DOI: 10.53843/bms.v9i13.678

Brazilian Medical Students Journal

ARTIGO ORIGINAL

DOI: 10.53843/bms.v9i13.678

SÍFILIS CONGÊNITA: PANORAMA EPIDEMIOLÓGICO DO SUDESTE DO BRASIL

CONGENITAL SYPHILIS: EPIDEMIOLOGICAL OVERVIEW OF SOUTHEAST BRAZIL

Anita dos Santos Cardoso [1*]; *Ruymara Candal Nogueira* [2]; *Hygor Braga Cartaxo* [3];

1. Universidade do Extremo Sul Catarinense, Medical Student. **2.** Faculdade Multivix, Medical Student. **3.** Universidade Federal de Campina Grande, Master 's Student.

anitasantos1216@unesc.net

RESUMO

INTRODUÇÃO: A sífilis congênita, doença notificável com estágios clínicos distintos, representa riscos graves para os bebês. A transmissão vertical, especialmente durante os estágios primário e secundário, pode resultar em diversas manifestações clínica e as complicações, se não tratadas, incluem surdez, cegueira e morte fetal. Apesar do papel do rastreamento pré-natal no diagnóstico precoce e tratamento simultâneo de gestantes e parceiros, obstáculos persistem, impactando nos esforços de prevenção primária. **METODOLOGIA**: Este é um estudo transversal que avaliou os dados do Sistema de Informação de Agravos de Notificação na região sudeste do Brasil, referentes a todos os casos notificados e investigados de sífilis congênita de 2016 a 2021. As variáveis observadas incluíram cuidado pré-natal, tratamento dos parceiros, casos confirmados por ano e estado, educação materna e momento do diagnóstico, sexo, idade, raça dos indivíduos afetados e progressão da doença. **RESULTADO**: Entre 2016 e 2021, foram registrados 57.012 casos de sífilis congênita na região sudeste do Brasil. A maioria das mulheres grávidas com bebês afetados por sífilis congênita tinha educação até o ensino médio e recebeu cuidado pré-natal. No entanto, mais da metade dos parceiros não foram tratados adequadamente. **CONCLUSÃO**: O estudo identificou sérios problemas de saúde pública relacionados à sífilis congênita na região sudeste do Brasil devido à ineficiência das medidas de prevenção e controle. Para enfrentar essa situação, é essencial implementar estratégias como detecção precoce da gravidez, triagem pré-natal, ampla disponibilidade de testes rápidos e capacitação dos profissionais de saúde.

PALAVRAS-CHAVE: *Pré-natal; Saúde Pública; Sífilis; Sífilis Congênita.*

ABSTRACT

INTRODUCTION: Congenital syphilis, a notifiable disease with distinct clinical stages, poses severe risks for infants. Vertical transmission, especially during primary and secondary stages, can result in various clinical manifestations. Untreated complications include deafness, blindness, and fetal death. Despite the role of prenatal screening in early diagnosis and simultaneous treatment for pregnant women and partners, persistent obstacles impact primary prevention efforts. **METHODOLOGY:** This cross-sectional study assessed data from the Notifiable Diseases Information System in the southeast

CC BY

DOI: 10.53843/bms.v9i13.678

region of Brazil, covering all reported and investigated congenital syphilis cases from 2016 to 2021. Observed variables included prenatal care, partner treatment, confirmed cases per year and state, maternal education, diagnosis timing, gender, age, race of affected individuals, and disease progression **RESULTS:** Between 2016 and 2021, 57,012 cases of congenital syphilis were recorded in southeast Brazil. Most pregnant women with affected infants had education up to high school and received prenatal care. However, over half of the partners were inadequately treated. **CONCLUSION:** The study identified serious public health issues related to congenital syphilis in the southeast region due to the inefficiency of prevention and control measures. To overcome this situation, it is essential to implement strategies such as early pregnancy detection, prenatal screening, widespread availability of rapid tests, and healthcare professionals training.

KEYWORDS: *Prenatal Care; Primary Health Care; Syphilis; Congenital Syphilis.*

INTRODUCTION

Congenital syphilis (CS) is an infectious disease resulting from the transmission of Treponema pallidum, a bacterium belonging to the spirochete group. It is a compulsorily notifiable condition in the National System of Notifiable Diseases (SINAN) through Ordinance No. 542 of 12/22/1986.[1,2] Vertical transmission primarily occurs through transplacental transmission from inadequately or untreated pregnant women to the fetus. The disease has distinct clinical periods: primary, secondary, tertiary, or latent stages, with or without manifestations. The latent period includes early stages (within one year after infection) and late stages (more than one year after or of unknown duration). Fetal transmission risk peaks during primary and secondary stages due to high spirochete concentrations in maternal blood. However, vertical transmission can occur at any disease stage. In additional, a wide range of clinical manifestations can be observed in affected infants, varying from asymptomatic cases with no complications to severe conditions such as bone deformities and neurological lesions. Without proper treatment, these conditions can lead to complications such as deafness, blindness, and fetal death4[4,6]. The cornerstone of congenital syphilis eradication lies in the simultaneous treatment of the pregnant woman and her partner, with prenatal screening being the primary tool for achieving early diagnosis of the infection and providing appropriate treatment for both individuals. However, several studies have shown [5,6] that a significant obstacle to the control of congenital syphilis is the absence or inadequacy of partner treatment. Justifications for low adherence to partner treatment in pregnant women with syphilis include socioeconomic factors, exclusionary health policies towards men, difficulty accessing information and healthcare services, and ineffective partner tracing and treatment referral services[6]. Thus, early screening during the initial prenatal visits at healthcare facilities and the appropriate treatment of both the pregnant woman and her partner are of utmost importance in reducing the spread of congenital syphilis to the baby[1]. Given the severity of the disease and its growing prevalence in the southeast region in recent years, the objective of this study is to analyze the association between inadequate prenatal care and partner treatment of pregnant women and the subsequent increase in syphilis cases. The study aims to identify socioeconomic, cultural, demographic, and other contributing factors to the scenario over the last 6 years of available data (2016-2021). Furthermore, the study endeavors to provide a comprehensive overview that can guide the development of effective strategies to combat the infection in the current regional context.

METHODS

This descriptive observational study focuses on the southeast region of Brazil, comprising four states: Espírito Santo, Minas Gerais, Rio de Janeiro, and São Paulo, with a total area of approximately 925,000 km² and a population of 84.8 million inhabitants, accounting for 41.8% of the national population (IBGE, 2023). Data were collected through secondary sources from the Department of Informatics of the Unified Health System (DATASUS) using the Information System for Notifiable Diseases (SINAN), provided by the Ministry of Health. All available data as of July 2023 were utilized for analysis in this study. The population includes all reported and investigated cases of congenital syphilis in the southeast region of Brazil from 2016 to 2021. Variables observed include confirmed cases per year and federative unit, maternal education, timing of

CC BY

DOI: 10.53843/bms.v9i13.678

diagnosis, gender, race, age at diagnosis of the infant affected by congenital syphilis, and the progression of the condition. All SINAN notifications related to congenital syphilis between 2016 and 2021 were included in this article. Comparisons were established between the federal units and the Southeast region, evaluating both the incidence rate and the absolute number of cases. There are no exclusion criteria as it involves a census collection. Data analysis employed descriptive statistics using IBM Statistical Package for the Social Sciences (SPSS) version 25.0. A descriptive analysis of the studied variables, reporting the frequency and percentage of qualitative variables (maternal education, gestational period when syphilis was detected, gender and race of the affected by congenital syphilis, age range at diagnosis, prenatal care, partner treatment, progression, and final classification), was conducted. The distribution of quantitative variables (confirmed cases by region and federative unit) will be assessed for normality using the Kolmogorov-Smirnov test. If normally distributed, the mean and standard deviation will be reported, and if not, the median and interquartile range will be evaluated. The significance level adopted in all analyses was 5% ($p < 0.05$).

RESULTS

The historical period from 2016 to 2021 revealed 57,012 cases of congenital syphilis in the southeast region (Table 1). In examining pregnant women, it is evident that a majority underwent prenatal care (46,965; 82.38%). However, despite this, 56.03% (31,943) of partners either received inadequate treatment or were left untreated. Moreover, 64.19% (26,573) of these pregnant women have education up to high school. They received a diagnosis of acquired syphilis either during or at the time of delivery, with a minority (0.59%; 338) remaining undiagnosed postpartum.Regarding individuals diagnosed with congenital syphilis, there is a slight predominance of cases in females (46.86%; 26,695), while in males, there were 26,302 diagnoses (46.17%). Furthermore, it is observed that 45.66% (26,034) are of mixed race, diagnosed within the first six days of life (92.58%; 52,752), with 99.71% (56,844) identified within the first 23 months.

Table 1. Epidemiological Characteristics of Maternal Syphilis Diagnosis. Southeast Region, Brazil, 2016-2021.

Variables	n(%)
Parental Care	n = 57.012
Yes	46.695(82,38)
No	7.348(12,89)
Ignored	2.699(4,73)
Partner treatment	
Yes	9.200(16,14)
No	7.348(12,89)
Ignored	2.699(4,73)
Time of Syphilis Diagnosis	
During prenatal care	34.060(59,67)
At the time of delivery/curettage	17.901(31,40)
after delivery	2.402(4,21)
Not perfomed	338(0,59)
Ignored	2.311(2.311)

Source: Authorship of the researchers

In additional, concerning classification and progression, it stands out that 52,457 individuals (92.01%) with congenital syphilis were classified as early syphilis, and the minority (817; 1.54%) progressed to death, as reported. Notably, despite not being the most populous, Rio de Janeiro reported the highest number of cases, totaling 23,109 notifications, with an annual average of 3,851.50 ± 1,052.07 diagnoses (Table 2). The detection rate remained constant at 9.9 cases per thousand live births in the 2018-2019 biennium; however, in 2021, a general reduction in notifications was observed, accounting for only 8.29% (4,728) of the region's total.

CC BY

DOI: 10.53843/bms.v9i13.678

Table 2. Epidemiological characteristics of infants born with congenital syphilis. Southeast Region, Brazil, 2016-2021.

Variables	n (%) n = 57.012
Sex	
Female	46.695 (82,38)
Male	7.348 (12,89)
Ignored	2.699 (4,73)
Age	
6 days or less	52.782 (92,58)
7-27 days	930 (1,63)
28 days to <1 year	780 (1,37)
12-23 months	2.352 (4,13)
2-4 years	107 (0,19)
5-12 years	61 (0,11)
Race	
White	14.505 (25,44)
Black	3.525 (6,18)
Brown	26.032 (45,66)
Yellow	119 (0,21)
Indigenous	44 (0,08)
Ignored	12.790 (22,40)

Source: Authorship of the researchers

DISCUSSION

The findings of this study highlight the magnitude of the consequences arising from the challenges in treating partners of pregnant women with syphilis. Despite a majority of pregnant women undergoing prenatal care (46,965; 82.38%), a significant proportion of their partners, 56.03% (31,943), either received inadequate treatment or were left untreated. This raises questions about the true effectiveness of prenatal care in addressing the serious public health issue of congenital syphilis[8]. Furthermore, it is essential to highlight the barriers encountered in adequately training healthcare professionals to manage the infection[6,7] and the lack of preventive health education actions focusing on this issue. The study conducted by Lazarini FM and Barbosa DA[9] demonstrated the proven effectiveness of such preventive measures in reducing cases of congenital syphilis. The analysis of the obtained data reveals an average of 9,502 cases of congenital syphilis per year in the southeast region and a higher prevalence in the state of Rio de Janeiro. From 2016 to 2018, there was an increase in the number of cases, followed by a subsequent progressive decline. This pattern observed in our study is consistent with the trends detected in the Epidemiological Bulletin of Syphilis[5], where detection rates also showed an increasing trend until 2018, reached a plateau, and then declined in 2020, possibly due to the social isolation caused by the Covid-19 pandemic[10]. Furthermore, it is evident that the majority of pregnant women have up to a high school education and received prenatal care, with the diagnosis being made during prenatal care or at the time of delivery, which supports the findings of the study by Ramos *et al*[11]. However, it is concerning that more than a quarter of the partners were not treated or received inadequate treatment. This suggests that either pregnant women with a diagnosis during prenatal care faced significant resistance from their partners in undergoing treatment for the disease, or there may be a deficiency in the care provided to these women by healthcare professionals who may be neglectful in addressing sexually transmitted infections[12,13]. The findings also indicate that in cases where a minority of pregnant women did not undergo prenatal care, the likelihood of their partners adhering to the treatment for congenital syphilis is even lower. This finding is in line with existing literature, as demonstrated by an epidemiological study in the State of Maranhão[13], which reported a higher incidence of congenital syphilis (34.6%) despite high rates of prenatal care and diagnosis of syphilis during prenatal care. Additionally, more than half of the partners did not receive treatment, resulting in the high rates of congenital syphilis observed in the region. It is crucial to emphasize that for the treatment of pregnant women to be considered appropriate, it should be administered simultaneously to their partners using penicillin, according to the clinical classification of the infection, and should be completed within 30 days before delivery[5,14,15,16,17,18] In cases where pregnant women are allergic to penicillin, desensitization should be carried out, as other therapeutic alternatives are considered inadequate treatment, along with treatment abandonment, incorrect regimen, and lack of cure monitoring[11]. Proper and timely treatment is vital in preventing transmission to the fetus and reducing the incidence of congenital syphilis. The study

CC BY

DOI: 10.53843/bms.v9i13.678

underscores the complexity of addressing syphilis among pregnant women and their partners. Despite widespread

prenatal care, a significant proportion of partners did not receive adequate treatment, contributing to the persistence of congenital syphilis. These findings emphasize the necessity for tailored interventions to enhance partner engagement in treatment and strengthen healthcare providers' capacity to effectively manage syphilis in pregnancy, ultimately mitigating the risk of transmission to infants.The limitations of the study include the use of secondary data, which were compiled from a national database and are subject to errors in data entry and recording. Despite this, it is believed that the careful analysis of the collected data has sufficiently mitigated this potential constraint.

Table 3. Confirmed Cases of Congenital Syphilis. Southeast Region, Brazil, 2016-2021.

	n (%)	Mean ± Standard Deviation
Southeast Region	57.012 (100)	9502 ± 1007,26
Espírito Santo	2.931 (5,15)	488,50 ± 55,95
Minas Gerais	10.618 (18,62)	1769,67 ± 233,95
São Paulo	20.354 (35,70)	3392,33 ± 873,83
Rio de Janeiro	23.109 (40,53)	3851,50 ± 429,48

Source: Authorship of the researchers

Table 4 - Confirmed Cases of Congenital Syphilis by Federative Unit and Year. Southeast Region, Brazil, 2016-2021.

Federal Unit	2016	2017	2018	2019	2020	2021	%
Minas Gerais	1.465	1.807	2.445	2.295	1.739	867	18,62
Espirito Santo	599	645	565	441	392	289	5,15
Rio de Janeiro	3.483	4.347	4.408	4.508	4.507	1.856	40,53
São Paulo	3.687	4.090	3.991	3.625	3.245	1.716	35,7
%	16,2	19,1	20,01	19,06	17,33	8,3	100
Mean ± Standard Deviation	3694,20 ± 1504,69	4355,60 ± 1775,106	4563,60 ± 1839,68	4351,60 ± 1768,08	3953,20 ± 1636,39	1891,20 ± 764,70	

Source: Authorship of the researchers

CC BY

DOI: 10.53843/bms.v9i13.678

CONCLUSIONS

It is evident, based on the information collected and analyzed in this study, that there is a serious public health problem regarding congenital syphilis in the southeast region of Brazil. It becomes apparent that prevention and control measures for vertical transmission of syphilis, such as quality prenatal care and appropriate treatment of partners of pregnant women, are gravely inefficient, leading to high incidence rates of the infection during the studied period. Therefore, a more careful approach to this issue is needed, seeking strategies that can be implemented by the Ministry of Health and are both effective and well-received in the region, in order to possibly reverse the current situation. Mechanisms that enable early detection of pregnancy and, consequently, early prenatal screening, such as widespread availability of rapid pregnancy and STI tests, active search for pregnant women and partners for benzathine penicillin application in primary care, and continuous professional training, are good ways to improve congenital syphilis rates. However, it is necessary to take into account the local territory and its limitations, adapting these initiatives to ensure that interventions are tailored to reach those most vulnerable to syphilis infection and, thereby, effectively contribute to the prevention and treatment of congenital syphilis.

CONFLICT OF INTEREST

There is no potential conflict of interest related to the research and/or publication of this article.

FUNDING

There was no financial support available for this study.

BIBLIOGRAPHY

1. Guia de Bolso [Internet]. 2016. [Available from: https://saude.campinas.sp.gov.br/doencas/sifilis/guiadebolsodasifilis_2edicao2016.pdf
2. Sífilis Congênita Diretrizes para o Controle da Sífilis Congênita [Internet]. 2005. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/sifilis_congenita_preliminar.pdf
3. Cerqueira LRP de, Monteiro DLM, Taquette SR, Rodrigues NCP, Trajano AJB, Souza FM de, et al. The magnitude of syphilis: from prevalence to vertical transmission. Revista do Instituto de Medicina Tropical de São Paulo. 2017 Dec 21;59(0).
4. Ministerio da Saude [Internet]. bvsms.saude.gov.br. Available from: https://bvsms.saude.gov.br/bvs/saudelegis/svs/2005/prt0033_14_07_2005.html
5. Boletim Epidemiológico de Sífilis - Número Especial | Out. 2022 — Português (Brasil) [Internet]. www.gov.br. Available from: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/especiais/2022/boletim-epidemiologico-de-sifilis-numero-especial-out-2022/view
6. Afonso R, Zeidi Araujo Trindade, Ingrid Faria Gianordoli-Nascimento, Maria F, Silva SC, Alessandra Craig Cerello. Masculinidades e práticas de saúde na região metropolitana de Belo Horizonte - MG. 2011 Mar 1;20(1):182–94.
7. Macêdo VC de, Romaguera LMD, Ramalho MO de A, Vanderlei LC de M, Frias PG de, Lira PIC de. Sífilis na gestação: barreiras na assistência pré-natal para o controle da transmissão vertical. Cadernos Saúde Coletiva. 2020 Dec;28(4):518–28.
8. Investment case for eliminating mother-to-child transmission of syphilis [Internet]. Available from: https://apps.who.int/iris/bitstream/handle/10665/75480/9789241504348_eng.pdf6.
   Macêdo VC de, Romaguera LMD, Ramalho MO de A, Vanderlei LC de M, Frias PG de, Lira PIC de. Sífilis na gestação: barreiras na assistência pré-natal para o controle da transmissão vertical. Cadernos Saúde Coletiva. 2020 Dec;28(4):518–28.
9. Lazarini FM, Barbosa DA. Educational intervention in Primary Care for the prevention of congenital syphilis. Revista Latino-Americana de Enfermagem. 2017 Jan 30;25(0).

CC BY

DOI: 10.53843/bms.v9i13.678

10. O impacto da pandemia da Covid-19 na incidência de sífilis adquirida no Brasil, em Minas Gerais e em Belo Horizonte | Revista Eletrônica Acervo Saúde. acervomaiscombr [Internet]. 2022 Aug 19; Available from: https://acervomais.com.br/index.php/saude/article/view/10874
11. Perfil epidemiológico da sífilis em gestantes no Brasil | Revista Eletrônica Acervo Saúde. acervomaiscombr [Internet]. 2022 Jan 21; Available from: https://acervomais.com.br/index.php/saude/article/view/9541
12. Benedetti KCSV, Ribeiro AD da C, Queiroz JHF de S, Melo ABD, Batista RB, Delgado FM, et al. High Prevalence of Syphilis and Inadequate Prenatal Care in Brazilian Pregnant Women: A Cross-Sectional Study. The American Journal of Tropical Medicine and Hygiene [Internet]. 2019 Oct 2 [cited 2023 May 4];101(4):761–6. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6779194/
13. Guimarães TA, Alencar LCR, Fonseca LMB, Gonçalves MMC, Da Silva MP. Sífilis em gestantes e sífilis congênita no Maranhão. Arquivos de Ciências da Saúde [Internet]. 2018 Jul 20;25(2):24. Available from: https://docs.bvsalud.org/biblioref/2019/12/1046449/a5.pdf
14. Domingues RMSM, Leal M do C. Incidência de sífilis congênita e fatores associados à transmissão vertical da sífilis: dados do estudo Nascer no Brasil. Cadernos de Saúde Pública [Internet]. 2016;32(6). Available from: https://www.scielo.br/j/csp/a/nH9v3WzrWR5p8G5BLTNmtck/?lang=pt&format=pdf
15. Rita A, Cardoso P, Leite M, Do M, Cavalcante S, Frota M, et al. TEMAS LIVRES FREE THEMES 563. Available from: https://www.scielo.br/pdf/csc/v23n2/1413-8123-csc-23-02-0563
16. Newman L, Kamb M, Hawkes S, Gomez G, Say L, Seuc A, et al. Global Estimates of Syphilis in Pregnancy and Associated Adverse Outcomes: Analysis of Multinational Antenatal Surveillance Data. PLoS Medicine [Internet]. 2013 Feb 26;10(2). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3582608/
17. Lafetá KRG, Martelli Júnior H, Silveira MF, Paranaíba LMR. Sífilis materna e congênita, subnotificação e difícil controle. Revista Brasileira de Epidemiologia [Internet]. 2016 Mar;19(1):63–74. Available from: https://www.scielosp.org/pdf/rbepid/2016.v19n1/63-74/pt
18. MANUAL TÉCNICO PARA O DIAGNÓSTICO DA SÍFILIS Brasília -DF 2021 [Internet]. Available from: https://www.gov.br/aids/pt-br/centrais-de-conteudo/publicacoes/2021/manual-tecnico-para-o-diagnostico-da-sifilis#:~:text=Para%20o%20diagn%C3%B3stico%20de%20s%C3%ADfilis

CC BY