Diversitas Journal
ISSN 2525-5215
Volume 9, Número Issue 4 (Oct./Dec. 2024) p. 1913 – 1924
https://diversitasjournal.com.br/diversitas_journal

Epidemiological profile of pregnant women infected with the human immunodeficiency virus in São Luís, Brazil, from 2019 to 2022

PIRES, Raynara Rodrigues[1]; ARAÚJO, Katiane Shirley Machado[2]; SILVA, Jéssica Gomes[3]; FERRO, Renata Rocha[4]; SOUSA, Bruno Costa[5]; SOUSA, Gabriel Pereira de[6]; CORREIA, Assíria de Araújo Chaves[7]; TEIXEIRA, Phelipe Austríaco[8]; SANTOS, Denise Alves[9]; NETO, Neemias Costa Duarte[10]; ARAGÃO, Francisca Bruna Arruda[11].

[1] 0009-0001-6529-5490; Universidade Ceuma; São Luís, Maranhão (MA), Brasil; raynararodrigues97@gmail.com.
[2] 0009-0002-9156-1390; Universidade Ceuma. São Luís, Maranhão (MA), Brasil. Kattyy_araujo@yahoo.com.br.
[3] 0009-0005-3542-1168; Universidade Ceuma. São Luís, Maranhão (MA), Brasil; jessica_g.s@hotmail.com.
[4] 0009-0008-4743-2085; Universidade Ceuma. São Luís, Maranhão (MA), Brasil; renatarof@yahoo.com.br.
[5] 0009-0009-2754-2399; Universidade Ceuma. São Luís, Maranhão (MA), Brasil; brunos.bs925@gmail.com.
[6] 0000-0003-3017-4207; Universidade Ceuma. São Luís, Maranhão (MA), Brasil; gabrielpsousa.med@gmail.com.
[7] 0000-0001-6901-2614; Universidade Ceuma. São Luís, Maranhão (MA), Brasil; assiria.solange@gmail.com.
[8] 0000-0003-2611-6215; Universidade Estadual da Região Tocantina. Imperatriz, Maranhão (MA), Brasil; ph-austriaco@hotmail.com.
[9] 0000-0003-2959-0246; Universidade de São Paulo. São Paulo (SP), Brasil; deniise.alves@hotmail.com.
[10] 0000-0003-2513-0947; Universidade Federal do Maranhão. São Luís, MA, Brasil. neemias.duarte@discente.ufma.br.
[11] 0000-0002-1191-0988; Universidade Ceuma. São Luís, Maranhão (MA), Brasil; aragao_bruna@hotmail.com.

ABSTRACT

The Human Immunodeficiency Virus is a pathogen that causes one of the most well-known sexually transmitted infections in the world. It mainly affects immune cells and is transmitted through contact with fluids from infected people. HIV infection in pregnant women is an alarming problem, given its capacity for vertical transmission. The aim was to describe the epidemiological profile of HIV-infected pregnant women in the municipality of São Luís - MA, from 2019 to 2022. This is a retrospective, descriptive, quantitative study. The data was obtained from compulsory notification forms from SINAN, with information on HIV-positive pregnant women notified from 2019 to 2022. There was a greater predominance of cases between 25 and 35 years old (47.0%), self-declared brown (76.0%), with complete high school or incomplete higher education (39.2%). With regard to the gestation period, 48.6% were in the third trimester; 56.3% were tested before prenatal care and 37.4% during prenatal care and 89.2% attended follow-up appointments. Around 22.2% had an elective cesarean section, with 37.6% live births. Schooling, laboratory evidence of HIV and pregnancy progression showed significant differences. Adequate prenatal care therefore acts to provide early management, diagnosing and treating infected pregnant women, minimizing harm to maternal and fetal health

ARTICLE INFORMATION

Article Process:
Submetido: 05/02/2024
Aprovado: 10/31/2024
Publicação: 11/08/2024

Keywords:
HIV seropositivity. Epidemiology. Prenatal care

RESUMO

O Vírus da Imunodeficiência Humana é um patógeno que causa uma das infecções sexualmente transmissíveis mais conhecidas no mundo e afeta, principalmente, células imunes, transmitido mediante contato com fluidos de pessoas infectadas. A infecção de gestantes pelo HIV surge como uma problemática alarmante, visto sua capacidade de transmissão vertical. Objetivou-se descrever o perfil epidemiológico das gestantes infectadas pelo HIV, no município de São Luís - MA, no período de 2019 a 2022. Trata-se de um estudo retrospectivo, descritivo, quantitativo. Os dados foram obtidos por fichas de notificação compulsórias do SINAN, com informações sobre gestantes HIV positivas, notificadas de 2019 a 2022. Observou-se maior predomínio de casos entre 25 a 35 anos (47,0%), autodeclaradas pardas (76,0%), com ensino médio completo ou superior incompleto (39,2%). Em relação ao período de gestação, 48,6% encontravam-se no terceiro trimestre; 56,3% realizaram o teste antes do pré-natal e 37,4% durante o pré-natal e 89,2% realizaram as consultas de acompanhamento. Cerca de 22,2% realizaram cesárea eletiva, com 37,6% de nascido vivo. A escolaridade, evidência laboratorial do HIV e a evolução da gravidez apresentaram diferenças significativas. Portanto, o acompanhamento pré-natal adequado atua no manejo precoce, diagnosticando e tratando as gestantes infectadas, minimizando os agravos à saúde materna e fetal.

***Palavras-Chave*:**
Soropositividade para HIV. Epidemiologia. Cuidado pré-natal

DOI: 10.48017/dj.v9i4.3031

Introduction

The Human Immunodeficiency Virus (HIV) belongs to the retrovirus family, characterized by the use of reverse transcription to replicate its genetic material. This pathogen causes one of the most widely recognized sexually transmitted infections (STIs) and exhibits distinct properties compared to other viruses, such as a prolonged incubation period before the onset of symptoms, the ability to infect blood and nervous system cells, and the suppression of the immune system (BRASIL, 2022).

HIV transmission occurs through contact with bodily fluids of infected individuals, such as blood, semen, vaginal secretions, and breast milk. Once infection is established, the immune system is compromised, particularly targeting CD4+ T cells, which play a crucial role in acquired immunity. As these cells are attacked and their function diminishes, the body becomes progressively immunocompromised, facilitating the onset of other diseases in their more severe forms. After an HIV diagnosis, it is essential to initiate antiretroviral treatment, which contributes to a better prognosis and quality of life (PAHO, 2021).

Given the high social stigma associated with the disease, the confirmation of an HIV diagnosis can be difficult for anyone to accept. However, for pregnant women, this process is even more complex due to the high social, cultural, family, and personal expectations generated by pregnancy. Motherhood brings significant changes, and during the postpartum period, women experience both physiological and emotional shifts, which can make them more sensitive, sad, tearful, and sometimes frustrated (LIMA; MORAES; REGO, 2019).

An HIV diagnosis is often accompanied by fears of discrimination from professionals or family members, as well as anxiety about how to proceed. At this stage, the idealized notion of a "perfect pregnancy" may be shattered, as thoughts become focused on the possibility of abandonment and rejection by the partner and close relatives. However, specialized support and the provision of information can change this reality during pregnancy (RAHIM et al., 2017).

In this context, concern arises about the risk of vertical transmission to the newborn, which primarily occurs during labor, in some cases in utero, and lastly, through breastfeeding. Once aware of this risk, preventive measures and family support help these women feel more secure and continue treatment with peace of mind (LIMA et al., 2017).

According to the Epidemiological Bulletin from the Ministry of Health, in 2019 and 2020, 47,921 new cases of HIV infection were reported among adults, of which 12,100 were in pregnant women. Over the past 10 years, there has been a 30.3% increase in the HIV detection rate among pregnant women. In 2010, the rate was 2.1 cases per 1,000 live births, and by 2020, it had risen to 2.7 per 1,000 live births (BRASIL, 2021).

Therefore, public policies aimed at HIV prevention, early detection, and vertical transmission prevention are essential for controlling the epidemic and reducing new cases. In Brazil, the Ministry of Health has implemented various strategies in these areas, with integrated public health actions involving education, distribution of preventive supplies, and medical assistance (BRASIL, 2022).

HIV prevention is based on educational campaigns raising awareness about safe practices and protection. Strategies include condom distribution, routine and rapid testing, Pre-Exposure Prophylaxis (PrEP) and Post-Exposure Prophylaxis (PEP), and sexual education. The latter includes school and community campaigns aimed at increasing awareness about condom use and safe sexual practices (LIMA et al., 2017).

Vertical transmission, which occurs from mother to baby during pregnancy, childbirth, or breastfeeding, is a significant concern in public HIV policies. Actions taken by the Ministry of Health aim to eliminate this form of transmission through prenatal care, antiretroviral use during pregnancy and childbirth, and follow-up care for the newborn (BRASIL, 2021).

Given this, studies highlighting sociodemographic, socioeconomic, and other relevant factors are of great importance in guiding effective public policies for this target group. Therefore, this study aims to describe the epidemiological profile of pregnant women infected with the human immunodeficiency virus in São Luís from 2019 to 2022. Considering the complexity of identification, care, and treatment, the guiding question emerges: What is the profile of pregnant women infected with the human immunodeficiency virus in São Luís, MA?

Methodology

It is a retrospective, descriptive, and quantitative study, that had as its target population pregnant women, HIV carriers, who were notified on the period of 2019 to 2022, in the city of São Luís – MA.

The city of São Luís, the capital of the state of Maranhão, is located on the island of Upaon-Açu. According to the last IBGE (Brazilian Institute of Geography and Statistics, in English) (2022), the estimated population is 1,037,775 inhabitants, considered the most populous city of the state and the fourth most populous in the Northeast region. It covers a territorial area of 583,063 km², about 1,779.87 inhab/km².

Data was obtained through compulsory notification forms of the SINAN's database (System of Information of Notification Grievance) with the information referring to the notification forms of HIV-positive pregnant women, obtained from the Department of Informatics of the Unified Health System (DATASUS).

It included the pregnant women HIV carrier, by year of notification, in the period of 2019 to 2022, rural and urban residents, above 18 years of age and domiciliated in the city of study. Forms doubled, incomplete and those which were not in the sample cut-off were excluded.

After being computed, data collected were presented through a spreadsheet in Excel (Microsoft Excel 2016), and organized according to the pre-established variables: gestational factors (trimester of diagnosis, pregnancy evolution antiretrovirals to prophylaxis, laboratory HIV evidence, labor type, use of antiretroviral medication during the labor, period when the baby started taking antiretroviral medication and prenatal care) and sociodemographic data (age, race/ethnicity, schooling and gestation period). The information was then shown in graphs drawn up using GraphPad Prism® software version 9.0 and in tables built using Microsoft Excel®, for better visualization of the results.

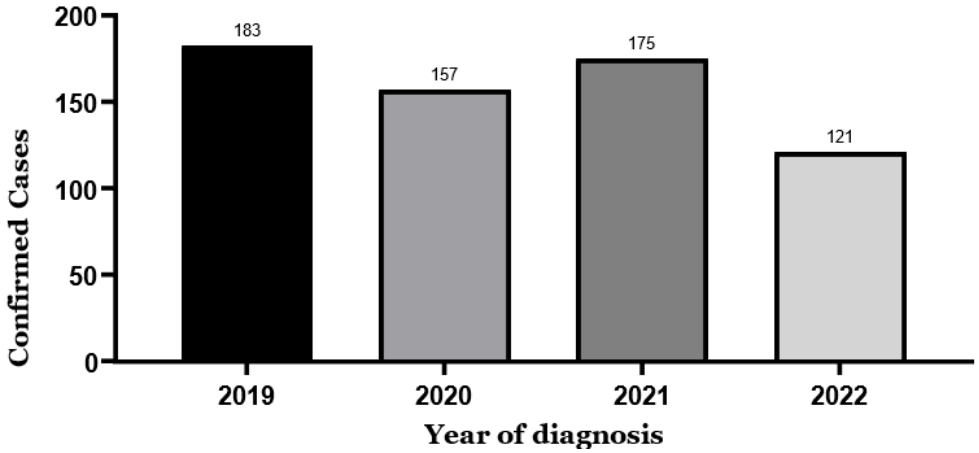
The information was analyzed using STATA software version 13.0 and absolute and relative frequencies were calculated using descriptive statistics. The chi-square test was used to assess the association between two categorical variables, comparing the frequency analyzed in each category with the expected Frequency.

Results

The analysis of HIV cases in pregnant women in the city of São Luís, Maranhão, unveils a varied behavior during the years. The sample was composed by 636 cases. In 2019, there were 183 cases which were decreased to 157 in 2020 (-14.21%). In 2021, the cases increased to 175 (+11.46%), posteriorly the was a decrease in 2022 to 121 (-30.86%).

Graph 1.

Distribution of HIV cases in pregnant women between 2019 and 2022. São Luís, MA, Brazil.



Source: Authors, 2024.

It is highlighted the high HIV incidence in pregnant women in the age range of 25 to 35 years old (47.0%), followed by those between 18 and 25 years old (30.5%). Pregnant women under 18 years old presented lower prevalence to the infection. In relation to the gestational period, biggest part of the pregnant were in the 3rd trimester (48.6%) followed by the 2nd trimester (27.5%) and by the 1st trimester (21.1%).

About the race, most of the pregnant women were brown skinned (76%), followed by white (11.8%) and black women (10.3%). About the education level, most part of the women have complete high school or incomplete superior education (39.2%), followed by incomplete elementary school (21.5%) and complete elementary school/incomplete high school (24.7%).

All these findings were organized on the following table:

Table 1.

Sociodemographic profile of the pregnant women diagnosed for HIV between 2019 and 2022.

	Variables	N	%
Age Range	Until 18 years old	59	9,3%
	From 18 to 25 years old	194	30,5%
	From 25 to 35 years old	299	47,0%
	From 35 to 45 years old	82	12,9%
	Until 18 years old	2	0,3%
Gestation Period	1st trimester	134	21,1%
	2nd trimester	175	27,5%
	3rd trimester	309	48,6%
	Ignored	16	2,5%
Race	White	75	11,8%
	Black	65	10,3%
	Yellow	5	0,8%
	Brown	482	76,0%
	Indigenous	1	0,2%
	It does not apply	2	0,3%
	Ignored	6	0,9%
Education Level	Incomplete Elementary School	137	21,5%
	Complete Elementary School/Incomplete High School	157	24,7%
	Complete High School/Incomplete Higher Education	249	39,2%
	Complete Higher Education	19	3,0%
	Ignored	74	11,6%

Source: Authors, 2024.

This sociodemographic data provides essential information about the profile of the pregnant women involved in the study of HIV, highlighting the necessity of prevention

approaches and care adapted to different age ranges, gestation stages and sociocultural characteristics, aiming an adequate and effective attention.

About the clinical variables analyzed (table 2 above), most of the pregnant women realized the test before prenatal care (56.3%) or during the prenatal (37.4%), highlighting the importance of early infection detection. A smaller proportion of pregnant women had laboratory evidence of HIV during labor (2.8%) or after labor (0.6%).

Table 2.

Clinical variables of the pregnant women diagnosed with HIV between 2019 and 2022.

Variables		n	%
Laboratory evidence of HIV	Ignored	18	2.8%
	Before prenatal	358	56.3%
	During prenatal	238	37.4%
	During labor	18	2.8%
	After labor	4	0.6%
Had prenatal care?	Yes	567	89.2%
	No	40	6.3%
	Ignored	29	4.6%
Use of antiretrovirals for prophylaxis	Yes	409	64.3%
	No	128	20.1%
	Ignored	99	15.6%
Type of labor	Vaginal	91	14.3%
	Elective cesarean section	141	22.2%
	Emergency cesarean section	116	18.2%
	Ignored	258	40.6%
Used antiretroviral prophylaxis during labor delivery	Yes	303	47.6%
	No	293	46.1%
	Ignored	40	6.3%
Evolution of pregnancy	Born alive	239	37.6%
	Stillborn	16	2.5%
	Miscarriage	8	1.3%
	Not applicable	49	7.7%
	Ignored	324	50.9%
Start of prophylaxis in children (in hours)	First 24h after birth	244	384%
	After 24h of birth	5	0.8%
	Not applicable	11	1.7%
	Not performed	42	6.6%
	Ignored	334	52.5%

Notas: Autores, 2024.

Even so, about prenatal care, the vast majority (89.2%) attended the follow-up appointments, while a smaller portion did not (6.3%). About the use of antiretrovirals for prophylaxis, 64.3% received the treatment, even though a significant portion (20.1%) has not used it.

About the type of labor, 22.2% have done the elective cesarean section, followed by vaginal labor (14.3%) and emergency cesarean section (4.7%). About the evolution of the pregnancy, there was 37.6% of born alive, while a smaller proportion experienced stillborn (2.5%) or miscarriage (1.3%). Regarding the start of prophylaxis in children, it was observed that most of the pregnant women began in the first 24 hours after birth (38.4%), although a significant proportion did not take prophylaxis (6.6%).

The chi-square test is a statistical procedure used to evaluate the association between two categorical variables. It compares the observed frequency in each category with the expected frequency. The analysis of the results of the chi-square test (table 3) revealed significant differences in various variables analyzed in this study.

Table 3.

Chi-square test results

Variable	Chi-square	p-value	Results
Education level	38.619	**0.000**	Rejects H0 – There is difference between year and education level.
Laboratory evidence of HIV	32.066	**0.001**	Rejects H0 – There is difference between laboratory evidence of HIV and year
Pregnancy evolution	149.978	**0.000**	Rejects H0 – There is difference between evolution of pregnancy and year.
Age range	15.512	0.215	Accepts H0 – There is no difference between age range and year.
Had prenatal care?	7.142	0.308	Accepts H0 – There is no difference between the completion of prenatal care and year
Used antiretroviral prophylaxis during labor delivery	115.827	**0.000**	Rejects H0 – There is difference between the use of antiretroviral prophylaxis and year.
Start of prophylaxis in children (in hours)	179.850	**0.000**	Rejects H0 – There is difference between the beginning of prophylaxis in children and year.
Gestation period	23.113	**0.027**	Rejects H0 – There is difference between gestation period and year.

Variable	Chi-square	p-value	Results
Race	19.374	0.197	Accepts H0 – There is no difference between race and year.
Type of labor	174.959	**0.000**	Rejects H0 – There is difference between type of labor and year.
Use of antiretrovirals for prophylaxis	22.710	**0.001**	Rejects H0 – There is difference between use of antiretrovirals for prophylaxis, and year.

Source: Authors, 2024.

According to the data presented on table 3, education level of pregnant women presented a statistically significant difference, highlighting an association between the education level and the study period. In the same way, laboratory evidence of HIV and the evolution of pregnancy also presented significant differences, suggesting a relation between these variables and year of the study. On the other hand, no significant differences were found between age group, prenatal care, race and use of antiretrovirals for prophylaxis. However, the type of delivery and the start of prophylaxis in the child showed statistically significant differences, indicating an association between these variables and the year the study was carried out.

Discussion

This study identified 636 cases of HIV-infected pregnant women with a predominance in the 18-35 age group, representing 77.5% of the total, which is related to the fertile age considered by the WHO (World Health Organization). According to Trindade et al. (2021), this prevalence may be associated with greater unprotected sexual activity and pregnancy rates.

About race/color, there was a higher prevalence of brown pregnant women (76.0%). Similarly, the 2021 national HIV epidemiological bulletin identified a predominance of cases among brown women (51.8%) (BRASIL, 2022). In contrast, a study carried out in the city of Curitiba between 2018 and 2020 reported 307 cases with a higher prevalence among white people (46.1%), which may be associated with the fact that the population in the south/southeast is predominantly white (Perotta et al., 2023). In this way, it is possible to correlate these high rates in certain races/colors with ethnic groups with a higher demographic concentration.

About prenatal care, most patients (89.2%) had it and 6.3% did not have the necessary follow-up during pregnancy. This shows a high rate of adherence in the region evaluated, which

was higher than the national average, which was 84.0% and that of analyses such as the study carried out in Amapá, which was 81.8% (Teixeira, 2020).

Although the majority had prenatal care, 40 pregnant women (6.3%) had not, which may be associated with socioeconomic and demographic barriers that make it difficult (MOCELIN et al., 2023). The importance of satisfactory monitoring during the gestational period should also be emphasized. Furthermore, it is not possible to say that the follow-up was carried out as recommended by the Ministry of Health, with all the tests and number of appointments, according to gestational age, since the compulsory SINAN forms do not provide these specific points (Mario et al., 2019).

In São Luís do Maranhão, Brazil, 56.3% of women were aware of their HIV infection before prenatal care, 37.4% learned about it during pregnancy monitoring and 2.8% obtained laboratory evidence during childbirth. The study by Trindade et al. (2021) showed that prenatal care acted as a trigger for HIV diagnosis, since 50.3% (n=1207) and 44.3% (n=218) of women discovered their HIV infection during prenatal care, respectively. This data underpins this strategy as essential for maternal and child health, to screen for chronic and infectious diseases that may pose a risk.

As a precautionary measure, elective cesarean sections are recommended. However, according to Ministry of Health guidelines, if the viral load is considered undetectable at the next delivery, the obstetric indication prevails and, in some cases, the woman's desire to experience a normal delivery is taken into consideration (Brasil, 2015). In the capital of Maranhão, only 91 women had normal births and 141 underwent elective cesarean sections.

When evaluating the start of prophylaxis in the child in the postpartum period, 38.4% of babies started within the first 24 hours of birth and 0.8% after one hour of birth. It is recommended that prophylaxis is started early, in the first hours of life, and in cases where prophylaxis is indicated after 48 hours of birth, it should be analyzed individually (BRASIL, 2021). Vertical transmission of HIV can be associated with other diseases, such as toxoplasmosis, so that failure to treat it leads to multisystemic sequelae (Brasil, 2014).

When analyzing the correlation between schooling and exposure to HIV, De Jesus et al. (2016) described the low level of schooling as a factor that influences the occurrence of this infection. Although the data from São Luís shows that the majority of those infected have completed high school/incomplete higher education, it cannot be said that pregnant women fully understand the problem of STIs.

However, studies show that individuals who consider themselves sufficiently informed reduce their perception of the risk of acquiring HIV and highlight the complexity associated with HIV prevention (Bezerra et al., 2012). Thus, the high number of infections may be linked to cultural, social and socioeconomic factors, which is analogous to what was observed by Soares et al. (2017).

Finally, the gestational data extracted in this study show that most of the pregnant women had good adherence to prenatal care, with 64.3% reporting the use of prophylaxis during pregnancy. And during childbirth, the recommended antiretroviral prophylaxis was taken by 47.6% of the women analyzed. This corroborates the findings of Mello et al. (2020), who found that factors such as schooling, gestational age at the start of prenatal care and the number of prenatal care visits were statistically associated with adherence to treatment and consequent undetectable viral load during pregnancy.

Final considerations

This study concluded that effective prenatal care is a good predictor of protection for pregnant women and children. The consultations carried out during this period are responsible for identifying and treating diseases, especially those with vertical transmission, such as STIs. With the data obtained by the study, it was possible to filter the population profile for direct health education interventions and thus achieve municipal/national health targets for reducing the infection rate. Therefore, effective prenatal care helps in the early diagnosis and treatment of infected pregnant women, to reduce risks to the fetus and the pregnant woman.

The sociodemographic profile of brown women, with high school education and between 18 and 35 years of age, was considered the focus of the demand for public policy action to mitigate the spread of STIs. The evolution of pregnancies was considered satisfactory. Furthermore, this study can be debated and compared with others in order to help develop new health strategies for this group of people.

REFERENCES

Bezerra, E. O., et al. (2012). Análise da vulnerabilidade sexual de estudantes universitários ao HIV/Aids. *Revista da Rede de Enfermagem do Nordeste*, 13(5), 1121-1131.

Brasil. Ministério da Saúde. (2022). Aids/HIV: o que é, causas, sintomas, diagnóstico, tratamento e prevenção. Disponível em: https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/a/aids. Acessado em: 05/09/2022.

Brasil. Ministério da Saúde. (2021). *Boletim Epidemiológico Especial - HIV/Aids 2021*. Disponível em: https://www.gov.br/saude/pt-br/centrais-deconteudo/publicacoes/boletins/epidemiologicos/especiais/2021/boletim-epidemiologico-especial-hivaids-2021.pdf/view. Acessado em: 17/09/2022.

Brasil. Ministério da Saúde. Departamento de DST, AIDS, e Hepatites Virais. (2015). *Protocolo Clínico e Diretrizes Terapêuticas para a Prevenção da Transmissão Vertical de HIV, Sífilis e Hepatites Virais*. Brasília: Ministério da Saúde. Disponível

em: http://www.aids.gov.br/sites/default/files/anexos/publicacao/2015/58572/pcdt_transm_vertical_091215_pdf_12930.pdf. Acessado em: 17/09/2022.

Brasil. Ministério da Saúde. (2022). *Manual de gestação de alto risco*. Secretaria de Atenção Primária à Saúde. Departamento de Ações Programáticas – Brasília: Ministério da Saúde.

Brasil. Ministério da Saúde. (2021). *Nota informativa nº 2/2021-DCCI/SVS/MS*. Disponível em: http://azt.aids.gov.br/informes/Informe%2003_21%20-%20NI0221%20%20Recomenda%C3%A7%C3%B5es_uso_RAL%20100mg%20granulado.pdf. Acessado em: 15/09/2023.

Brasil. Ministério da Saúde. (2014). *Protocolo clínico e diretrizes terapêuticas para manejo da infecção pelo HIV em adultos*. Secretaria de Vigilância em Saúde. Departamento de DST, Aids e Hepatites Virais.

De Jesus, M. L., et al. (2016). Relato de experiência no PET Saúde: reflexões sobre práticas sexuais protegidas e nível de escolaridade. *REVASF*, 6(10), 125-146.

De Lima, S. S., et al. (2017). HIV na gestação: pré-natal, parto e puerpério. *Ciência & Saúde*, 10(1), 56-61.

Mello, Caren Julianne Filgueiras de Assis, et al. (2020). Terapia Antirretroviral: principais causas de abandono no estado do Amapá. *Revista Eletrônica Acervo Saúde*, 12(8), e3423-e3423.

Lima, C. N., De Moraes, L. P., & Rêgo, H. C. L. J. (2019). Aleitamento materno: a visão de puérperas soropositivas para HIV e HTLV quanto a não amamentação. *Nursing (São Paulo)*, 22(248), 2583-2586.

Mario, Débora Nunes, et al. (2019). Qualidade do pré-natal no Brasil: Pesquisa Nacional de Saúde 2013. *Ciência & Saúde Coletiva*, 24, 1223-1232.

OPAS. (2021). Diagnóstico, sintomas, causas, prevenção e tratamento da AIDS. Disponível em: https://www.paho.org/pt/topicos/hivaids. Acessado em: 02/09/2022.

Perotta, M., et al. (2023). Perfil sociodemográfico e aspectos gestacionais de mulheres com HIV/Aids de Curitiba, Brasil. *Revista Gaúcha de Enfermagem*, 44, e20220202.

Rahim, S. H., et al. (2017). Gestantes e puérperas soropositivas para o HIV e suas interfaces de cuidado. *Rev. enferm. UFPE on line*, 11(suppl. 10), 4056-4064.

Soares, J. P., et al. (2017). Prevalência e fatores de risco para o hiv/aids em populações vulneráveis: uma revisão integrativa de literatura. *Arquivos Catarinenses de Medicina*, 46(4), 182-194.

Teixeira, S. P., et al. (2020). Perfil epidemiológico de gestantes com HIV admitidas em uma maternidade de referência no Amapá. *Revista Eletrônica Acervo Saúde*, 12(2), e2543-e2543.

Trindade, L. N. M., et al. (2021). Infecção por HIV em gestantes e os desafios para o cuidado pré-natal. *Revista Brasileira de Enfermagem*, 74(suppl. 4), e20190784.

Mocelin, Helaine Jacinta Salvador, et al. (2023). Barreiras e facilitadores do enfrentamento de HIV/aids e sífilis por venezuelanas residentes no Brasil. *Revista Panamericana de Salud Pública*, 47, e3.