

Revaluation of the COVID-19 pandemic impact on the epidemiology of syphilis in Brazil

Reavaliação do impacto da pandemia de COVID-19 na epidemiologia da sífilis no Brasil

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ABSTRACT

Introduction: Due to the coronavirus 2019 disease (COVID-19) pandemic, health systems worldwide have suffered interferences, with the interruption of sexual health clinics, limitation of ambulatory consults, prevention, diagnosis, and treatment of several diseases, especially syphilis, altering their epidemiology. **Objective:** To investigate the impact of the pandemic on syphilis diagnosis in Brazil, the main goal of this study was to update and reevaluate data from the Brazilian Unified Health System on the number of syphilis cases reported in all five Brazilian geographic regions and verify the response of the Brazilian health care to the COVID-19 pandemic. **Methods:** The data were retrieved from the National Disease Notification System and the Department of Chronic Conditions Diseases and Sexually Transmitted Infections and represent syphilis diagnosis in Brazil, from March to December 2017 to 2019, 2020, and 2021. **Results:** The increase in the number of syphilis cases was minor compared to 2020, keeping the Southeast region as the most impacted (+146.1%) and an increase of 22,633 cases throughout Brazil (+54.3%). **Conclusion:** Syphilis disease control measures were ineffective in 2021 as the drop in the number of cases was irrelevant compared to the years before the pandemic. The association between the increase in syphilis cases in Brazil and the COVID-19 pandemic should be further investigated to assist in decision-making processes and in the programming of health actions in addition to finding measures to raise the control of this disease.

Keywords: COVID-19. Syphilis. Epidemiology

RESUMO

Introdução: Em consequência da pandemia de COVID-19, os sistemas de saúde em todo o mundo sofreram interferências, com interrupção de clínicas de saúde sexual, limitação de consultas ambulatoriais, de prevenção, diagnóstico e tratamento de diversas doenças, principalmente a sífilis, alterando sua epidemiologia. **Objetivo:** Para investigar o impacto da pandemia no diagnóstico da sífilis no Brasil, o objetivo principal do presente estudo foi atualizar e reavaliar os dados do Sistema Único de Saúde sobre o número de casos de sífilis notificados nas cinco regiões geográficas brasileiras e verificar a resposta da atenção básica à saúde brasileira diante da pandemia de COVID-19. **Métodos:** Os dados foram retirados do Sistema Nacional de Notificação de Agravos e do Departamento de Doenças Crônicas e Infecções Sexualmente Transmissíveis e representam o diagnóstico de sífilis no Brasil, de março a dezembro de 2017 a 2019, 2020 e 2021. **Resultados:** O aumento no número de casos de sífilis foi menor em relação a 2020, mantendo-se a Região Sudeste como a mais impactada (+146,1%) e havendo aumento de 22.633 casos em todo o Brasil (+54,3%). **Conclusão:** As medidas de controle da sífilis foram ineficazes em 2021, pois a queda no número de casos foi irrelevante em comparação aos anos anteriores à pandemia. A associação entre o aumento dos casos de sífilis no Brasil e a pandemia de COVID-19 deve ser mais bem investigada para auxiliar nos processos de tomada de decisão e na programação das ações de saúde, além de se encontrarem medidas para elevar o controle desta doença.

Palavras-chave: COVID-19. Sífilis. Epidemiologia.

INTRODUCTION

In Brazil, the first coronavirus 2019 disease (COVID-19) case was confirmed on February 26, 2020, subsequently becoming the new epicenter of the COVID-19 pandemic⁽¹⁾. Data updated by the Brazilian Ministry of Health demonstrate that even with the start of vaccination on January 17, 2021 (doses applied until December 2022: 186,659,869), the end of Brazil's COVID-19 pandemic is still unpredictable, with 36.3 million confirmed cases and more than 694,000 deaths (<https://covid.saude.gov.br/COVID-19>).

The COVID-19 disease has exhibited typical clinical manifestations, such as fever, cough, fatigue, shortness of breath, sore throat, headache, loss of taste and smell, gastrointestinal disorders, respiratory failure, and skin rashes, which may be confounded with the clinical signs of sexually transmitted infections (STIs), such as syphilis⁽²⁾. Syphilis, a sexually transmitted disease caused by *Treponema pallidum*, is a worldwide public health problem⁽³⁾ and has an important association with the human immunodeficiency virus (HIV), through behavioral and pathological factors⁽⁴⁾. Genital ulcers associated with primary syphilis act as facilitators of sexual transmission, favoring HIV infection by increasing the concentrations of the virus in lesions of the genital tract⁽⁴⁾.

In several countries, social isolation and distancing were implemented to control the SARS-CoV-2 infections, in the face of the gravity presented by the COVID-19 pandemic. The possible impacts of social habit changes implemented during the pandemic on sexual behavior and STI epidemiology, especially syphilis, have been studied⁽⁵⁻¹¹⁾. The health systems worldwide have suffered interferences, with the interruption of sexual health clinics, limitation of ambulatory consults, prevention, diagnosis, and treatment of several

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diseases, especially syphilis, altering their epidemiology⁽⁵⁻¹¹⁾. Several diseases have shown a significantly increased number of cases during the pandemic period. So far, there are only a few studies published in the scientific literature exploring the dimension of the COVID-19 pandemic impacts, and the influence on the number of new cases of syphilis remains unclear⁽¹²⁻¹⁴⁾.

OBJECTIVE

To investigate the impact of the pandemic on syphilis diagnosis in Brazil, the main goal of this study was to update and reevaluate data from the Brazilian Unified Health System (SUS) on the number of syphilis cases reported in all five Brazilian geographic regions and verify the response of the Brazilian health care to the COVID-19 pandemic and if syphilis disease control measures were effective in 2021.

METHODS

The data were retrieved from the National Disease Notification System (SINAN) and the Department of Chronic Conditions Diseases and Sexually Transmitted Infections, Ministry of Health, Brazil (<http://portalsinan.saude.gov.br/sifilis-congenita>), and represent syphilis diagnosis in Brazil, from March to December 2017 to 2019, 2020, and 2021. A descriptive analysis of the data was performed, and a comparison was made between the average number of diagnoses in the pre-pandemic period with 2020 (Previous study Maia et al.)⁽¹⁵⁾ and also between the first year of the pandemic (2020) and the last year (2021).

RESULTS

Table 1⁽¹⁵⁾ shows an increased number of syphilis cases all over the country during the pandemic period (2020) compared to the mean number of cases in the last 3 years (2017–2019). The number of new syphilis cases increased considerably in all five Brazilian regions, since the beginning of the pandemic period, varying from +3.6% in the South region to +157% in the Southeast region. The increase in the Brazilian general means reached

Table 1. Differences in the mean number of syphilis cases reported by the Brazilian public health system in all geographic regions, from March to December 2017, 2018, and 2019, compared to the same period in 2020 (March to December represents the COVID-19 pandemic period).

Regions of Brazil	2017–2019 (n)	2020 (n)	Difference n (%)
North	4,528	8,396	+3,868 (85.4)
Northeast	10,953	14,372	+3,419 (31.2)
Southeast	12,232	31,460	+19,228 (157.1)
South	9,655	13,066	+3,441 (3.6)
Midwest	4,278	8,813	+4,535 (106)
Total	41,646	76,107	+34,461 (82.7)

+82.7%, corresponding to additional 34,461 new cases during the COVID-19 pandemic. **Table 2** compares the second year of the pandemic period (2021) with the first year of the COVID-19 pandemic (2020) and after the pre-pandemic period. There was a trend toward a decrease in the number of syphilis cases in the second year of the pandemic throughout Brazil (-15.5%), with attention to the South region, the least affected in the first study and now the only one that increased cases (+6.6%) during the second period of the pandemic. When comparing the following period of the pandemic (2021) with the mean number of the pre-pandemic (2017–2019), the increase in the number of syphilis cases was minor compared to the previous study, keeping the Southeast region as the most impacted (146.1%) and an increase of 22,633 cases throughout Brazil (+54.3%).

DISCUSSION

Studies performed in the United States⁵, Taiwan⁶, Italy (Rome)⁸, and Spain⁹ indicate a decrease in the number of syphilis cases in the pandemic period, which may be caused by a reduction of sexual intercourses due to the fear of infection by the SARS-CoV-2.

Nonetheless, in studies performed in Italy (Milan)⁽⁷⁾, Denmark⁽¹⁰⁾, Lebanon⁽¹¹⁾, and Brazil, an increase in the number of cases during the pandemic period was observed, even with the social distancing and isolation policies. In Brazil, this increase may be attributed to the differences in the pandemic control protocols and to the public health system coverage, which is one of the most inclusive in the world⁽¹⁶⁾.

The control of the number of cases of *T. pallidum* infection is a concern to any country. The social isolation and distancing measures during the COVID-19 pandemic could not interfere with general sexual health in various countries, such as Denmark, Lebanon, Taiwan, and Italy (Milan). In Brazil, there was also an increase in the epidemiological data on syphilis during the COVID-19 pandemic.

As in the first article published by this group⁽¹⁵⁾, an important increase in the number of syphilis cases was observed in 2021 when compared with the pre-pandemic period. Syphilis disease control measures were ineffective in 2021 as the drop in the number of cases was irrelevant compared to the years before the pandemic. Furthermore, this study is the first to reassess the syphilis diagnosis data of the second period of the pandemic in Brazil.

Limitation

A limitation of this study was that we lack knowledge about the type of syphilis, as well as the anatomical locations of involvement.

Strength

Our findings did demonstrate an increase in syphilis cases during the pandemic phase in Brazil. These findings highlight the importance of close observation in individuals with syphilis. The diagnosis should be carefully monitored during the COVID-19 pandemic. Studies with other sexually transmitted diseases are needed to compare and confirm the worry with the present results.

Table 2. Differences in the mean number of Syphilis cases reported by the Brazilian public health system in all geographic regions, from March to December 2017, 2018, and 2019, compared to the same period in 2021 and between 2020 and 2021 (2020 represents the first and 2021 the second COVID-19 pandemic period).

Regions of Brazil	2017–2019 (n)	2020 (n)	2021 (n)	Difference 2017–2019 x 2021 (%)	Difference 2020 x 2021 (%)
North	4,528	8,396	5,138	610 (13.5)	-3,258 (-38.8)
Northeast	10,953	14,372	10,194	-759 (-6.9)	-4,178 (-29.1)
Southeast	12,232	31,460	30,107	17,875 (146.1)	-1,353 (-4.3)
South	9,655	13,066	13,932	4,277 (44.3)	866 (6.6)
Midwest	4,278	8,813	4,908	630 (14.7)	-3,905 (-44.3)
Total	41,646	76,107	64,279	22,633 (54.3)	-11,828 (-15.5)

Source: National Disease Notification System (SINAN) and Department of Chronic Conditions Diseases and Sexually Transmitted Infections, Ministry of Health, Brazil (<http://portalsinan.saude.gov.br/sifilis-congenita>)

CONCLUSION

Therefore, due to the continuous increase in syphilis cases described in the literature during the pandemic and demonstrated in this study, the aspects of the association between the increase in the number of syphilis cases in Brazil and the COVID-19 pandemic should be further investigated to assist in decision-making processes and in the programming of health actions in addition to finding measures to raise the control of this disease.

Approval by the Human Research Ethics Committee

Not applicable. Data were collected from a public system – National Disease Notification System (SINAN).

Participation of each author

NPM: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. NCTM: Conceptualization, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. DMMS: Conceptualization, Data curation, Writing – review & editing. DRBM: Conceptualization, Formal analysis, Writing – review & editing. EAO: Formal analysis, Investigation, Methodology, Writing – review & editing. HMJ: Conceptualization, Formal analysis, Methodology, Project administration, Supervision, Writing – original draft, and Writing – review & editing.

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Conflict of interest

The authors declare no conflicts of interest.

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