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Acquired syphilis in women of childbearing age

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ABSTRACT

OBJECTIVE

To describe the epidemiological profile of Acquired Syphilis (AS) in women of childbearing age (WCA) in the last 6 years, notified in the Notifiable Diseases Information System (SINAN).

METHODS

Quantitative, descriptive study of reported cases of AS in WCA in Brazil between 2018 and 2023. Data collected from SINAN including the variables region and state of residence, female gender, age group (10 to 18 years and 19 to 49 years), race/color, schooling, confirmed cases, and disease progression.

RESULTS AND DISCUSSION

Notified cases of AS in WCA occurred in higher percentages in the 19-49 age group, with brown skin color, complete high school education, and the Southeast region and the state of São Paulo had higher proportions of notification. Higher incidence rate in 2022.

CONCLUSION

The data presented in this study showed that syphilis continues to be an emerging disease in Brazilian regions among the MIF, characterizing it as an important public health problem. This situation impacts different socio-demographic groups, representing a significant challenge for all levels of government and for society as a whole.

KEYWORDS

Syphilis; Reproductive Health; Women's Health; Health Policy.

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INTRODUCTION

Syphilis is a chronic infection that has challenged the world and humanity for years. It compromises all organs and systems, and although treatment is very effective and available free of charge or at low cost, it is currently a major public health problem.[1]

This infectious disease became well known in Europe in the 15th century, and its proliferation throughout the world has made it one of the world's plagues.1 Syphilis is caused by the bacterium Treponema pallidum and is transmitted mainly through unprotected sexual contact with an infected person.[2]

Data from the Pan American Health Organization (PAHO) show that syphilis cases increased by 30% worldwide between 2020 and 2022. In Brazil, in 2022, cases of acquired syphilis (AS) were higher in males aged 20 to 39 years. Between 2012 and 2018, there was an annual increase of 41.6% in people aged 13 to 19. The incidence rate of AS in the country among women aged 13 to 19 is higher than among men in the same age group.[3]

The World Health Organization (WHO) goal for reducing SA cases is to reach less than 1 million cases worldwide by 2030. In February 2024, the Ministry of Health (MS) launched the Healthy Brazil program, with the goal of eliminating socially determined diseases, including congenital syphilis (CS). The goal is to reduce the incidence rate of CS to less than 0.5 cases per1,000 live births by the year 2030.[3,4]

To achieve this goal, it is essential that cases of syphilis in pregnant women and SA, especially in women of childbearing age (WCA), are detected and treated in a timely manner. According to the Ministry of Health, WPA are women aged 10 to 49 years, which includes the adolescent age group (13 to 18 years). Syphilis infection in WPA can compromise a woman's fertility, especially if not treated properly, and, when pregnant, increase the risk of the newborn having CS.[4,5]

Given the presented data, it is important to identify cases of SA in MIF for timely treatment and prevention of CS, in addition to reducing the risks of infertility. This study aims to describe the epidemiological profile of MIF with SA, reported in the Notifiable Diseases Information System (SINAN) in the last 6 years.

METHODS

A descriptive, retrospective epidemiological study was conducted on reported cases of AS in MIF in Brazil from 2018 to 2023. The database was extracted from SINAN (SINAN Net) in June 2024 and gathered all cases of AS in Brazil, by year.

Subsequently, the data were organized in spreadsheets in Excel, and the variables gender (female) and age (10 to 49 years) were selected. Based on the selection of female gender and age 10 to 49 years, the following variables were also included in this study: race/color, education level, confirmed cases, and disease progression.

A region variable was generated to identify the federal units by Brazilian region, and the age variable was transformed into age groups 10 to 18 years and 19 to 49 years. Subsequently, the absolute and relative frequencies per year of all study variables were calculated using the Jamovi®program, version 2.3.26.0.

To calculate the incidence rate of SA in MIF, the number of reported cases of SA in MIF per year in Brazil was divided by the MIF population for each corresponding year in Brazil, multiplied by 100,000. The population number used to compose the calculation was taken from the document Population Projections for Brazil and Federal Units: 2000-2070 from the Brazilian Institute of Geography and Statistics (IBGE).

As this study uses secondary data in the public domain, it did not need to be submitted to the Human Research Ethics Committee, as determined by Resolution 196/96 of the Ministry of Health.

RESULTS

Based on data collected from SINAN between 2018 and 2023, 302.281 cases of AS in MIF were reported in Brazil. The Southeast and South regions had the highest absolute numbers of cases, 137.844 and 75.750, respectively.

When analyzing the cases reported per year, a certain volatility can be observed in each region (Table 1). The North and Southeast regions showed an increase in reported cases in 2019, but in 2020 there was a considerable decrease in notifications in all Brazilian regions. In 2021 and 2022, cases continued to grow in all regions, and in 2023 there was another decrease in cases.

Table 1 - Reported cases of acquired syphilis in MIF, by Brazilian region. Brazil, 2018 to 2023.

	2018		2019		2020		2021		2022		2023	
	n	%	n	%	n	%	n	%	n	%	n	%
REGION												
North	3401	1.1	3610	1.2	2582	0.9	4258	1.4	5460	1.8	3066	1.0
Northeast	8679	2.9	8573	2.8	4970	1.6	7932	2.6	9548	3.2	5313	1.8
Southeast	22,421	7.4	24,453	8.1	18858	6.2	24183	8.0	31,418	10.4	16,511	5.5
South	14,037	4.6	13346	4.4	10401	3.4	12782	4.2	16,598	5.5	8586	2.8
Midwest	3801	1.3	3794	1.3	2714	0.9	3375	1.1	4560	1.5	3051	1.0

Source: Prepared by the author, 2024.

When analyzing the last 6 years (2018 to 2023) of cases reported by state (Table 2), it was noted that the states of São Paulo and Rio Grande do Sul had the highest percentages of notifications in Brazil and their respective regions. The states of Amazonas, Bahia, and Goiás had the highest proportions of reported cases in the North, Northeast, and Midwest, respectively.

Table 2 - Absolute and relative frequency of reported cases of acquired syphilis in MIF, by region and state. Brazil, 2018 to 2023

Region		n	%
North	Rondônia	3034	1.0
	Acre	1855	0.6
	Amazon	6498	2.1
	Roraima	1197	0.4
	Pará	5816	1.9
	Amapá	1405	0.5
	Tocantins	2572	0.9
Northeast			
	Maranhão	3543	1.2
	Piauí	1500	0.5
	Ceará	5526	1.8
	Rio Grande do Norte	3421	1.1
	Paraíba	2186	0.7
	Pernambuco	10919	3.6
	Alagoas	1328	0.4
	Sergipe	2314	0.8
	Bahia	14278	4.7
Southeast			
	Minas Gerais	28053	9.3
	Rio de Janeiro	15949	5.3
	Espírito Santo	29353	9.7
	São Paulo	64489	21.3
South			
	Paraná	16905	5.6
	Santa Catarina	25689	8.5
	Rio Grande do Sul	33156	11.0
Midwest			
	Mato Grosso do Sul	5594	1.9
	Mato Grosso	3820	1.3
	Goiás	9256	3.1
	Federal District	2625	0.9
Total		302281	100

Source: prepared by the author, 2024.

With regard to sociodemographic characteristics, there were some discrepancies between regions in the race/color variables. However, there was agreement among all regions in the age group and education variables (Table 3).

In terms of race/color, brown skin color had the

highest percentages in most regions. Except for the South, where white skin color had the highest proportion of notifications, brown skin color was the most prevalent in the North, Northeast, Southeast, and Midwest (Table 3).

The 19-49 age group had the highest percentage of reported cases in all regions, as did those with a high school education. The Northeast region had the highest percentages of unknown and not applicable education levels, which may indicate underreporting, hindering the interpretation of the results, since only when the unknown and not applicable items are excluded do women with a high school education have the highest percentages (Table 3).

In the South and Midwest regions, the proportions of not applicable and unknown also drew attention, as they are higher percentages when added together than the variable of complete high school education (Table 3).

Table 3 - Absolute and relative frequency of sociodemographic characteristics of MIFs reported for acquired syphilis by region. Brazil, 2018 to 2023.

	North		Northeast		Southeast		South		Midwest	
	n	%	n	%	n	%	n	%	n	%
Age group										
10 to 18 years	2871	0.9	5140	1.7	20022	6.6	8510	2.8	2596	0.9
19 to 49 years	19506	6.5	39875	13.2	117822	39.0	67240	22.2	18699	6.2
Race/color										
White	2114	0.7	4488	1.5	42215	14.0	50520	16.7	4729	1.6
Black	1522	0.5	5579	1.8	19711	6.5	4931	1.6	1535	0.5
Yellow	381	0.1	353	0.1	1622	0.5	617	0.2	371	0.1
Brown	16607	5.5	25749	8.5	55686	18.4	8820	2.9	11835	3.9
Indigenous	492	0.2	252	0.1	229	0.1	288	0.1	211	0.1
Ignored	1261	0.4	8594	2.8	18381	6.1	10574	3.5	2614	0.9
Education										
Illiterate	212	0.1	613	0.2	320	0.1	314	0.1	67	0.0
EF1I	1058	0.4	2348	0.8	3024	1.0	1896	0.6	554	0.2
EF1C	662	0.2	1396	0.5	2578	0.9	1492	0.5	472	0.2
EF2I	2547	0.8	5097	1.7	12650	4.2	7849	2.6	2043	0.7
EF2C	1687	0.6	2796	0.9	10795	3.6	6161	2.0	1495	0.5
EMI	2729	0.9	4208	1.4	17803	5.9	7635	2.5	2552	0.8
EMC	6195	2.0	7720	2.6	34,407	11.4	15261	5.0	4621	1.5
ESI	882	0.3	722	0.2	3518	1.2	2084	0.7	763	0.3
ESC	908	0.3	714	0.2	4046	1.3	2325	0.8	685	0.2
Not applicable	3116	1.0	10149	3.4	24784	8.2	15804	5.2	4168	1.4
Ignored	2381	0.8	9252	3.1	23919	7.9	14929	4.9	3875	1.3

Source: Prepared by the author, 2024.

Legend: EF1I – incomplete elementary school (1st to 4th grade incomplete); EF1C – complete elementary school (1st to 4th grade complete); EF2I – incomplete elementary school 2 (incomplete 5th to 8th grade); EF2C – complete elementary school 2 (complete 5th to 8th grade); EMI – incomplete high school; EMC – complete high school; ESI – incomplete higher education; ESC – complete higher education.

Regarding the final classification of the disease, in all Brazilian regions, the highest number of confirmed cases of SA in MIF was in 2022. All regions had high percentages of confirmed cases and low percentages of inconclusive, unknown, and discarded cases. The disease progression showed a higher percentage of cure in all regions, but unknown and blank cases had high numbers, especially in the Northeast region (Table 4).

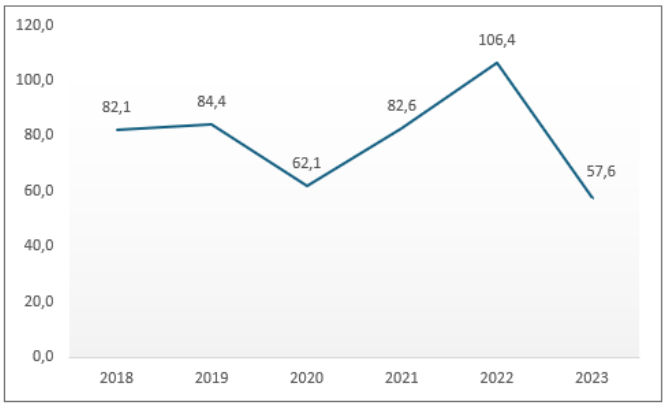
Table 4 - Absolute and relative frequency of clinical characteristics of acquired syphilis cases in MIF, by region. Brazil, 2018 to 2023.

	North		Northeast		Southeast		South		Midwest	
	n	%	n	%	n	%	n	%	n	%
Final Classification										
Confirmed	18198	6.0	30283	10.0	113382	37.5	66115	21.9	16997	5.6
Discarded	389	0.1	582	0.2	775	0.3	526	0.2	246	0.1
Inconclusive	3484	1.2	12654	4.2	20403	6.7	8062	2.7	3551	1.2
	306	0.	1496	0.5	3284	1.1	1047	0.3	501	0.
Blank		1								2
Evolution										
Cure	13991	4.6	18828	6.2	70204	23.2	40775	13.5	11907	3.9
Death from syphilis	13	0	24	0.0	31	0.0	45	0.0	9	0.0
Death from other causes	21	0	67	0	70	0.0	57	0.0	23	0
Ignored	3488	1.2	8020	2.7	29624	9.8	20,516	6.8	4043	1.3
Blank	4864	1.6	18076	6.0	37915	12.5	14357	4.7	5313	1.8

Source: Prepared by the author, 2024.

Regarding the incidence of SA in MIF in Brazil (Graph 1), there was a slight increase in incidence between 2018 and 2019. In 2020, there was a considerable decrease, but in 2021 and 2022, the incidence of AS cases reached 106,4 cases per 100.000 MIF, and in 2023, the incidence declined to 57,6 cases per 100.000 MIF.

Graph 1 - Incidence rate of acquired syphilis cases in MIF. Brazil, 2018 to 2023.



Source: Prepared by the author, 2024.

DISCUSSION

This study showed that reported cases of AS in MIF declined in 2023 after an alarming increase in the previous year, but the data were collected until June 2024, suggesting that some notifications are still not included in SINAN.

To achieve the WHO target, Brazil needs to intensify the active search for syphilis cases, offering rapid tests mainly to the younger population of both sexes and initiating treatment in a timely manner. In addition, health education actions should be prioritized for the population, focusing on the prevention of sexually transmitted infections. [6]

According to the data, the increase in syphilis transmissibility in Brazil may be linked to social, biological, cultural, and behavioral factors that affect the incidence of the disease in the population.Although syphilis is curable and its treatment is affordable, it remains a public health challenge.

This study demonstrated that in all Brazilian regions, reported cases of SA in MIF occur in greater proportion in the 19-49 age group, of brown skin color, except in the South region, where white people with complete high school education predominated. In addition, the Southeast region and the state of São Paulo stood out as the region and state with the highest proportions of notification.

With regard to clinical characteristics, confirmed cases that progressed to cure were higher in all Brazilian regions. What stands out in this study is the number of ignored and blank variables, which prevent reliable interpretation

of the data, both in sociodemographic and clinical variables.

Corroborating the findings of this study, Negreiros et al.[9] state that this growing number of notifications and their predominance in the Southeast and South regions may be related to increased testing and improved health policies aimed at controlling sexually transmitted infections, especially in the most populous and economically developed regions.

Another important point is the correlation between population growth in Brazilian regions and the number of cases of SA in MIF, as the Southeast region currently has the highest population density and is the most economically developed. The region stood out from the others by presenting higher numbers of cases in all the years analyzed, in addition to concentrating the largest number of health professionals and services, facilitating the notification of syphilis cases in women in this age group. [9]

It was also noted that the data indicate common patterns and needs among affected women, with a higher proportion of brown race/color, except in the South Region, where white women predominate. According to the 2022 IBGE Census, 45.3% of the Brazilian population declared themselves to be brown. The North, Northeast, and Central-West regions had percentages of brown people above the national average, while in the South and Southeast regions, white people had higher proportions.[11]

The higher incidence of cases among brown women indicates a possible connection with social factors that influence health. Our findings are consistent with another study, which also identified a predominance among brown individuals.[12]

Santos et al.[12], in Brazil, highlighted that there was an increase in cases of SA among women with incomplete elementary education in the Southeast region, which differs from the results of this study, which showed that women with complete high school education had the highest proportions in all regions surveyed.

Regarding social issues, women with low educational attainment and belonging to marginalized racial groups face a high risk of contracting sexually transmitted infections due to socioeconomic vulnerability and lack of access to quality health services. It has been observed that as the educational level of Brazilian women increases, the average number of sexual partners tends to decrease.[13,14]

However, the data from this study indicated that those with a high school education have the highest rates of STIs, while among women with less education, the percentage of cases is lower. However, the percentages of "not applicable" and "ignored" must be taken into account, as these data may not reveal the reality.

With regard to age, the results show that women over 19 years of age had higher percentages of SA cases, regardless of region. Data published by the Ministry of Health in 2023 identified that the highest incidence rates of SA were in the 20-39 age group.[12]

In this context, despite major advances in public health, there has been an increase in cases of syphilis in MIF over the years. One of the factors that may have contributed to this increase is the expansion of rapid testing for sexually transmitted infections in the general population.[9]

Regarding the final classification of the disease, the highest number of confirmed cases of SA in MIF was in 2022. All Brazilian regions had high percentages of confirmed cases and low percentages of inconclusive, ignored, and discarded cases.

The evolution of the disease revealed an increase in cure rates in all regions, but the rates of ignored and blank cases were particularly high in the Northeast region. This high cure rate represents a significant advance, evidencing, according to the literature, the effectiveness of treatment as as indicated by national guidelines. However, it is always important to emphasize the urgency of implementing earlier interventions and ensuring access to appropriate treatment.[15]

It is also observed that the incidence rate of AS cases in MIF was unstable between 2018 and 2023, with a lower incidence in 2020 and 2023 and peaking in 2022. Based on the analysis of another study, the decrease in cases between 2020 and 2021 can be attributed to the most intense period of the SARS-CoV-2 pandemic.[11]

In this context, Brazil continues to face difficulties in relation to adherence to treatment and prevention strategies. The increase in cases of SA may be associated with unequal access to health services and diagnosis of the disease.[15]

In general, the data presented highlight the seriousness of the problem, showing an increase in cases of STIs in Brazil among young people, which may be a consequence of the increase in unprotected sexual practices and emphasizing the need for greater investment by the government to improve the quality of care for this population.[10]

From another perspective, the increase in the number of cases recorded over the years demonstrates advances in epidemiological surveillance and more effective action by Family Health Strategy teams. The increase in syphilis cases can and should be prevented through the implementation of programs developed by the Ministry of Health. To this end, it is essential to take into account the regional differences observed in this study and to ensure that public policy interventions and implementations are equitable.

CONCLUSION

The data presented in this study showed that syphilis continues to be an emerging disease in Brazilian regions, characterizing it as an important public health problem. In the last 6 years (2018 to 2023), 302,281 cases of SA were reported in MIF. The Southeast region, specifically the state of São Paulo, had the highest percentages of cases. Regarding sociodemographic characteristics, the predominant characteristics were brown skin color, age group 19 to 49 years, and complete high school education, with a final classification of confirmed disease and progressing to cure.

This situation impacts different sociodemographic groups, representing a significant challenge for all levels of government and society as a whole. Given this reality, it is essential that health professionals and managers understand the extent of the problem so that they can provide a solid foundation for the development of effective prevention strategies for these women.

It is important to highlight the scientific value brought to the areas of health, especially in epidemiology applied to nursing and public health. This information is fundamental for the development of new policies and practices aimed at combating SA.

Finally, it is recommended that studies be conducted with regional focuses and methodologies that enable the identification of causal relationships between SA and MIF, as current studies on this subject are scarce.

These studies can contribute to a better understanding of the diverse local realities and, thus, support the formulation of specific and more effective policies, programs, or protocols for controlling SA infection in women in this age group.

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