; Transmissão Vertical de Doença Infecciosa; Epidemiologia; Saúde Pública; Estudos Transversais.

RESUMEN

Objetivo: analizar el perfil epidemiológico y la distribución espacial de los casos notificados de VIH/SIDA en niños y mujeres embarazadas. ***Método:*** este es un estudio cuantitativo, descriptivo, retrospectivo, epidemiológico, transversal. La muestra consistió en todos los casos de mujeres embarazadas seropositivas reportadas como infectadas con VIH en SINAN y niños con SIDA registrados en SIM, entre el 1 de enero de 2008 y el 31 de diciembre de 2016. Los datos se obtuvieron a través del Sistema de Información de Agravios de Notificación y del Sistema de Información de Mortalidad en residentes del municipio. ***Resultados:*** se informaron un total de 37 casos de mujeres embarazadas seropositivas, siendo estas mujeres jóvenes de 16 a 20 años (32.5%), marrones (70.3%), con menos de ocho años de estudio (70.3 %) y amas de casa (59.5%). Solo hubo tres casos de niños con SIDA. ***Conclusión:*** se concluye que el aumento en la tasa de incidencia de VIH en mujeres embarazadas, así como los casos reportados de muertes en niños por SIDA, muestran el fracaso en la atención brindada a estas personas. ***Descriptores***: Mujeres Embarazadas; Niño; Transmisión Vertical de Enfermedad Infecciosa; Investigación sobre Servicios de Salud; Estudios Transversales.

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INTRODUCTION

Acquired Immunodeficiency Syndrome (AIDS) has been known for the past 20 years, mainly because the epidemic of HIV infection has become a global phenomenon, affecting all people, regardless of their socioeconomic status.[1]

According to the Epidemiological Bulletin, between 1980 and June 2015, 798,366 AIDS cases were reported in Brazil. It is noteworthy that the Northeast region concentrates 14.6% of HIV cases, and Maranhão has a rate of 19.6 cases per 100 thousand inhabitants.[2]

It is understood that the disease has spread, causing significant epidemiological changes, since initially it was limited to the male population and, in the current phase, the epidemic is growing among women, which characterizes the feminization of HIV/AIDS.[2-3]

As the reproductive age is the most affected by the infection, the number of cases of children infected by vertical transmission (VT) is high. VT is the transmission of the virus from mother to child, which may occur during pregnancy, childbirth or breastfeeding.[3]

Although the fetus is enveloped by the membranes, it is approximately 35% likely to contract the human immunodeficiency virus (HIV) inside the womb, and this probability rises to 60 during labor and delivery. 70%; already during breastfeeding, there is an additional risk of transmission of seven to 22%.[4] It is understood that infection can result in serious consequences for the child's health. It is considered a cause of preventable death in children under five years of age, and effective interventions to prevent vertical transmission based on early diagnosis of infection and the use of well-established care protocols.[5-6]

Knowing the epidemiological profile and spatial distribution of cases of pregnant women with HIV in the community is of fundamental importance to identify the group vulnerable to infection and subsidize the planning of preventive measures in order to avoid vertical transmission. Spatial analysis makes it possible to identify the areas with the largest number of cases, ie those that need greater attention for the prevention and control of this problem.[3]

OBJECTIVE

- To analyze the epidemiological profile and spatial distribution of reported cases of HIV/AIDS in children and pregnant women.

METHOD

This is a quantitative, descriptive, retrospective, epidemiological, cross-sectional study. conducted in the municipality of Caxias (MA), Northeast region of Brazil. Data were obtained by the Epidemiological Surveillance of the Municipal Secretariat of Health of the municipality of Caxias, Maranhão, with information from the Notification of Disease Information System (SINAN), Mortality Information System (MIS) and Information System on Live Births (SINASC).

The study population consisted of all cases of HIV-positive pregnant women reported as infected with HIV in SINAN and children with AIDS registered in MIS, between January 1, 2008 and December 31, 2016, residing in Caxias. Duplicate records were excluded, which were counted only once, to avoid duplication of information, in addition to pregnant women who evolved to abortion or who were stillborn, with the purpose of exclusively analyzing the potential risk of vertical transmission of HIV to live births.

In order to characterize the different areas of the municipality of Caxias and their relationship with HIV infection in children and pregnant women, the sociodemographic and health variables were analyzed. The variables investigated on the profile of pregnant women with the infection were listed: age in years (16-20, 21-25, 26-30, 31-35 or ≥36); race/color (white, brown, black, yellow or indigenous); education in years of schooling (≤8 or> eight years); occupation (housewife, agricultural sector, student, other or ignored); laboratory confirmation (before prenatal, during prenatal or at delivery); gestational period (first, second or third trimester); prenatal (yes or no); use of prophylactic antiretroviral therapy in pregnancy (yes, no or ignored); use of prophylactic antiretroviral therapy at birth (yes, no or ignored); type of delivery (vaginal, elective, emergency or ignored); pregnancy outcome (live born) and initiation of antiretroviral therapy in the child (within 24 hours of birth or ignored).

The sociodemographic variables of the children with AIDS who died were listed: mode of transmission of the disease; type of death; year of death (2009, 2014); age in years (five, seven, eight); gender (male or female); race/color; area of residence (urban or rural) and if medical care was received during the illness that caused the death.

Data was analyzed using descriptive statistics, with absolute and relative frequencies, in the Statistical Package for Social Science (SPSS), version 20, and then organized into tables and graphs. For the calculation of the HIV detection rate in pregnant women, the number of cases detected in pregnant women resident in the municipality was used and the total number of live births of women residents of the studied municipality, obtained from SINASC and multiplied by a thousand. For the calculation of the percentage reduction in the incidence rates of

infection in pregnant women between 2012 and the last year of study, the final value was subtracted from the initial value. The result was divided by the initial value and subsequently multiplied by 100.

For the analysis of the behavior of the spatial distribution of the cases, thematic maps were constructed for the period from 2008 to 2016, referring to the reported cases of HIV in pregnant women and the reported cases of AIDS in children. In the construction of the maps, the geographic coordinates were collected with the aid of the Global Positioning System (GPS) Essentials, in which, according to the home address of the notification form (pregnant women) or death declaration (children) of the cases, were made. the coordinate markings. Then, the maps were drawn up using the QGIS program, version 2.18 Las Palmas - QGIS BRASIL, which used the coordinate data collected and made the spatial distribution related to the Caxias cartographic base provided by IBGE.[7]

The study was approved by the Research Ethics Committee of the State University of Maranhão (CAAE: 63064816.9.0000.5554).

RESULTS

Between 2008 and 2016, a total of 37 cases of HIV-positive pregnant women in the municipality of Caxias were identified. Throughout the time frame, the incidence of notification cases was increasing, as shown in Figure 1, from a detection rate of 0.3 cases per thousand live births to 4.3 cases per thousand live births. at an interval of eight years. From 2012 to 2016, the detection rate increased by 48.28%.

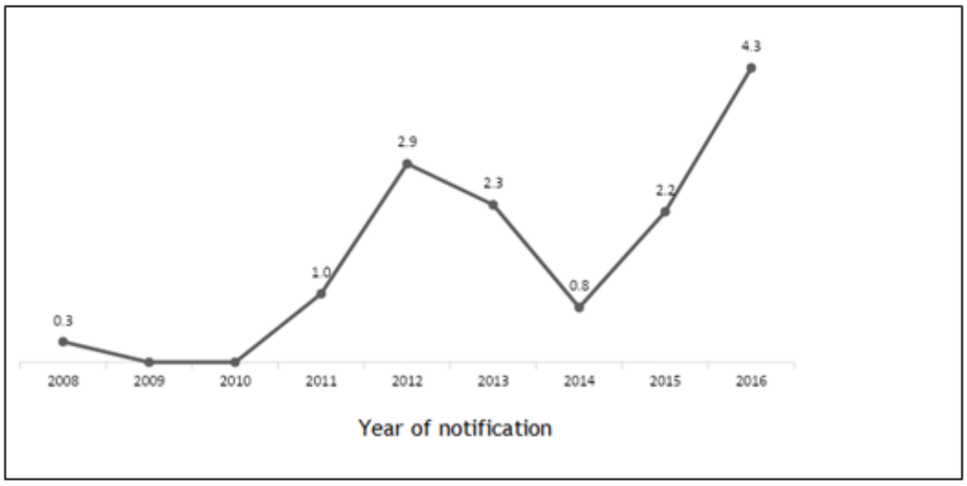

Figure 1. Temporal evolution of the incidence of reported cases of HIV seroreactive pregnant women. Caxias (MA), 2008 to 2016, Brazil. Source: SINAN/SINASC, Caxias Epidemiological Surveillance, Caxias Municipal Health Secretariat, 2016.

Table 1 presents the sociodemographic and health characteristics of pregnant women. The prevalence of HIV infection was observed in young adults aged 16 to 42 years, with an average of 24.9 years and a standard deviation of ± 5.7 years, including 12 (32.2%) women. between 16 and 20 years old. It was found that 26 (70.3%) infected pregnant women were race/brown, 26 (70.3%) had less than eight years of schooling, 22 (59.5%) were housewives and 25 (67, 6%), residents of the urban area.

From the health variables, it was evidenced the predominance of the diagnosis during prenatal care, detecting 17 (45.9%) cases. It is noteworthy that 18 (48.7%) notifications referred to the third gestational trimester and 30 (81.1%) of the respondents had prenatal care. The use of prophylactic antiretroviral therapy during pregnancy was predominant in 13 (35.1%) patients, 18 (48.6%) used prophylactic antiretroviral therapy at delivery and 15 (40.5%) underwent elective cesarean section. The 37 (100%) pregnancies evolved with the live newborn and 19 (51.4%) of the children used antiretroviral therapy in the first 24 hours of life (Table 1).

Table 1. Sociodemographic and health characteristics of HIV-positive pregnant women in Caxias (MA), Brazil, 2008 to 2016.

Variables (n=37)	n	%
Age group (in years)		
16 to 20	12	32.5
21 to 25	09	24.3
26 to 30	11	29.7
31 to 35	03	8.1
≥ 36	02	5.4
Race/color		
White	04	1.08
Indígenous	01	2.7
Brown	26	70.3
Black	06	16.2
Education		
≤oito years	26	70.3
>oito years	08	21.6
Ignored	03	8.1
Occupation		
House wife	22	59.5
Agricultural Sector	08	21.6
Student	02	5.4
Others	04	10.8
Ignored	01	2.7
Location		
Rural	12	32.4
Urban	25	67.6
Lab confirmation		
Before pre-natal	15	40.6
During pre-natal	17	45.9
At the time of birth	05	13.5
Gestational period (notification)		
1st trimester	03	8.1
2nd trimester	13	35.1
3rd trimester	18	48.7
Ignored	03	8.1
Pre-Natal		
Yes	30	81.1
No	-	-
Ignored	07	18.9
She used prophylactic antiretroviral therapy during pregnancy		
Yes	13	35.1
No	09	24.3
Ignored	15	40.5
Prophylactic antiretroviral therapy during childbirth		
Yes	16	43.2
No	03	8.1
Ignored	18	48.6
Type of birth		
Vaginal	06	16.3
Elective surgical	15	40.5
Urgent surgical	01	2.7
Ignored	15	40.5
Evolution of pregnancy		
Live birth	37 (100.0)	37 (100.0)
Prophylactic antiretroviral therapy begins (in children)		
In the first 24 hours after birth	18	48.6
Ignored	19	51.4

Fonte:[8]

During the study period, only three cases of children with AIDS were reported in the Mortality Information System (MIS), and all cases were acquired by vertical transmission. It is reported that two (66.7%) cases were female and one (33.3%) male and all had non-fetal death. The age range was established between five and eight years of age, with an average of 6.6 years and a standard deviation of ± 1.2. All patients lived in the urban area of the municipality. All cases were reported to have had medical assistance during the disease that caused death (Table 2).

Table 2. Sociodemographic variables of children with AIDS. Caxias (MA), Brazil, 2008 to 2016.

Variables (n=03)	n	%
Transmission mode		
Vertical transmission	03	100.0
Type of death		
Non fetal	03	100.0
Year of death		
2009	02	66.7
2014	01	33.3
Age		
Five years	01	33.3
Seven years	01	33.3
Eight years	01	33.3
Sex		
Female	02	66.7
Male	01	33.3
Race		
Brown	03	100.0
Zone of residence		
Urban	03	100.0
Rural	-	-
Received medical attention during the illness that caused their death?		
Yes	03	100.0

Source:[9]

The spatial distribution of the cases of pregnant women by zone, located in the municipality, for the period studied is shown in Figure 2. The concentration of higher values in the East region is shown, followed by the West, North, South and Central regions. Regarding the spatial distribution of cases of children with AIDS registered in the municipality, it was identified that most of the cases were located in the Central zone and only one case was located in the East zone.

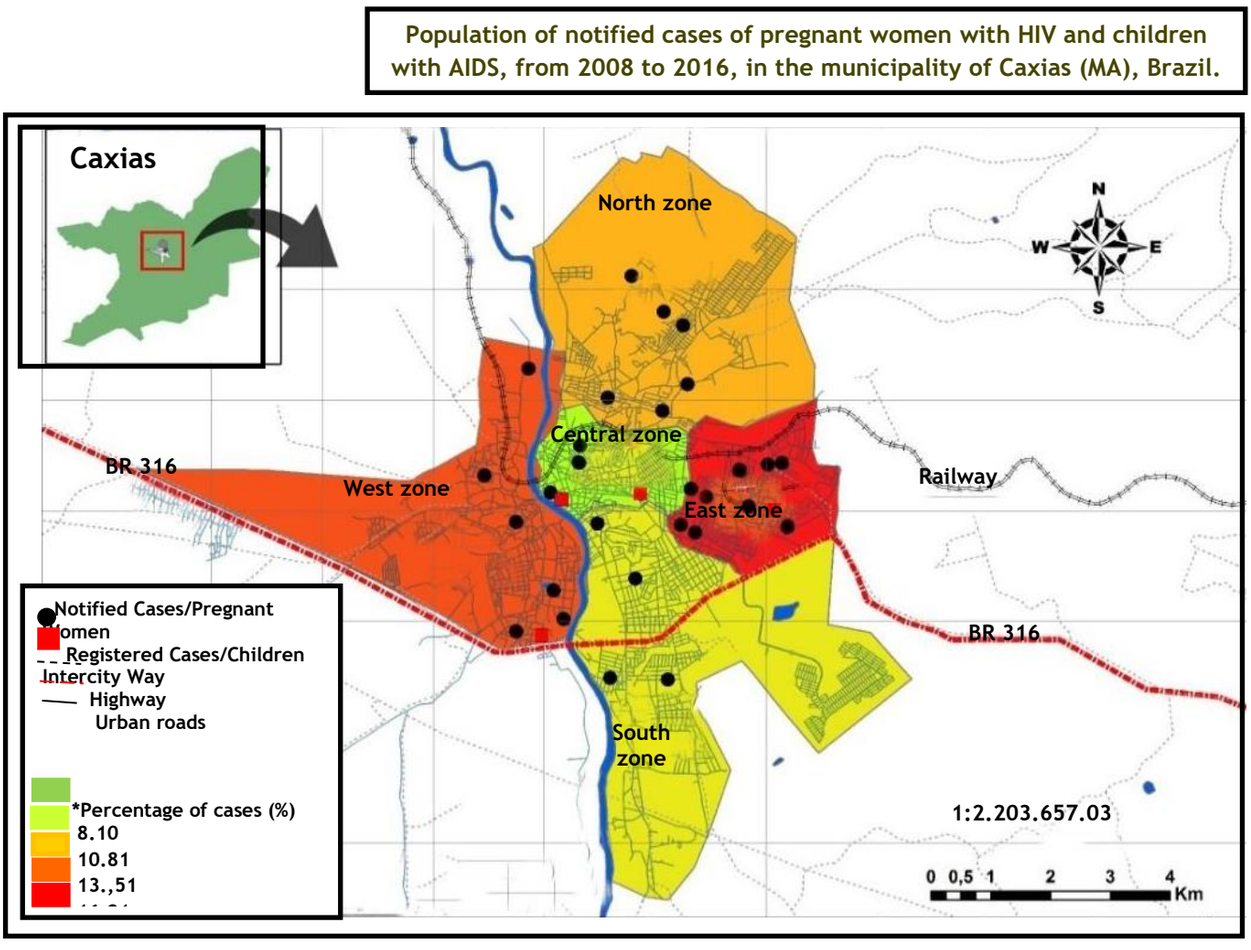

Figure 2. Spatial distribution of cases of pregnant women with HIV and children with AIDS from 2008 to 2016. Caxias (MA), Brazil. Source:[8]

DISCUSSION

The detection rate of pregnant women with HIV was increasing over the years studied. The findings in Caxias corroborate other studies found in the literature, which may reveal an increase in the number of children affected by the HIV virus.[6-7,10] It is evident from this growth in the number of cases in pregnant women infected with HIV. HIV, the need to initiate strategies to prevent and reduce the number of cases. However, it is understood that the results may represent that cases of seropositive pregnant women are only being reported more reliably.[3,7]

It is observed that the HIV-seroreactive pregnant women were young adults, corroborating other studies showing that the average age of pregnant women attended during the research period was 25.6 years (± 5.8), ranging from 15 to 42 years, and that cases of HIV infection are found in women of childbearing age, as observed in other studies.[3,11]

As for education, a significant percentage of pregnant women with less than eight years of schooling were found, but none were recognized as illiterate. It is known that low education has been frequently found in pregnant women with HIV: in two studies, young adult pregnant women with low education were found and, in their study, one fifth of the pregnant women were adolescents (under 20 years) and just over half were between 20 and 29 years old. Thus, it is reinforced that the AIDS epidemic is affecting pregnant women who have a higher vulnerability, such as low education.[11-2]

Laboratory confirmation of infection by most of the study's pregnant women was noted during consultations, and diagnosis was more common in the third trimester, showing a failure, as HIV testing should be prescribed in the first trimester. prenatal. Similar results were found in other studies.[12-3]

Regarding the use of antiretroviral therapy for prophylaxis, a large part of the records were ignored. It is impossible, due to the lack of data in the system on the interventions performed in each case, to accurately assess the quality of prenatal care, compliance with the recommendations for TV prophylaxis and whether all measures were properly performed.

It is estimated that the number of pregnant women who received prophylaxis during childbirth is small compared to other studies in the literature, where percentages greater than 90% were reported in cases of pregnant women who received this therapy.[11]

The most common type of delivery was elective cesarean section. It was considered from accumulated evidence, mainly prior to ART use and without any maternal viral load data, that elective cesarean section reduced the likelihood of vertical transmission of this virus when compared to emergency cesarean section and vaginal delivery. However, according to the Department of Surveillance, Prevention and Control of STIs, HIV/AIDS and Viral Hepatitis, it is cautioned that the most appropriate type of delivery to prevent HIV infection depends mainly on of the mother's health status, regarding the viral load and the correct intervention.[2,14]

Prophylactic antiretroviral therapy was performed in the first 24 hours of life in most children born to mothers with HIV, however, it is noteworthy that in most of the files this question was blank. In a similar study, it was found that in 90.4% of cases both the administration of AZT syrup prophylaxis to the newborn and the withdrawal of breastfeeding were performed in 95.2% of cases.[15]

With regard to child data, there were only three cases of children with HIV over an eight-year period, which may raise questions about whether this number really represents the local reality. The analysis of the epidemiological profile of children with AIDS in the municipality in question was limited due to the low amount of data that could be extracted from MIS files. It is pointed out that the use of secondary data and the possible underreporting of cases can lead to distortions in trends and the construction of small numbers indicators, as well as fluctuations in population estimates.[16]

Among the variables, we highlight the age, which ranged from five to eight years, the gender, which was predominantly female, with a ratio of 2: 1, and the mode of transmission, since all cases occurred by vertical transmission, showing that the observed data, despite progress in preventing vertical transmission of HIV, still reveal a failure in maternal and child care. It was observed in a study aimed at describing the temporal tendency of AIDS incidence and mortality coefficients in children and adolescents that AIDS deaths occurred mainly in male children in the age group of under one year old and brown.[17]

It is noted that the lack of registration in the databases and the small amount of studies focused on the epidemiological profile of children who died from AIDS make a more careful analysis of the cases difficult, thus making it impossible to compare with other studies on the disease theme covered.

According to the spatial analysis of the cases in the urban zone, it was noted that most of the cases were located in the eastern part of the municipality, where neighborhoods such as Baixinha, João Viana and Pai Geraldo are more socially vulnerable than neighborhoods in other areas, since one of these neighborhoods was

created through a migration of people who made the place their home. A spatial analysis of pregnant women is highlighted, similar to this study, made in Ceará, which also indicated neighborhoods with a high number of cases and that the distribution of these cases showed a relationship with the social vulnerability of the place.[18]

In this same context, studies conducted in other regions of the country show that the cases were in places of greater poverty, such as the South and Southeast, indicating the process of AIDS pauperization and the need to prioritize actions in these areas. areas for TV reduction.[1,3,14,16]

In this study, at least two limitations should be considered: first, the use of secondary data, vulnerable to failure to fill out the notification forms, which directly interferes with the disclosure of information that really portrays the profile and management of HIV cases in pregnant women; Secondly, the lack of reporting of HIV cases in children, the results of pregnancies of an HIV-positive mother, made it impossible to assess the management of infection in children.

CONCLUSION

In this study, it was observed through the epidemiological profile of pregnant women with HIV in the city, that they were adolescents and young adults, most with a low education. It is found that a large part used ART during pregnancy and childbirth and the gestational period of the most common diagnosis was the third trimester. It was noted that the children included in the study were notified only in MIS, which made a more detailed analysis of the profile difficult.

An increase in the incidence rates of cases of infected pregnant women was observed, highlighting the need for greater attention to this problem by health services.

With regard to the cases of infected children, it was concluded that few cases were reported, which suggests underreporting and non-monitoring of children exposed to the virus to confirm the diagnosis. Attention is drawn, among the findings, to the amount of information ignored in the notification forms, highlighting the need for greater attention by professionals who fill out these forms.

Through the spatial distribution of cases, it was verified that the urban area has the largest number of cases, revealing areas that presented a higher number of infected pregnant women and which may be places of great social vulnerability.

It is believed that these findings make it possible to adapt interventions according to the specific needs of the population, as well as prioritize resources to the most vulnerable sites of infection in pregnant women, contributing to the reduction of health inequities.

REFERENCES

1. Traebert J, Traebert E, Schuelter-Trevisol F, Cortez Escalante JJ, Schneider IJC. The burden of AIDS: a time series analysis of thirty-five years of the epidemic in Brazil. AIDS care. 2018 Nov;30(11):1413-20. DOI: 10.1080/09540121.2018.1456642

2. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de DST, AIDS e Hepatites Virais. HIV.AIDS. Bol Epidemiol [Internet]. 2015 [cited 2019 June 15];4(1):1-100. Available from: www.AIDS.gov.br › tdf › pub › boletim_epidemiologico_hivAIDS_-_2015

3. Castro RCMB, Gomes SM, Damasceno AKC, Bastos CVG, Araújo LC, Coelho TS. Delivery and birth indicators of seropositive women for the human immunodeficiency virus. Rev RENE. 2018 Nov;19:e33605. DOI: 10.15253/2175-6783.20181933605

4. Silva MJM, Mendes WS, Gama MEA, Chein MBC, Veras DS. Clinical and laboratory profile of children living with vertically transmitted HIV/AIDS in a city in northeastern Brazily. Rev Soc Bras Med Trop. 2010 Jan/Feb;43(1):32-5. DOI: 10.1590/S0037-86822010000100008

5. Chetty T, Thorne C, Coutsoudis A. Preterm delivery and small-for-gestation outcomes in HIV-infected pregnant women on antiretroviral therapy in rural South Africa: results from a cohort study, 2010-2015. PloS One. 2018 Feb; 13(2):e0192805. DOI: 10.1371/journal.pone.0192805

6. Holanda ER, Galvão MTG, Pedrosa NL, Paiva SS, Almeida RLF. Spatial analysis of infection by the human immunodeficiency virus among pregnant women. Rev Latino-Am Enfermagem. 2015 May/June, 23(3):441-9. DOI: 10.1590/0104-1169.0481.2574

7. Ministério do Planejamento, Orçamento e Gestão (BR), Instituto Brasileiro de Geografia e Estatística. Indicadores sociais municipais: uma análise dos resultados do universo do Censo Demográfico 2010 [Internet]. Rio de Janeiro: IBGE; 2011 [cited 2019 Sept 15]. Available from: https://biblioteca.ibge.gov.br/visualizacao/livros/liv54598.pdf

8. Prefeitura de Caxias do Sul. Secretaria Municipal De Saúde de Caxias, Vigilância Epidemiológica. Sistema Nacional de Agravos de Notificação (SINAN). Fichas de notificação/investigação compulsória de HIV em gestante [Internet]. Caxias do Sul: Prefeitura de Caxias do Sul; 2016 [cited 2019 Jan 15]. Available from: https://caxias.rs.gov.br/servicos/saude/vigilancia-a-saude/vigilancia-epidemiologica

9. Prefeitura de Caxias do Sul. Secretaria Municipal De Saúde de Caxias, Vigilância Epidemiológica. Sistema de Informação sobre Mortalidade (SIM). Declaração de óbitos de crianças com HIV/AIDS [Internet]. Caxias do Sul: Prefeitura de Caxias do Sul; 2016 [cited 2019 Jan 15]. Available from: https://caxias.rs.gov.br/servicos/saude/vigilancia-a-saude/vigilancia-epidemiologica

10. Acosta LMW, Gonçalves TR, Barcellos NT. HIV and syphilis coinfection in pregnancy and vertical HIV transmission: a study based on epidemiological surveillance data. Rev Panam Salud Publica. 2016 Dec;40(6):435-43. PMID: 28718492

11. Beck ST, Cauzzo LDC, Vielmo L, Andrade CS. Profile of pregnant women under treatment for human immunodeficiency virus infection. R Epidemiol Control Infec. 2018 July;8(3):210-15. DOI: 10.17058/reci.v8i3.11190

12. Sousa SF, Xavier MP, Borges JCM, Rocha KA. Profile of pregnants with hiv attended at the Gurupi-TO Policlinic. CEREUS. 2015 Sept/Dec; 7(3):163-75. DOI: 10.18605/21757275/cereus.v7n3p163-175

13. Ziebell NS, FEIL AC, Renner FW. Epidemiological profile of HIV positive pregnant women and their newborns in a reference hospital in the interior of Rio Grande do Sul in the 2012-2013 period. Rev AMRIGS [Internet]. 2017 Jan/Mar [cited 2018 Aug 10];61(1):84-7. Available from: https://pesquisa.bvsalud.org/portal/resource/pt/biblio-849325

14. Sales DR. Indução da escolha do parto em pacientes soropositivas. Rev Saúde-UNG-Ser [Internet]. 2019 [cited 2018 Aug 10];12(1 Spe):26. Available from: http://revistas.ung.br/index.php/saude/article/view/3610/2630

15. Silva NJL, Lobato FM, Lopes NLS, Brito AJC, Dias GAS, Cardoso BA, et al. Epidemiologic profile of children born of HIV-Positive mothers in a Metropolitan Region in the Amazon Region. Saúde Pesqui [Internet]. 2018 Sept/Dec [cited 2018 Aug 10];11(3):423-30. Available from: https://pesquisa.bvsalud.org/portal/resource/pt/biblio-970964

16. Melo MC, Ferraz RO, Nascimento JL, Donalisio MR. Incidence and mortality of children and teenagers with AIDS: challenges in the southern region of Brazil. Ciênc Saúde Colet. 2016 Dec;21 (12):3889-998. DOI: 10.1590/1413-812320152112.11262015

17. Melo MC, Ferraz RO, Nascimento JL, Donalisio MR. Incidence and mortality of children and teenagers with AIDS: challenges in the southern region of Brazil. Ciênc Saúde Colet. 2016 Dec;21:3889-98. DOI: 10.1590/1413-812320152112.11262015

18. Sousa AIA; Pinto Júnior VL. Spatial and temporal analysis of AIDS cases in Brazil, 1996-2011: increased risk areas over time. Epidemiol Serv Saúde. 2016 July/Sept;25(3):467-76. DOI: 10.5123/s1679-49742016000300003

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