



Epidemiological analysis of syphilis cases in pregnant women during the Covid-19 pandemic in the State of Pará from 2018 to 2021¹

*Epidemiological analysis of syphilis cases in pregnant women during the Covid-19 pandemic
in State of Pará in the period from 2018 to 2021^{two}*

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SUMMARY

Syphilis is a contagious and chronic bacterial infection, considered one of the most common sexually transmitted diseases (STDs) in the world. According to the World Health Organization (WHO), it is estimated that, in the world, it ranks third in the scale of curable sexually transmitted infections in the sexually active population in Brazil. The pathogen is transmitted through sexual contact with an infected person, through blood transfusion and through vertical transmission, which is based on contamination from mother to fetus through the bloodstream. *O.T. pallidum* They manifest themselves in three stages that are characterized according to the harmfulness and time of exposure to the organism. Its diagnosis can be through a gynecological examination, in the case of women, and immunological tests. The objective of the present study was to analyze the epidemiological rate of syphilis in pregnant women in the northern region of Brazil, from 2018 to 2021. The study had a quantitative, descriptive, retrospective approach and a survey of data collection provided by information from the System Information on Notifiable Diseases (Sinan). In the period from 2018 to 2021, a total of 3,312 cases of gestational syphilis were reported by age group ranging from 10 to 59 years in the main municipalities in the northern region of the state of Pará. Through these data, we observed that until 2019 the Syphilis cases, for the most part, continued to grow, however in 2021 we saw a considerable drop in the number of cases diagnosed and registered in the database provided by SINAN, however we must remember that the decrease in the number of cases registered this year may be due to the reduced search for Syphilis diagnoses during the pandemic period due to Sars-Cov2 (Coronavirus or Covid-19), in the state of Pará, and there may be negligence on the part of the population in relation to other diseases. In short, there was a significant increase in gestational syphilis, the spatial distribution indicated the prevalence of these diseases in the peripheral regions of the municipality, characterizing the infection in young pregnant women, with low education, housewives and residing in the urban area, revealing the fragility of the prenatal care provided to pregnant women, through late diagnosis, inadequate treatment and failure to treat the partner, these being fundamental points to prevent vertical transmission. Although the etiological agent is well known, an established mode of transmission, effective and low-cost treatment, with a high probability of cure, it still remains a serious public health problem.

Keywords: Syphilis, pregnant women, *Treponema pallidum*, epidemiology, covid 19.

ABSTRACT

Syphilis is a contagious and chronic bacterial infection, considered one of the most common sexually transmitted diseases (STDs) in the world. According to the World Health Organization (WHO) it is estimated that, in the world, occupying the third place on the scale of curable sexual transmission infections in the sexually active population in Brazil. The pathogen is transmitted by sexual contact with an infected person, by blood transfusion and through vertical transmission that is based on contamination from mother to fetus through the bloodstream. *T. pallidum* is manifested in three stages that are characterized according to the harmfulness and time of exposure to the organism. Its diagnosis can be through gynecological examination, in the case of women and immunological tests. The aim of this study was to analyze the epidemiological index of syphilis in pregnant women in northern Brazil, from 2018 to 2021. The study was a quantitative, descriptive, retrospective approach and data collection provided by information from the Notifiable Diseases Information System (Sinan). In the period from 2018 to 2021, 3,312 cases of gestational syphilis were reported by age group ranging from 10 to 59 years in the main municipalities of the northern region of the state of Pará. Through these data, we observed that by the year 2019 the cases of Syphilis, for the most part, they continued to grow, but in 2021 we see a considerable drop in the number of cases diagnosed and registered in the database provided

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by SINAN, however we must remember that the decrease in the number of cases registered this year may be due to the reduced search for diagnoses of Syphilis by the pandemic period by Sars-Cov2 (Coronavirus or Covid-19), in the state of Pará, and there may be negligence on the part of the population in relation to other diseases. In short, there was a significant growth of gestational syphilis, the spatial distribution indicated prevalence of these diseases in the peripheral regions of the municipality characterizing the infection in young pregnant women with low schooling, housewives and living in the urban area, revealing the fragility of prenatal care provided to pregnant women, through late diagnosis, inadequate treatment, and non-treatment of the partner, these are key points to avoid vertical transmission. Although it has the well-known etiological agent, established mode of transmission, effective and low-cost treatment, with high probabilities of cure, it persists as a serious public health problem.

Keywords:Syphilis, pregnant women, *Treponema pallidum*, epidemiology, covid 19.

1. INTRODUCTION

Syphilis is a contagious and chronic bacterial infection, considered one of the most common sexually transmitted diseases (STDs) in the world. According to the World Health Organization (WHO), it is estimated that around 12 million new cases occur annually in the world, highlighting that of these, 1.5 to 1.85 million of the records found are of pregnant women, ranking third on the scale of curable sexually transmitted infections in the sexually active population in Brazil.

Compulsory notification of syphilis in pregnant women throughout the country was established by Ordinance No. 33, of July 14, 2005. In the period from 2005 to June 2020, 449,981 cases of syphilis in pregnant women were reported on Sinan, of which 45.3 % were residents of the Southeast region, 21.0% in the Northeast region, 14.7% in the South region, 10.3% in the North region and 8.7% in the Central-West region.

Syphilis is an STD caused by bacteria *Treponema pallidum* of subspecies *pallidum*, classified as belonging to the genus *Treponema* and the *Treponemataceae* family, its morphology is spiral-shaped thin, covered by an external envelope of three layers rich in N-acetyl muramic acid and N-acetyl glucosamine, it has flagella facilitating rotational movements and its reproduction is by binary division, the *T. pallidum*. It is not able to survive in the external environment, requiring a human host.

The pathogen is transmitted through sexual contact with an infected person, through blood transfusion and through vertical transmission, which is based on contamination from mother to fetus through the bloodstream. *O.T. pallidum* They manifest themselves in three stages that are characterized according to the harmfulness and time of exposure to the body.

Primary syphilis begins with the formation of wounds between 10 and 90 days after infection, generally in the place where the initial contamination occurred; In secondary syphilis, symptoms appear after 6 weeks to 6 months, with the appearance of spots on other parts of the body such as the palms of the hands and feet, they do not cause skin irritation and do not cause itching or pain, other symptoms that can be observed are the appearance of fever, malaise, headache and lumps on the patient's skin; in the case of tertiary syphilis, it usually appears 2 to 40 years later, and skin, neurological, cardiovascular and bone lesions may appear, in severe cases it can lead to death, however, the disease can present asymptotically,

During this period, the infection is in the latent phase, where signs and symptoms do not appear.

In the case of congenital syphilis, symptoms may appear shortly after birth with the appearance of wounds on the skin; in severe cases, spontaneous abortion, premature birth, fetal malformation, deafness, blindness, mental disability and/or death at birth.

Its simple diagnosis is based on the analysis of the collection of the patient's biological material, it can be through a Gynecological examination, in the case of women, such as the Pap smear and immunological tests that are subdivided

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into two classes: treponemals, which involve the detection of specific antitreponemal antibodies in the blood (IgG), and non-treponemals, which are non-specific antibodies (IgM).

Table 1 Treponemal and non-treponemal immunological tests

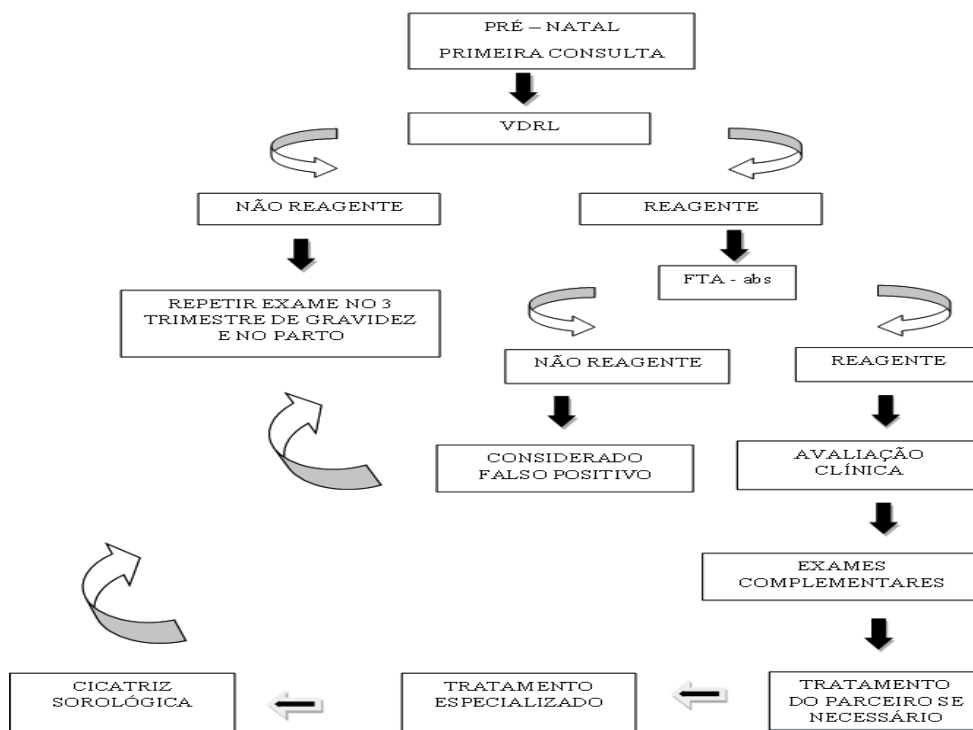
TREPONEMIC TEST (SPECIFICITY)	NON-TREPONEMIC TEST (QUANTITATIVE)
FTA-abs	VDRL
QUICK TEST (TR)	TRUST
ELISA	RPR

Source: Adapted, Epidemiological Bulletin | Health Surveillance Secretariat | Ministry of Health | Volume 51 | No. 18 | apr. 2020

Syphilis is a disease that has accessible, effective and efficient treatment, but still has high incidence rates, representing a challenge for public health.

For pregnant women, the single health system (SUS) offers prenatal care where the pregnant woman will be monitored through three tests, one in the 1st trimester of pregnancy, one in the 3rd trimester of pregnancy and one at the time of delivery, even in cases of abortion is recommended to carry out the test to rule out any possible new contamination, the pregnant woman's partner is also diagnosed, preventing further transmission of the bacteria.

Figure 1. Flowchart for syphilis serological screening



Source: adapted from ROMANELLI (2014)

Considering the growing increase in notifications of gestational syphilis and consequently syphilis congenital disease, it is of fundamental importance to know the profile of pregnant women infected by the disease, identify the areas with the greatest focus for these diseases and detect what compromises the control of syphilis at the local level, so that measures can be taken to reduce these infections and propose measures of effective interventions.

2 OBJECTIVE

From this perspective, the objective of the present study was to analyze the epidemiological rate of syphilis in pregnant women in the northern region of Brazil, from 2018 to 2021.

3 METHODOLOGY

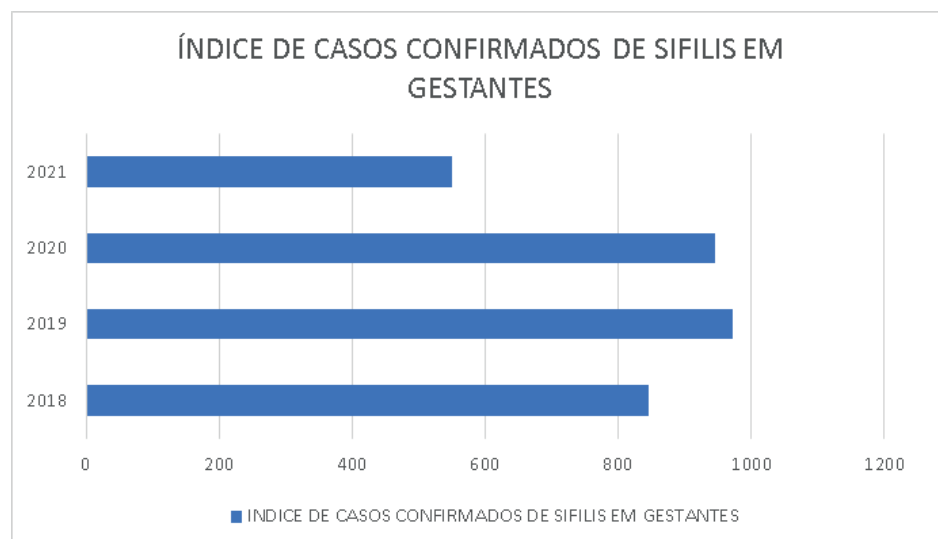
The study had a quantitative, descriptive, retrospective and survey approach to collect data provided by information from the Notifiable Diseases Information System (Sinan). Data analysis was carried out using the Microsoft Excel 2016 program.

The study population was made up of all confirmed cases of gestational syphilis from January 2018 to December 2021, residents of the municipalities of Belém, Ananindeua, Santarém, Marituba, Itaituba and Marabá and who were registered on Sinan with the highest rates. Cases of gestational syphilis were selected by year of notification, age group, education, race/color and prenatal care.

4 RESULTS AND DISCUSSION

In the period from 2018 to 2021, a total of 3,312 cases of gestational syphilis were reported by age group ranging from 10 to 59 years in the main municipalities in the northern region of the state of Pará. Where the highest number of registered cases were in the year 2019 with 971 cases of syphilis in pregnant women in municipalities in the state of Pará and the year with the lowest number was 2021 with only 550 registered cases. We can note that there was an increase in the number of cases of gestational syphilis from 2018 to 2020, but decreasing in 2021, as shown in Figure 1.

Figure 1. Syphilis rate in pregnant women from 2018 to 2021.



SOURCE: Notifiable Diseases Information System – Pará

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Through these data, we observed that until 2019, most cases of Syphilis were confirmed. continued to grow, however in 2021 we see a considerable drop in the number of cases diagnosed and registered in the database provided by SINAN, however we must remember that the decrease in the number of cases registered this year may be due to the reduced search for Syphilis diagnoses during the period pandemic caused by Sars-Cov2 (Coronavirus or Covid-19), in the state of Pará, and there may be negligence on the part of the population in relation to other diseases.

The results expressed in Figure 2 demonstrate that the predominant age estimate of pregnant women infected with syphilis, aged between 20 and 39 years, was 76.5%, determined as the highest rate of infection by the *Treponema pallidum* in the years 2018 to 2021, followed by the age group of 15 and 19 years old with 8.7% being the second highest rate of contamination in pregnant women, later the age group of 40 to 59 years old, with 5% being reported and 3.4 % of pregnant women between 10 and 14 years of age. Being the lowest age group of contamination and exposure of the disease in all periods.

Table 2. Confirmed cases of syphilis in pregnant women by municipality of notification and age group in the period between 2018 and 2021.

County	10--14	15--19	20--39	40--59	Total
Itaituba	4	149	266	two	421
Ananindeua	1	99	338	7	445
Santarém	-	99	351	11	461
Maraba	12	216	495	13	736
Bethlehem	17	310	905	17	1249
Total	34	873	2,355	50	3,312

SOURCE: Notifiable Diseases Information System – Pará

It is noted that the presence of pregnant women is greater among women aged between 15 and 39 years, for have an active sexual life, in addition, women in this age group are in the best biological period for conception, thus increasing contamination by the bacteria.

Education reflects socioeconomic conditions, which can be seen as determinants of health and well-being. In this way, it is possible to suggest that pregnant women with less education are more vulnerable in terms of their health, including in relation to the propensity for infections during pregnancy. The number of confirmed and reported cases of congenital syphilis in Pará, from 2018 to 2021, totaled 7,821 cases. When observing the data in table 3

Table 3. Epidemiological index of syphilis in pregnant women by level of education 2018/2021.

DEGREE OF EDUCATION	NOTIFICATION MUNICIPALITY					
	Santarém	Ananindeua	Marituba	Bethlehem	Maraba	Total
Ignored/blank	86	129	135	309	312	1711
Illiterate	1	3		two		44
1st to 4th series incomplete from EF	13	5	3	39	8	425
4th complete series of EF	3	14	1	27	20	295
5th to 8th series incomplete from EF	67	62	21	277	80	1716
Elementary School complete	49	29	11	62	129	716

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Incomplete high school	70	68	30	221	59	1126
Complete high school	143	123	28	269	118	1556
college education incomplete	13	9	1	30	6	135
college education complete	16	3	two	13	4	96
Not applicable	-	-	-	-	-	1
Total	461	445	232	1249	736	7821

Source: SINAN TabNet (Adapted 2022)

It is important to highlight that women with less education had a higher prevalence of syphilis during pregnancy, which is also an important marker of greater risk for exposure to sexually transmitted diseases.

According to the results reported in table 4, notifications of confirmed cases that underwent prenatal care are 65.8%, compared to 34.2% of cases not diagnosed through prenatal care, thus being the largest number of notifications made through the Prenatal care was in 2019, with 802 confirmed cases.

Table 4. Confirmed cases by Municipality of notification that carried out **Prenatal** in the Period 2018-2021

Year of diagnosis	Yes	No
2018	699	102
2019	802	120
2020	705	82
2021	362	39
TOTAL	2,568	343

SOURCE: Notification diseases information system – Pará

The information presented in table 5 demonstrates that the cases of Syphilis according to race, the largest number of notifications are of the brown race with 87% with the highest cases reported in the municipality of Belém with 1157 cases, 708 cases in the municipality of marabá, 447 cases in the municipality of Santarém, 196 cases in the municipality of Cametá and 144 in the municipality of Marituba, followed by the White race with 6.90% with a predominance in the municipality of Belém, 97 cases in the municipality of Belém, 26 cases in the municipality of Marabá, 22 cases in the municipality of Santarém, 21 cases in the municipality of Cametá and 19 in the municipality of Marituba.

The Black race represents 4.86% of the total, with a predominance in the municipalities of Belém with 59 cases, 23 cases in the municipality of Marabá, 16 cases in the municipality of Cametá and 16 cases in the municipality of Santarém, followed by the municipality of Marituba with 15 cases. The Yellow and Indigenous races were those with the fewest notifications, the Yellow race with 0.64% and indigenous people with 0.22%.

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Table 5. Confirmed cases by reporting municipality classified by race in the period 2018-2021.

Municipality of notification	White	Black	Yellow	Brown	Indigenous	Total
Bethlehem	97	59	8	989	4	1157
Cametá	21	16	two	157	-	196

Maraba	26	23	two	656	1	708
Marituba	19	15	1	109	-	144
Santarém	22	16	4	404	1	447
Total	185	129	17	2315	6	2652
%	6.90%	4.86%	0.64%	87%	0.22%	

SOURCE: Notification diseases information system – Pará

CONCLUSION

In short, there was a significant increase in gestational syphilis, the spatial distribution indicated the prevalence of these diseases in the peripheral regions of the city, characterizing the infection in young pregnant women, those with low education, housewives and those residing in urban areas, revealing the fragility of prenatal care provided to pregnant women, through late diagnosis, inadequate treatment and of not carrying out treatment for the partner, these being fundamental points to avoid vertical transmission. Although the etiological agent is well known, an established mode of transmission, effective and low-cost treatment, with a high probability of cure, it still remains a serious public health problem.

In this study, the prevalence of infection by *Treponema pallidum* of pregnant women who were notified in the State of Pará, it is worth noting that this estimate of syphilis found can be considered low, due to the covid 19 pandemic period, but it allows one to have an idea of the prevalence of this infection in pregnant women and their risk of vertical transmission.

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