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Sociodemographic Profile Of Syphilis In Pregnant Women In The Municipality Of Norte Do Tocantins

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Abstract:
Objective: *The aim of this study was to evaluate the sociodemographic profile of syphilis in pregnant women from 2015-2021 in Araguatins in the state of Tocantins.*
Methodology: *The research is an epidemiological study of a quantitative and exploratory-descriptive nature. Regarding the sociodemographic profile of these pregnant women, it was pointed out that they have a low level of schooling, a higher age range between 13-23 years, and (82.5%) self-declared as brown, such information suggests a group of greater social vulnerability.*
Results*: The occurrence of syphilis during pregnancy is directly related to several factors, including color, low level of education, unfavorable socioeconomic conditions, history of obstetric risk, late start of prenatal care and an insufficient number of appointments.*
Conclusion: *This study emphasizes the urgent need to review the procedures adopted and highlights the importance of health professionals taking greater responsibility for a problem that is largely preventable.*
Keyword: *Notification; Prevalence; Gestational Syphilis.*

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I. Introduction

In Brazil, an estimated 937,000 new cases of syphilis are reported annually, with syphilis being classified as a mandatory notifiable disease since 1986, and gestational syphilis included from 2005 onward. Both notification forms have undergone several modifications to reach their current versions (WHO, 2012).

According to reports obtained through the Notifiable Diseases Information System (SINAN), from 1998 to June 2016, 142,961 cases of congenital syphilis were recorded in children under one year of age, with most cases registered in the Southeast (30.8%) and Northeast (10%) regions. Proper treatment and management of syphilis during pregnancy and prenatal care have the potential to reduce congenital syphilis incidence to below 0.5 per 1,000 live births (Araujo et al., 2012).

In 2015, the Ministry of Health showed, through an epidemiological bulletin, that the syphilis infection rate in Brazil in 2004 was 1.7 cases per 1,000 live births, increasing to 4.7 by 2013, indicating over a 100% increase in less than ten years. Following these data, the infant mortality rate due to syphilis rose from 2.2 deaths per 100,000 live births in 2004 to 5.5 in 2013 (Silva, Fernandes, 2015).

In Brazil, 33,365 cases of syphilis in pregnant women were reported in 2015, with the Southeast region recording the highest percentage of gestational syphilis cases (Brazil, 2016). Throughout 2016, approximately 87,593 cases of acquired syphilis were reported in the country, with about 37,436 women diagnosed during pregnancy and 20,474 cases of congenital syphilis, resulting in 185 deaths (Ministry of Health, 2017).

Brazilian health authorities have struggled with rising levels of a disease that should have been eradicated, as syphilis—especially when transmitted during pregnancy and the puerperal period—has one of the highest transmission rates. Its persistence is seen as a sign of the failure of the Unified Health System (Valderrama, 2005).

The high incidence of gestational syphilis in Brazil, with significant case numbers and deaths, particularly in more developed regions such as the Southeast, indicates the ineffectiveness of the current prevention and control strategies. This persistence of gestational syphilis represents a significant public health challenge for the Unified Health System (SUS), highlighting the urgent need to review and improve health policies focused on prevention, early diagnosis, and appropriate treatment to mitigate these impacts on the health of pregnant women and their children.

In light of the above, this article seeks to describe the sociodemographic profile of pregnant women with syphilis in the municipality of Araguatins, reported over a period of seven years.

II. Material And Methods

This research is configured as a quantitative epidemiological study of an exploratory-descriptive nature. Epidemiological studies are essential for describing the health conditions of a specific population, considering temporal and spatial factors, as well as investigating the determinants of health within that population, as highlighted by Turci et al. (2010).

The research scenario encompasses the municipality of Araguatins, located in the far north of the State of Tocantins, characterized by an area of 2,625.28 km², a mixed climate of Cerrado and Amazon, and a population of 31,324 inhabitants according to the IBGE in 2010. Araguatins is the largest city in the region known as Bico do Papagaio.

The target population for this study included all women residing in Araguatins who were reported with gestational syphilis from 2015 to 2021. The sample used corresponded to 100% of the compulsory notification forms provided by the Municipal Health Secretariat of Araguatins during the same period. The inclusion criteria encompassed women who lived in Araguatins-TO between 2015 and 2021 and who had cases of gestational syphilis reported within that timeframe. On the other hand, the exclusion criteria included records with incomplete information and cases of gestational syphilis that occurred outside the predefined analysis period, meaning those that did not fall within the interval from 2015 to 2021.

The project received approval from the Ethics Research Committee of the State University of Tocantins, with registration number 4.987.188. The time series used covered the period from 2015 to 2021, as the data were recorded in the Notification Information System (SINAN). All information from the compulsory notification forms was collected from this database.

The characterization of the sample profile was performed using absolute frequency (n) and relative frequency (%). The analysis of prevalence over the period from 2015 to 2021, according to the exploratory variables, was conducted using the Pearson Chi-square test. The data were processed using SPSS (Statistical Package for Social Science) version 26.0, and the significance level adopted was 5% ($p < 0.05$).

III. Result Discussion

Table 1 shows the sociodemographic profile of women with syphilis during pregnancy in the municipality of Araguatins, Tocantins, according to education level, age group, and race/color, during the period from 2015 to 2021.

Regarding sociodemographic characteristics, it was evident that the level of education among pregnant women diagnosed with gestational syphilis (GS) is low, as only 14.4% of these women completed high school, while another 14.4% had incomplete education from the 5th to 8th grades. Additionally, the education field was left blank in 44.3% of the reported GS cases. This data resembles a study conducted by Cavalcante et al. (2017) in Palmas, the capital of the state of Tocantins, which showed that 76.0% had education levels ranging from incomplete elementary to complete high school. The findings are also similar to studies conducted by Lima et al. (2013) and Gonzales et al. (2014).

Therefore, Pereira et al. (2020) state that low educational attainment is directly related to a greater vulnerability to syphilis infection during pregnancy since the lower the educational level, the less access there is to information regarding prevention, diagnosis, and treatment of the disease. Thus, the majority of pregnant women diagnosed with GS were in the age range of 18 to 23 years, accounting for 48.5% of the cases, while 16.5% were between 13 and 17 years old. This can be related, according to Mesquita (2012) and Araujo (2013), to the high incidence rate of syphilis in women who began their sexual lives before the age of 19 or who have more than one sexual partner. It is noteworthy that women in these situations are at greater vulnerability to sexually transmitted infections (STIs), such as sex workers.

Regarding race/color, there was a prevalence of brown women, comprising 82.5% of the GS cases. These data are consistent with studies conducted by Rodrigues and Guimarães (2004) and Domingues et al.

(2014), where they reported a higher prevalence of brown or black women with low education levels diagnosed with syphilis during pregnancy.

It can be observed that the prevalence of syphilis, according to race in the study, was highest among brown individuals. This result corroborates the findings of Jacobina (2014), which indicate that medical and academic communities in 1932 believed that the high incidence and mortality rates of syphilis among Afro-descendants and black individuals were empirical evidence of the supposed scientific fact that they were "biologically inferior" to white individuals. On the other hand, Menezes et al. (2020) state that when there is a higher number of people of a particular race in a location, there tends to be a greater notification of syphilis cases for that race.

Furthermore, the study shows that the prevalence of syphilis according to education level was higher among individuals with low educational attainment. This finding aligns with studies by Pereira et al. (2020), which suggest that the predominance of syphilis among individuals with low education is related to limited access to information. This premise can be explained by the vulnerability of this group, which is more exposed to sexually transmitted infections (STIs) due to unprotected sexual practices, lack of information regarding sexuality, and shortcomings on the part of the multidisciplinary team in conducting active outreach for health promotion and prevention.

Table 1. Sociodemographic characterization of gestational syphilis cases in the municipality of Araguatins from 2015 to 2021.

				Year n (%)				**Total**	***p****
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**		
Level of Education									
Incomplete 1st to 4th Grade	1 (10,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,0)	
4th Grade completed	0 (0,0)	0 (0,0)	0 (0,0)	1 (4,3)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,0)	
5th to 8th grade incomplete	3 (30,0)	1 (33,3)	1 (9,1)	2 (8,7)	4 (20,0)	2 (11,8)	1 (7,7)	14 (14,4)	
Complete Elementary Education	0 (0,0)	1 (33,3)	2 (18,2)	0 (0,0)	2 (10,0)	0 (0,0)	2 (15,4)	7 (7,2)	
Incomplete Secondary Education	1 (10,0)	0 (0,0)	2 (18,2)	3 (13,0)	3 (15,0)	3 (17,6)	0 (0,0)	12 (12,4)	0,16
Complete Secondary Education	2 (20,0)	0 (0,0)	2 (18,2)	2 (8,7)	7 (35,0)	1 (5,9)	0 (0,0)	14 (14,4)	
Incomplete Higher Education	0 (0,0)	0 (0,0)	0 (0,0)	1 (4,3)	2 (10,0)	1 (5,9)	0 (0,0)	4 (4,1)	
Complete Higher Education	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (5,9)	0 (0,0)	1 (1,0)	
Ignored	3 (30,0)	1 (33,3)	4 (36,4)	14 (60,9)	2 (10,0)	9 (52,9)	10 (76,9)	43 (44,3)	
Age Range									
13- 17	1 (10,0)	2 (66,7)	2 (18,2)	0 (0,0)	6 (30,0)	5 (29,4)	0 (0,0)	16 (16,5)	
18-23	8 (80,0)	0 (0,0)	7 (63,6)	14 (60,9)	7 (35,0)	4 (23,5)	7 (53,8)	47 (48,5)	0,79
24-29	1 (10,0)	0 (0,0)	2 (18,2)	7 (30,4)	4 (20,0)	3 (17,6)	4 (30,8)	21 (21,6)	
30-40	0 (0,0)	1 (33,3)	0 (0,0)	2 (8,7)	3 (15,0)	5 (29,4)	2 (15,4)	13 (13,4)	
Race/Color									
Yellow	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (5,0)	0 (0,0)	1 (7,7)	2 (2,1)	
White	0 (0,0)	1 (33,3)	2 (18,2)	4 (17,4)	2 (10,0)	1 (5,9)	0 (0,0)	10 (10,3)	
Indigenous	1 (10,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,0)	0,06

Brown	7 (70,0)	1 (33,3)	9 (81,8)	19 (82,6)	16 (80,0)	16 (94,1)	12 (92,3)	80 (82,5)	
Black	2 (20,0)	1 (33,3)	0 (0,0)	0 (0,0)	1 (5,0)	0 (0,0)	0 (0,0)	4 (4,1)	
Source: Research data, 2022.									

Table 2 shows the types of tests used for the notification of pregnant women diagnosed with syphilis (SG) in the municipality of Araguatins from 2015 to 2021. Regarding the tests used for diagnosing syphilis during prenatal care, (74.2%) of these pregnant women had a reactive non-treponemal test, while (12.4%) did not undergo testing, (6.2%) had a non-reactive test, and for (7.2%), the testing status was ignored. Concerning the treponemal test, (52.6%) of these pregnant women had a reactive test, (20.6%) did not undergo testing, (8.2%) had a non-reactive test, and for (18.6%), the testing status was ignored.

Table 2. Characterization of the Tests Used for the Diagnosis, Clinical Classification, and Notification Trimester of Cases of Gestational Syphilis in the Municipality of Araguatins from 2015 to 2021

	Year n (%)							**Total**	***p***
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**		*****
Non-Treponemal Test in Prenatal Care									
Ignored	2 (20,0)	0 (0,0)	1 (9,1)	1 (4,3)	0 (0,0)	2 (11,8)	1 (7,7)	7 (7,2)	
Non-reactive	0 (0,0)	0 (0,0)	0 (0,0)	1 (4,3)	2 (10,0)	1 (5,9)	2 (15,4)	6 (6,2)	0,21
Not performed	1 (10,0)	0 (0,0)	1 (9,1)	3 (13,0)	1 (5,0)	5 (29,4)	1 (7,7)	12 (12,4)	
Reactive	7 (70,0)	3 (100,0)	9 (81,8)	18 (78,3)	17 (85,0)	9 (52,9)	9 (69,2)	72 (74,2)	
Treponemal test in prenatal care									
Ignored	4 (40,0)	0 (0,0)	5 (45,5)	3 (13,0)	4 (20,0)	1 (5,9)	1 (7,7)	18 (18,6)	
Non-reactive	0 (0,0)	0 (0,0)	1 (9,1)	3 (13,0)	1 (5,0)	0 (0,0)	3 (23,1)	8 (8,2)	0,59
Not performed	3 (30,0)	1 (33,3)	2 (18,2)	4 (17,4)	6 (30,0)	3 (17,6)	1 (7,7)	20 (20,6)	
Reactive	3 (30,0)	2 (66,7)	3 (27,3)	13 (56,5)	9 (45,0)	13 (76,5)	8 (61,5)	51 (52,6)	
Source: Research data, 2022.									

These data show similarities with a study conducted by Oliveira (2016) in Natal, the capital of Rio Grande do Norte, where (94.6%) of pregnant women had reactive non-treponemal tests at the time of delivery, indicating possible negligence in the therapeutic approach adopted by healthcare professionals and potential reinfection during pregnancy.

In 2006, the Ministry of Health established fundamental guidelines for the diagnosis and control of syphilis, emphasizing the importance of confirming reactive non-treponemal test results through treponemal tests. This approach aims to reduce the incidence of this disease and ensure the effectiveness of gestational syphilis diagnoses, contributing to improved medicinal interventions and preventing the vertical transmission of this condition.

Syphilis is a disease that presents variable clinical characteristics, with distinct symptoms and signs depending on the stage of the illness. Before the discovery of penicillin as an effective treatment, syphilis was known as "the disease with a thousand faces" due to its multiple manifestations, complicating diagnosis (Alexis; Barbosa, 2012).

For the diagnosis of syphilis, serological tests are employed, which can be classified as non-treponemal and treponemal. In Brazil, the most common non-treponemal tests are the Venereal Disease Research Laboratory (VDRL) test and the Rapid Plasma Reagin (RPR) test, with the VDRL being the most widely used (Secretariat of State for Health of São Paulo, 2016).

On the other hand, the most commonly used treponemal tests in the country include the Fluorescent Treponemal Antibody Absorption (FTA-Abs) test, the Treponema pallidum hemagglutination assay (TPHA), and the Enzyme-Linked Immunosorbent Assay (ELISA), which stands out for its sensitivity and specificity of 100% in recent cases of syphilis. In advanced stages of the disease, these tests still maintain high sensitivity and specificity rates, ranging from 98% to 100%. Treponemal tests are used to confirm or rule out positive results obtained from non-treponemal tests (Brazil, 2015).

The Ministry of Health recommends conducting syphilis tests as part of the screening for all pregnant women during all three trimesters of pregnancy. This approach aims to map and control cases of gestational syphilis, focusing on preventing the vertical transmission of the disease during pregnancy (Brazil, 2016).

IV. Conclusion

Regarding the sociodemographic profile of the evaluated pregnant women, it is evident that characteristics indicating a greater social vulnerability are predominant in this group. Most of them have low educational levels and fall within the age range of 13 to 23 years. Additionally, there is a notable prevalence of self-declarations as mixed-race (parda).

These data clearly indicate the existence of a group of pregnant women in a situation of greater social vulnerability. The occurrence of syphilis during pregnancy is intrinsically related to various factors, such as skin color, low educational attainment, unfavorable socioeconomic conditions, a history of obstetric risk, late initiation of prenatal care, and an insufficient number of consultations.

This study emphasizes the need for a review of the procedures adopted in the care of pregnant women and highlights the importance of greater accountability among healthcare professionals in the face of a problem that can largely be prevented.

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