

Birth conditions of children of women living with HIV

Milena da Silva Soares , Ezequiel Almeida Barros , Janainna Ferreira e Silva , Romila Martins de Moura Stabnow Santos , Ana Cristina Pereira de Jesus Costa , Livia Maia Pascoal , Marcelino Santos Neto , Floriacy Stabnow Santos 

ABSTRACT

The objective was to identify the conditions of birth of children of women living with HIV in the period between 2009 and 2019, at the Regional Maternal and Child Hospital of Imperatriz (MA). Cross-sectional, quantitative, documentary study, with descriptive analysis of the data and carried out in a reference maternity hospital between August 2020 and July 2021. Information from the medical records of HIV-positive pregnant women and their newborn children was included. The results collected 314 medical records, of which 195 were eligible. Regarding the birth conditions of the newborns, in 56.41% the rapid test was negative; 72.82% used post-birth prophylaxis; 75.38% did not receive breast milk; 68.2% received vaccines at birth; 40.51% did not use any medication. 20.51% of the mothers were between 36 and 40 years old; 59.48% did not live in the municipality surveyed; 23.6% were housewives; 65.64 were multipara women; 46.15% were diagnosed with HIV during pregnancy; 67.17% had no coinfections; 82.05% underwent prenatal care; 60.51% used intrapartum prophylaxis; and 77.43% underwent cesarean section. The prenatal and childbirth follow-up of most of these women living with HIV reflected positively on the conditions of birth of their children, being an important strategy, aiming at the non-vertical transmission and prevention of the disease in children.

Keywords: Pregnant, Newborn, Vertical transmission, HIV serodiagnosis.

INTRODUCTION

The evolution of science, more than three decades after the discovery of the human immunodeficiency virus (HIV), has allowed the expansion of knowledge about the disease, its treatment, how it is transmitted, vertical transmission (VT) and antiretroviral therapy (ART) in pregnant women, especially in developing countries¹.

HIV epidemiological data between 2007 and June 2021 recorded 381,793 new cases of HIV in the Brazilian population in the Notifiable Diseases Information System (SINAN). Among these, men represent 69.8% and women 30.2%. With the course of research and ways of reporting, these data may be much more numerous, since the use of compulsory HIV reporting only came into force in 2014, which may mask the real epidemiological situation of the virus in this period addressed².

The recognition of the feminization of HIV has brought to light a new group as a warning center in the epidemic, especially among pregnant women³. During the period from 2000 to

June 2021, 141,025 pregnant women with HIV were notified, of which 37.4% were residents in the Southeast region, followed by the South (29.5%), Northeast (22.3%), North (13.2%) and Midwest (6.3%)².

In the period from 2010 to 2020, infection in pregnant women represented a 30.3% increase in notification rates, that is, an advance of infection over a subgroup of women who are vulnerable and in the reproductive phase. This increase may represent an expansion of prenatal diagnosis and even an advance in HIV VT surveillance².

This fact represents a complication due to the possibility of HIV VT in the childbirth and postpartum phases, in which the transfer of the virus can be maternal-fetal by transplacental route or breastfeeding⁴.

Although ART is a reality, it is still not within the reach of all pregnant women due to the low health care coverage for these women throughout the country. As a result, there is an increase in the infection of newborns that have been exposed to the virus through VT. It is in this scenario that the importance of emphasizing the group of pregnant

women to adopt prophylactic measures to prevent VT and guide pregnant women on the impact of ART⁴ is evident.

With the constant research and deepening on the HIV epidemic, much has changed about how to deal with the virus and the disease. And with the growing exposure of the female group, the need to understand the behavior of this group emerged, in order to develop better health strategies in Brazil to contain the epidemic. Thus, primary health care assumes a prominent position, considering that it is a point of care of the Health Care Network (HCN), where prenatal care is carried out and also surveillance of pregnant women⁵.

In view of all the setbacks that the HIV epidemic has caused among the population, pregnant women living with HIV still face the disadvantage of the possibility of VT, emerging the need to redouble preventive measures, avoiding the spread of the disease. Some of the factors deserve to be highlighted to be evaluated, such as the health institutions for the adoption of protocols, team training and health education for pregnant women about the importance of adhering to ART⁶.

With the increase in the number of pregnant women and newborns in this scenario, being groups affected by HIV, it is pertinent to ask: what is the clinical/obstetric situation of pregnant women living with HIV; and how is the clinical condition of birth of their newborns?

Therefore, it is significant to collect data related to the HIV epidemic among pregnant women and the possibility of VT for their newborns, which may contribute to the implementation of strategies aimed at the health care of this public. Thus, it is relevant to identify the maternal characteristics that are directly reflected in the level of understanding of women in relation to their health situation⁷.

When we understand the cases of children exposed to HIV over a period of time and characterize them in relation to the clinical/epidemiological situation, we can guide the assistance of health professionals and, mainly, nurses to take better actions related to this group. In addition, it serves to verify how the institutions monitor both these pregnant/postpartum women and their

children, verifying failures in coping with these different situations and which are reflected in the condition of monitoring future cases⁸.

In Brazil, studies focused on this theme made it possible to advance the fight against the epidemic by creating measures and governmental programs and public policies already developed, however, there are still gaps in this knowledge that can be filled with new research, which aims to understand how to provide adequate assistance to the pregnant women living with HIV; for this, it is important to know the epidemiological and clinical profile of this public^{9,10}.

Taking into account the need to advance knowledge about the epidemiological reality of HIV in the mother-child binomial in different scenarios throughout Brazil, the objective was to identify the conditions of birth of children of women living with HIV in the period between 2009 and 2019, at the Regional Maternal and Child Hospital of Imperatriz (MA).

METHODS

This is a cross-sectional, documentary study with a quantitative approach, which was carried out in a public maternity hospital of reference in the care of low- and high-risk pregnant women in Imperatriz, Maranhão, being the only public institution that serves pregnant women living with HIV. Survey conducted between August 2020 and July 2021.

The criteria used to include the data in the research were: women, over 18 years old, living with HIV and their children born between 2009 and 2019, who received monitoring during pregnancy at the specialized care service (SCS) of HRMI.

Pregnant women living with HIV and their children, who started living in another city and interrupted follow-up at the SCS, were excluded.

For data collection, a form was prepared by the researchers containing closed questions that were answered through consultation in the medical records of women who received support provided by the SCS between 2009 and 2019.

Data collection surveyed 314 medical records of women living with HIV and 314 medical

records of their newborn children. Of these, 195 medical records of women living with HIV and 195 medical records of their newborn children met the inclusion criteria, and 119 medical records were discarded because they did not have all the information and were not complete.

For the analysis of sociodemographic information and to characterize the study population, the following data were collected: data of the pregnant woman (age, origin, employment status, number of pregnancies, abortions, time of diagnosis, co-infection with another sexually transmitted infection – STI, if she attended prenatal consultations, if she used ART and intrapartum prophylaxis, in addition to knowing the route of delivery); and data of the NB (if he underwent a rapid test, if he underwent prophylaxis at birth, if he was weighed at the first childcare visit, if he received breast milk, if he use ART); the data were organized in tables using *Excel* 2016 spreadsheets, which were tabulated to provide a better understanding. A database was prepared in order to facilitate the process of checking the data and avoid possible errors. Data were analyzed considering the relative and absolute frequencies of the variables studied.

This study followed the recommendations of Resolution 466/2012 of the National Health Council and was approved by the Research Ethics Committee of the Federal University of Maranhão under Opinion number: 2.496.047.

RESULTS

Of the 195 women included in the research, the data showed that: 40 puerperal women (20.5%) were between 36 and 40 years old; 116 (59.5%) came from other cities surrounding the city of Imperatriz; 46 (23.6%) were housewives; 128 (65.6%) were multiparous women; 39 (20.0%) had previous abortions; 90 (46.2%) discovered the disease during pregnancy; 22 (11.3%) had another STI besides HIV; 160 (82.0%) had prenatal care during pregnancy; 106 (54.3%) used ART; 118 (60.5%) used intrapartum prophylaxis for HIV; and the most prevalent route of delivery was cesarean section, in 151 (77.5%) of women (Table 1).

Table 1

Characterization of puerperal women living with HIV treated at a Reference Center, Regional Maternal and Child Hospital from 2009 to 2019, Imperatriz (MA), 2021.

Maternal Variables	N	%
Age		
≤19 years to 21 years	24	12.3
21 to 25 years	24	12.3
26 to 30 years	40	20.5
31 to 35 years	31	15.9
36 to 40 years	7	3.6
Not Informed	69	35.4
Origin		
Imperatriz	70	35.9
Other cities	116	59.5
Not informed	9	4.6
EMPLOYMENT STATUS		
Paid worker	35	17.9
Housewife	46	23.6
Not informed	114	58.5
Pregnancy number		
1 st pregnancy	39	20.0
Multiparous	128	65.6
Not informed	28	14.4
Previous abortion		
Yes	39	20.0
No	127	65.1
Not informed	29	14.9
Moment of diagnosis		
Before pregnancy	61	31.3
During pregnancy	90	46.2
After pregnancy	10	5.1
Not informed	34	17.4
HIV co-infection with other STIs*		
Yes	22	11.3
No	131	67.2
Not informed	42	21.5
Prenatal care during pregnancy		
Yes	160	82.0
No	6	3.0
Not informed	29	15.0
Use of ART** during pregnancy		
Yes	106	54.3
No	51	26.2
Not informed	38	19.5
Intrapartum prophylaxis		
Yes	118	60.5
No	15	7.7
Not informed	62	31.8
Mode of delivery		
Vaginal	19	9.7
Cesarean section	151	77.5
Not informed	25	12.8
Total	195	100

Source: Own authorship, 2021, *STI Sexually Transmitted Infection, **ART Antiretroviral Therapy.

Regarding birth conditions, of the 195 newborns, children of women living with HIV, the following situations were observed: 110 (56.4%) had a negative result by the rapid test; 142 (72.8%) underwent post-birth prophylaxis; 54 (27.7%) weighed between 4,100g and 5 kg at the first visit; 147 (75.4%) did not receive breast milk; 133 (68.2%) were vaccinated at birth; 79 (40.5%) did not use any medication (Table 2).

Table 2

Characterization of newborns, children of postpartum women living with HIV, treated at a Reference Center, Regional Maternal and Child Hospital from 2009 to 2019, Imperatriz (MA), 2021.

Newborn variables		
Rapid HIV test for NB*		
Positive	30	15.4
Negative	110	56.4
Not informed	55	28.2
Used prophylaxis after birth		
Yes	142	72.8
No	17	8.7
Not informed	36	18.5
Weight at 1 st consultation (g**)		
2 to 2.599	9	4.6
2.600 to 3.599	24	12.3
3.600 to 4.099	33	16.9
4.100 to 5.099	54	27.7
5.100 to 6.099	21	10.8
6.100 +	13	6.7
Not informed	41	21.0
Breast milk		
Yes	7	3.6
No	147	75.4
Not informed	41	21.0
Vaccination at birth (BCG and Hepatitis B)		
Yes	133	68.2
No	13	6.7
Not informed	49	25.1
Currently taken medication:		
AZT***	69	35.4
Other	10	5.1
None	79	40.5
Not informed	37	19.0
Total	195	100

Source: Data from the medical records of newborns, 2021;
*NB=Newborn, **grams; ***AZT Zidovudine.

DISCUSSION

The research findings show that the predominant age group of women living with HIV differs from that found in a study carried out in Belém (PA), in which 48% were between 21 and 25 years old¹¹. In the epidemiological Bulletin of the Ministry of Health², the predominant age group was women living with HIV between 20 and 24 years old. These data indicate that these women are of reproductive age and, because they are pregnant, they also discovered the diagnosis of HIV positive.

Regarding the origin of the participants, it was observed that most of them were from cities surrounding the city of Imperatriz (MA). The fact that most of the women in the research reside in other municipalities may make it difficult for this public to access the reference institution due to distance and issues related to transportation, which may culminate in an increase in absences from prenatal consultations, thus decreasing their adherence to treatment and contributing to the increase in VT¹².

Pregnant women living with HIV are also vulnerable due to their unfavorable financial condition, requiring social support that can provide them with quality health care, in addition to access to information and meeting their basic needs¹³.

Pregnancy is characterized by being a distinct moment in the woman's life, since there is concern about the health of her child^{14, 15} combined with the fact that this pregnant woman lives with HIV, which contributes to increase her concern about VT, constituting, therefore, a vulnerable situation in the life of this woman¹⁶.

Prenatal care comprises a period in which the pregnant women have the opportunity to be accompanied and assisted by professionals, thus making its realization of fundamental importance. It is at this moment that women can receive diagnoses and/or prevent health problems that, in the future, may affect the health of their children¹².

It is worth mentioning that when a woman becomes pregnant, even after receiving the diagnosis of being HIV-positive, care should be aimed at accompanying the pregnant woman and reducing the possibility of VT occurring both during pregnancy and in childbirth and postpartum¹².

The Ministry of Health recommends that prenatal care be carried out through monthly consultations that begin in the first trimester of pregnancy, so that it is, in fact, an organized process¹⁷. In view of comprehensive care and the HCN, it is essential that women are accompanied by the SCS and also by primary care concomitantly, as this monitoring guarantees them the most favorable outcomes in this gestation period. Their non-adherence may be related to non-acceptance of pregnancy, which should also be worked on carefully in this period¹⁸.

Regular monitoring of pregnant women by professionals who promote adequate reception and counseling contributes to the early detection of both HIV and other pathogens, such as STIs. The possibility of coinfection with other diseases such as syphilis, hepatitis B, tuberculosis, human papillomavirus (HPV), toxoplasmosis and others concomitantly with the HIV virus in Brazil is a frequent situation in the gestational period and may be related to the socioeconomic situation of these women⁷. The incidence of co-infection of other infectious diseases with HIV is a situation that worries public health, considering that, if they are carriers of other infections, these women will have to undergo more than one type of treatment, constituting a condition that overloads their immune system¹².

According to the Protocol of Therapeutic Guidelines for the Prevention of Vertical Transmission of HIV, Syphilis and Viral Hepatitis¹⁸, ART consists of treatment with antiretrovirals, which aims to reduce the viral load (VL) of the virus and improve people's quality of life. ART is indicated for all audiences, and for pregnant women, it becomes essential due to the risk of VT. Adherence to ART in the gestational period has its effectiveness in reducing VT by 30% to 1% when a decrease in VL is achieved. Pregnant women can start treatment even before the results of the tests performed, and this is independent of the clinical and immunological situation of the woman¹⁸.

The use of ART during pregnancy has been shown to be effective in decreasing VL and, consequently, in reducing VT. This adherence by pregnant women may result from the adoption of prevention goals, women's access to reproductive

planning and testing available for diagnosis before delivery. In addition, another factor responsible for this adherence is that the effectiveness of the treatment overlaps with its adverse effects, which are temporary, combined with the possibility of other drug alternatives¹².

The monitoring of pregnant women living with HIV should be continuous, given the importance of adherence to ART. Pregnant women living with HIV need to be accompanied by a reference care service, where professionals get to know each pregnant woman and her social context and also create strategies that strengthen the bond at all stages, both during pregnancy and during childbirth and the puerperium¹⁹.

Elective cesarean section is recommended from the 38th week of gestation for women with unknown VL or greater than 1,000 copies/ml after 34 weeks of gestation, as it decreases the risk of HIV VT. For pregnant women using ART and with sustained VL-HIV suppression, the indicated route of delivery is vaginal, if there is no indication for cesarean section for another reason. And, in women with VL-HIV <1,000 copies/ml, but detectable, vaginal delivery can be performed if there is no obstetric contraindication. However, it is essential that she receives intravenous AZT¹⁸. This conduct is indispensable, considering that infectious diseases have an increased risk of transmission when there is manipulation of blood, secretion, mucosa and skin that has lost its integrity³.

Once again, it is important for women to receive knowledge about their health status and serological status, in addition to being assiduous in prenatal consultations in order to maintain the examinations as indicated and prescribed by the physician so that an effective screening of the infection can be done, and thus be prepared for the birth of the child¹⁶.

Regarding the newborn, its exposure to HIV is inevitable when the mother is living with HIV. At birth, it must be accompanied, together, by the Specialized Care Service (SCS) and primary health care. The initiation of antiretroviral prophylaxis, indicated for all children exposed to HIV, should occur, still in the delivery room after immediate care, preferably within the first four hours of birth¹⁸.

The rapid test comprises a screening of this infection in the child, and can be applied from one to two months, making it indispensable for diagnostic disclosure after exposure. This study showed that, of the newborns tested, those who, despite exposure, obtained a negative result prevailed. A scenario of mothers living with HIV who give birth to children who, even exposed, ended up not becoming infected with the virus is noticeable, being a definitive result of the use of antivirals and strategies to avoid VT, thus reducing infection by the unborn child²⁰.

The use of ART as a prophylactic measure for both pregnant women and newborns is a recommendation of national and international health agencies. All newborns of mothers living with HIV should receive antiviral therapy as a prophylaxis measure for VT, and this prophylaxis should be evaluated individually¹⁸.

The consequent HIV infection in children can cause some losses related to weight gain, and one of these problems is low birth weight. However, when all VT prevention strategies are adopted, such as: use of ART; adherence to prenatal care; early testing; and intrapartum and NB prophylaxis, these conditions may not present in the child, since 70 to 80% of the infection in the child occurs in the delivery period²¹.

Non-breastfeeding is a strategy to prevent the transmission of the virus to the child, so that artificial milk should be accessible to the mother, who, in turn, should be advised on the proper preparation of this formula to ensure quality nutrition to the child. Although breastfeeding provides all the necessary nutrients and vitamins in the first months, this conduct is necessary, and if women have access to good quality food to offer to their children, the development may be normal²².

Vaccination at birth in newborns exposed to HIV follows the same schedule recommended by the National Immunization Program (NIP). The recommended vaccines at birth are Bacillus Calmette-Guérin-BCG and Hepatitis B, which should be administered within 24 hours of birth¹⁹.

Immunization is indispensable for all audiences in order to ensure the protection and good development of the children. And, in children infected with HIV, BCG is essential, in view

of the possibility of Tuberculosis-HIV coinfection that can and should be prevented; this coinfection can also be related to hepatitis B, common in many cases, which makes immunization indispensable in exposed children, to avoid future morbidities²³.

As for the use of medications by the exposed children, they receive drug therapy as soon as they are born, and this is administered for four weeks. After this procedure, if these children are tested non-reactive for HIV, they will not need to undergo ART. If there is a need to use drugs, it is important that these children and their family have pharmaceutical surveillance, professional help and monitoring aimed at the effectiveness of the children's immune system²⁴.

In this investigation, it was noted that women with HIV and their children need quality care, and it is essential to promote permanent training among health professionals so that they understand the vulnerability of this audience and their expectations regarding their right to be a mother.

As a limitation of this study, we can mention the lack of complete data, which could be observed in all variables, presented in the part that refers to "not informed". This lack of filling out the notification forms and medical records of these women and their newborns can impair the work to be developed by professionals, which makes the care fragmented. It is necessary that the records are effectively made so that the care provided in the service is evaluated⁷.

CONCLUSION

It is concluded that the prenatal and child-birth monitoring of most of these women living with HIV was directly reflected in the birth conditions of their children. This constitutes an important strategy aimed at non-VT and disease prevention in children.

In this scenario, the findings of this research contribute to fill a gap in studies on the prognoses of children born to mothers living with HIV. However, the good prognoses of this mother and child are not extended to all, even with all existing strategies to provide care to pregnant women living with HIV and newborns exposed

to the virus. To combat VT, it is necessary that this audience of women receive knowledge provided by the health education system. Thus, depending on their adherence to the proposal, they will be able to understand the importance of this monitoring at all stages of pregnancy, which will be reflected in the health of the child being generated.

REFERENCES

1. Mouafo LCM, Dambaya B, Ngoufack NN, Nkenfou CN. Host molecular factors and viral genotypes in the mother-to-child HIV-1 transmission in sub-Saharan Africa. *Journal of Public Health in Africa*. [Internet]. 2017 [acesso em 2021 ago 20]; 8(1): 16-22. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5510234/pdf/jphia-8-1-594.pdf>
2. Brasil. Ministério da Saúde. Boletim Epidemiológico Secretaria de Vigilância em Saúde. Ministério da Saúde. Semana epidemiológica 52. Número Especial; Dez. 2021. [acesso em 2022 dez 15]; ISSN 1517 1159. Disponível em: <https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/especiais/2021/boletim-epidemiologico-especial-hiv-aids-2021.pdf>
3. Lima SS, Silva LCS, Santos MV, et al. HIV na gestação: pré-natal, parto e puerpério. *Ciência & Saúde*. [Internet]. 2017 [acesso em 2021 ago 20]; 10 (1):56-61. Disponível em: <https://doi.org/10.15448/1983-652X.2017.1.22695>
4. Neris LS, Paiva SL, Lemos LR, et al. O risco da existência da transmissão vertical em gestantes portadores do HIV. *Revista Brasileira Interdisciplinar de Saúde*. [Internet]. 2019 [acesso em 2021 jun 2]; 1 (4): 77-82. Disponível em: <https://revistarebis.rebis.com.br/index.php/rebis/article/view/56/52>
5. Bertagnoli MSFF, Figueiredo MAC. Gestantes soropositivas ao HIV: maternidade, relações conjugais e ações da psicologia. *Psicol. cienc. prof.* [Internet]. 2017 [acesso em 2021 jun 2]; 37(4): 981-994. Disponível em: <https://doi.org/10.1590/1982-3703004522016>.
6. Rodriguez VJ, LaCabe RP, Kyle Privette KC, et al. The Achilles' heel of prevention to mother-to-child transmission of HIV: Protocol implementation, uptake, and sustainability. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*. [Internet]. 2017 [acesso em 2021 jun 2]; 14(1): 38-52. Disponível em: <https://doi.org/10.1080/17290376.2017.1375425>
7. Bick MA, Ferreira T, Sampaio CO, et al. Perfil de gestantes infectadas e crianças expostas ao HIV atendidas em serviço especializado do sul do Brasil. *Rev Bras Saúde Materno Infantil*. [Internet]. 2018 [acesso em 2021 ago 12] 18 (4): 791-801. Disponível em: <https://doi.org/10.1590/1806-93042018000400007>
8. Santos VMS, Rodrigues GS, Batista GC, et al. Análise do perfil epidemiológico de crianças expostas ao HIV no Estado de Sergipe entre os anos de 2008-2019. *Brazilian Journal of Health Review*. [Internet]. 2020 [acesso em 2021 ago 12]; 3(4): 8594-8618. Disponível em: <https://www.brazilianjournals.com/index.php/BJHR/article/view/13431>
9. Carvalho MO, Figueiredo MN, Rolemberg AS, et al. Soror-reversão de crianças expostas ao vírus da imunodeficiência humana. *Brazilian Journal of Health Review*. [Internet]. 2019 [acesso em 2021 ago 12]; 2(4): 3265-3282. Disponível em: <https://brazilianjournals.com/index.php/BJHR/article/view/2228>
10. Silva HHF, Santos WSS, Silva FMV, et al. Assistência de enfermagem à gestante HIV positivo durante o pré-natal: uma revisão integrativa. *Revista Eletrônica Acervo Saúde*. [Internet]. 2021 [acesso em 2021 jul 20]; 13(5): 1-10. Disponível em: <https://acervomais.com.br/index.php/saude/article/view/7190/4555>
11. Figueiredo Júnior AM, Silva SC, Lima GLOG, et al. Perfil epidemiológico de gestantes/puérperas soropositivas para o HIV em uma maternidade de referência em Belém-PA. *Revista Eletrônica Acervo Saúde*. [Internet]. 2019 [acesso em 2021 ago 20]; 11(14): 1-10. Disponível em: <https://acervomais.com.br/index.php/saude/article/download/1294/707/>
12. Serafim PM, Gesuino DB, Machado LB, et al. Perfil epidemiológico de mulheres soropositivas para HIV em acompanhamento pré-natal. *Revista da AMRIGS*. 2020 [Internet]. [acesso em 2021 jul 20]; 64(4): 722-729. Disponível em: https://www.researchgate.net/profile/David-Gesuino/publication/351884255_Perfil_epidemiologico_de_mulheres_soropositivas_para_HIV_em_acompanhamento_pre-natal/links/60ae91b492851c168e439728/Perfil-epidemiologico-de-mulheres-soropositivas-para-HIV-em-acompanhamento-pre-natal.pdf?origin=publication_detail
13. Fortes JMS, Silva BA, Araújo RV. Assistência de enfermagem às gestantes diagnosticadas com HIV no pré-natal: Uma revisão integrativa. *Research, Society and Development*. [Internet]. 2021 [acesso em 2021 jul 20]; 10(6): 1-13. Disponível em: <https://rsdjournal.org/index.php/rsd/article/download/15504/13772/199024>
14. Tibes-Cherman CM, Camargo CRM, Flores LJR, et al. Perfil clínico da gestação tardia em um município brasileiro de fronteira. *Enfermagem em Foco*. [Internet]. 2021 [acesso em 2017 jan 2]; 12(2): 223-239. Disponível em: <http://revista.cofen.gov.br/index.php/enfermagem/article/download/3571/1123>
15. Zanatta E, Pereira CRR, Alves APA. A experiência da maternidade pela primeira vez: as mudanças vivenciadas no tornar-se mãe. *Pesqui. prá. Psicossociais*. [Internet]. 2017 [acesso em 2021 ago 20]; 12(3): 1-16. Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1809-89082017000300005&lng=pt&nrm=iso.
16. Silva SS, Nery IS, Carvalho NAR, et al. A Enfermagem e a Prevenção da Transmissão Vertical do HIV: uma revisão integrativa. *Ver. Reme*. [Internet]. 2018 [acesso em 2021 ago 20]; 11(1): 95-104. Disponível em: <https://www.reme.org.br/artigo/detalhes/1017>

17. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Atenção ao pré-natal de baixo risco [Internet]. Ministério da Saúde. Secretaria de Atenção à Saúde. 1. ed. rev. Brasília: Editora do Ministério da Saúde, 2013. Disponível em: https://bvsmms.saude.gov.br/bvs/publicacoes/atencao_pre_natal_baixo_risco.pdf
18. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Protocolo Clínico e Diretrizes Terapêuticas para Prevenção da Transmissão Vertical do HIV, Sífilis e Hepatites Virais. [Internet]. Ministério da Saúde, Secretaria de Vigilância em Saúde, Departamento de Doenças de Condições Crônicas e Infecções Sexualmente Transmissíveis. Brasília: Ministério da Saúde; 2022. Disponível em: http://bvsmms.saude.gov.br/bvs/publicacoes/protocolo_clinico_hiv_sifilis_hepatites.2.ed.rev.pdf
19. Santos SM, Santos DSS, Bispo TCF, et al. Transmissão vertical do HIV: dificuldade na adesão ao pré-natal. *Revista Enfermagem Contemporânea*. [Internet]. 2017 [acesso em 2021 jun 20]; 6(1): 56-61. Disponível em: <https://doi.org/10.17267/2317-3378rec.v6i1.1109>
20. Sanjeeva GN, Sathenahalli VB. HIV-exposed Uninfected Children: A Vulnerable and Neglected Population. *Indian Pediatrics*. [Internet]. 2019 [acesso em 2021 jun 20]; 56(6): 461-462. Disponível em: <https://link.springer.com/article/10.1007/s13312-019-1568-5>
21. Almeida FJ, Kochi C, Sáfadi MP. Influence of the antiretroviral therapy on the growth pattern of children and adolescents living with HIV/AIDS. *J Pediatr*. [Internet]. 2019 [acesso em 2021 jun 20]; 95(S1): 95-101. Disponível em: <https://reader.elsevier.com/reader/sd/pii/S002175571831132X?token=D451D154A05F15431F0B7190843877334461F4ADB747815D7F3FF7F1B547212A42A289E7DE00781CEB141048BEDC2CB1&originRegion=us-east-1&originCreation=20220324212638>.
22. Alvarenga WA, Nascimento LC, Leal CL, et al. Mothers Living With Hiv: Replacing Breastfeeding By Infant Formula. *Rev Bras Enferm*. [Internet]. 2019 [acesso em 2021 jul 25]; 72(5):1153-60. Disponível em: <http://dx.doi.org/10.1590/0034-7167-2017-0880>.
23. Braga BR, Filgueiras SRD, Lima AMM. Imunização em crianças infectadas pelo hiv: uma leitura de cobertura vacinal. *Revista de Enfermagem da UFJF*. [Internet]. 2018 [acesso em 2021 jul 25]; 4(2): 135-140. Disponível em: <https://doi.org/10.34019/2446-5739.2018.v4.14026>
24. Pedroso WM, Vitorino KA. Atenção farmacêutica no tratamento de crianças portadores da aids/HIV. *Revista Científica da Faculdade de Educação e Meio Ambiente*. [Internet]. 2019 [acesso em 2021 jul 25]; 10 (1): 34-45. Disponível em: <https://doi.org/10.31072/rcf.v10iedesp.799>

MSS, Substantial contribution to study design or data interpretation; Participation in drafting draft; Compliance to be responsible for the accuracy or completeness of any part of the study.

EAB, Substantial contribution to study outline or data interpretation; Participation in drafting draft;

JFS, Substantial contribution to study outline or data interpretation; Participation in drafting draft;

RMMSS, Substantial contribution to study outline or data interpretation; Participation in drafting draft;

ACPJC, Participation in the review and approval of the final version; Compliance to be responsible for the accuracy or completeness of any part of the study.

LMP, Participation in the review and approval of the final version; Compliance in being responsible for the accuracy or completeness of any part of the study.

MSN, Substantial contribution to study outline or data interpretation; Participation in drafting draft;

FSS, Substantial contribution to study outline or data interpretation; Participation in drafting draft version; Participation in review and approval of final version; Compliance to be responsible for the accuracy or completeness of any part of the study.

Sources of support or funding

Federal University of Maranhão. PIBIC/CNPq/FAPEMA/UFMA 2020-2021. AGEUFMA NOTICE No. 013/2020.

This study was funded by the Coordination for the Improvement of Higher Education Personnel – Brazil (CAPES) – Finance Code 001.

Corresponding Author:
Floriacy Stabnow Santos
floriacy.stabnow@ufma.br

Editor:
Profa. Dra. Ada Clarice Gastaldi

Received: feb 05, 2023
Approved: jul 12, 2023
