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COMPARATIVE ANALYSIS OF THE EPIDEMIOLOGICAL PROFILE OF SYPHILIS BETWEEN TWO MUNICIPALITIES IN SANTA CATARINA, STATE ENTIRE AND BRAZIL FROM 2014 TO 2022

Análise comparativa do perfil epidemiológico da sífilis entre dois municípios catarinenses, estado todo e Brasil de 2014 a 2022

Análisis comparativo del perfil epidemiológico de la sífilis entre dos municipios de Santa Catarina, todo el estado y Brasil de 2014 a 2022

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ABSTRACT

Introduction: Syphilis is a Sexually Transmitted Infection that affects both men and women. Over the years there has been an increase in the number of cases in Brazil. This study aims to describe the epidemiological profile of syphilis from 2014 to 2022 in Jaraguá do Sul and Joinville, Santa Catarina. **Methodology:** Data collection was done through of the Department of Informatics of the Unified Health System in the Information System for Notifiable Diseases **Results:** Acquired syphilis had the highest incidence in the population with a tendency of fall from 2019 to 2021, suggesting possible underreporting due to the pandemic and showed that most cases of acquired syphilis occurred in the age group between 20 and 39 years old, white ethnicity and with complete secondary education. In Brazil, the prevalence of the disease occurred in the brown and black population and in Santa Catarina in the white population. Males were responsible for most cases. The population with low education had a higher prevalence of syphilis. Women with low education had a higher prevalence of syphilis during pregnancy, those under 39 years of age, with primary and latent syphilis. Most cases of congenital syphilis in Brazil and in Santa Catarina did not receive treatment for the partner, but prenatal care was provided. **Conclusions:** Both in Brazil and Santa Catarina, syphilis remains a serious public health problem. This study is expected to contribute to a better understanding of the epidemiology of syphilis, especially in the state of Santa Catarina.

Keywords: Syphilis; Treponemal Infections; Sexually Transmitted Diseases; Treponema Pallidum.

RESUMO

Introdução: A sífilis é uma Infecção Sexualmente Transmissível que afeta tanto homens como mulheres. Ao longo dos anos tem havido um aumento no número de casos no Brasil. **Objetivo:** descrever o perfil epidemiológico de sífilis de 2014 a 2022 em Jaraguá do Sul e Joinville, Santa Catarina. **Metodologia:** A coleta de dados foi feita através das bases de dados do Departamento de Informática do Sistema Único de Saúde no Sistema de Informação de Agravos de Notificação. **Resultados:** A sífilis adquirida apresentou a maior incidência na população com uma tendência de queda de 2019 a 2021, sugerindo uma possível subnotificação devido à pandemia e mostrou que a maioria dos casos de sífilis adquirida ocorreu na faixa etária entre 20 e 39 anos, com ensino médio completo. No Brasil a prevalência da doença ocorreu na população parda e preta e em Santa Catarina na população de etnia branca. O sexo masculino foi responsável pela maioria dos casos. A população com baixa escolaridade apresentou maior prevalência de sífilis. Mulheres com baixa escolaridade apresentaram maior prevalência de sífilis durante a gravidez, com idade inferior a 39 anos, e com ensino fundamental e médio, com sífilis primária e latente. A maioria dos casos de sífilis congênita no Brasil e em Santa Catarina não houve tratamento para o companheiro, mas realizou pré-natal. **Conclusões:** Tanto no Brasil como em Santa Catarina a sífilis permanece como um grave problema de saúde pública. Com esse estudo espera-se contribuir para melhor entendimento da epidemiologia de sífilis, especialmente no estado de Santa Catarina.

Palavras-Chave: Sífilis. Infecções por Treponema; Infecções Sexualmente Transmissíveis; Treponema Pallidum.

RESUMEN

Introducción: La sífilis es una Infección de Transmisión Sexual que afecta tanto a hombres como a mujeres y con el paso de los años ha habido un aumento en el número de casos en Brasil. **Objetivo:** describir el perfil epidemiológico de la sífilis de 2014 a 2022 en Jaraguá do Sul e Joinville, Santa Catarina. **Metodología:** La recolección de datos se realizó a través de las bases de datos del Departamento de Informática del Sistema Único de Salud en el Sistema de Información de Enfermedades de Declaración Obligatoria. **Resultados:** La prevalencia de sífilis adquirida mostró una tendencia a la baja de 2019 a 2021, lo que sugiere un posible subregistro debido a la pandemia y mostró la mayoría de los casos de sífilis adquirida ocurrieron en el grupo de edad entre 20 y 39 años, de etnia blanca y con educación secundaria completa. Los hombres representaron la mayoría de los casos. Las mujeres con bajo nivel educativo tienen mayor prevalencia de sífilis durante el embarazo, menores de 39 años, y con educación primaria y secundaria, con sífilis primaria y latente. En la mayoría de los casos de sífilis congénita no hubo tratamiento para la pareja, pero se realizó atención prenatal. **Conclusiones:** Tanto en Brasil como en Santa Catarina, la sífilis sigue siendo un grave problema de salud pública. Se espera que este estudio contribuya a una mejor comprensión de la epidemiología de la sífilis, especialmente en el estado de Santa Catarina.

Palabras clave: Sífilis; Enfermedades de Transmisión Sexual; Infecciones por Treponema. Treponema Pallidum.

Introduction

Syphilis has once again become a highly prevalent disease being considered as a serious public health problem. According to the World Health Organization one of the biggest challenges is achieving control through implementation of actions with integrated public health. (1). This Sexually Transmitted Infection (STI) is present in all social strata, developed and developing countries, in HIV carriers as well as immunocompetent, men and women. Globally, from 1990 to 2019 there has been an increase of 60 % in the number of prevalent cases of syphilis(1). Between 2017 and 2018, it was found that Brazil and regions showed growth in their detection rates of acquired syphilis and in 2018, the highest detection rate was observed in Santa Catarina(2).

Maternal syphilis has been universally identified among the main causes of maternal morbidity. According to the Ministry of Health in Brazil from 2017 to 2018

there is an increase in the number of notifications in all regions. The detection rate observed was 21.4 cases of syphilis in pregnant women/1,000 births alive, which was 25.7% higher than the rate observed in the previous year. The same tendency was observed with congenital syphilis which increased in 5.2 % from 2017 to 2018, there was an increase of 5.2% and in 2018, an incidence rate of 9.0 cases/1,000 live births was observed. In Brazil, from 2010 to 2020 there was a progressive increase in the rate incidence of congenital syphilis³.

It is estimated that in Brazil the average prevalence of syphilis in pregnant women varies between 1.4% and 2.8% with a vertical transmission rate of 25% (3). Congenital syphilis has been associated with greater social vulnerability and lack of knowledge of the population regarding the severity and repercussions of the disease. New and constant studies are needed so that it is possible to improve methods of approaching the population in terms of prevention and adherence to treatment.

Effective actions such as prevention, correct treatment of syphilis and a better quality prenatal are needed to reduce the existence of congenital syphilis which is considered as high-magnitude sentinel event and presents unfavorable indicators in terms of its control, requiring a political priority for its approach.

There are gaps in studies addressing the characteristics of the occurrence of syphilis in Santa Catarina, especially regarding acquired and gestational and more specifically in municipalities in the north region of the State of Santa Catarina. Considering the severity and epidemiological relevance of syphilis this study aims to describe the epidemiological profile of reported cases of syphilis in two major cities in the north region of Santa Catarina, Jaraguá do Sul and Joinville due the lack of epidemiological profile of syphilis in these cities and compare these data with national and state data.

Methodology

This is a retrospective epidemiological study and descriptive with a quantitative approach carried out in the state of Santa Catarina and in Brazil. The state of Santa Catarina is divided into 6 large regions and the north of Santa Catarina

comprises several cities, including Joinville and Jaraguá do Sul. These cities were selected for this study due to the lack of epidemiological data regarding syphilis.

Data collection through the databases DATASUS (Department of Informatics of the Unified Health System) in the Notifiable Diseases Information System (SINAN in Portuguese: Sistema de Informação de Agravos de Notificação) and IBGE (Brazilian Institute of Geography and Statistics) in the periods between 2017 and 2021(4).

The following variables were selected: education, age group, sex, ethnicity, and clinical classification (gestational syphilis). Afterwards, a comparative profile was drawn with the results obtained.

Inclusion and exclusion criterion: The population comprising all notified cases of acquired, gestational and congenital syphilis, occurring in the period from 2014 to 2022, was used as an inclusion criterion, and excluding cases referring to the years before 2014 and after 2022.

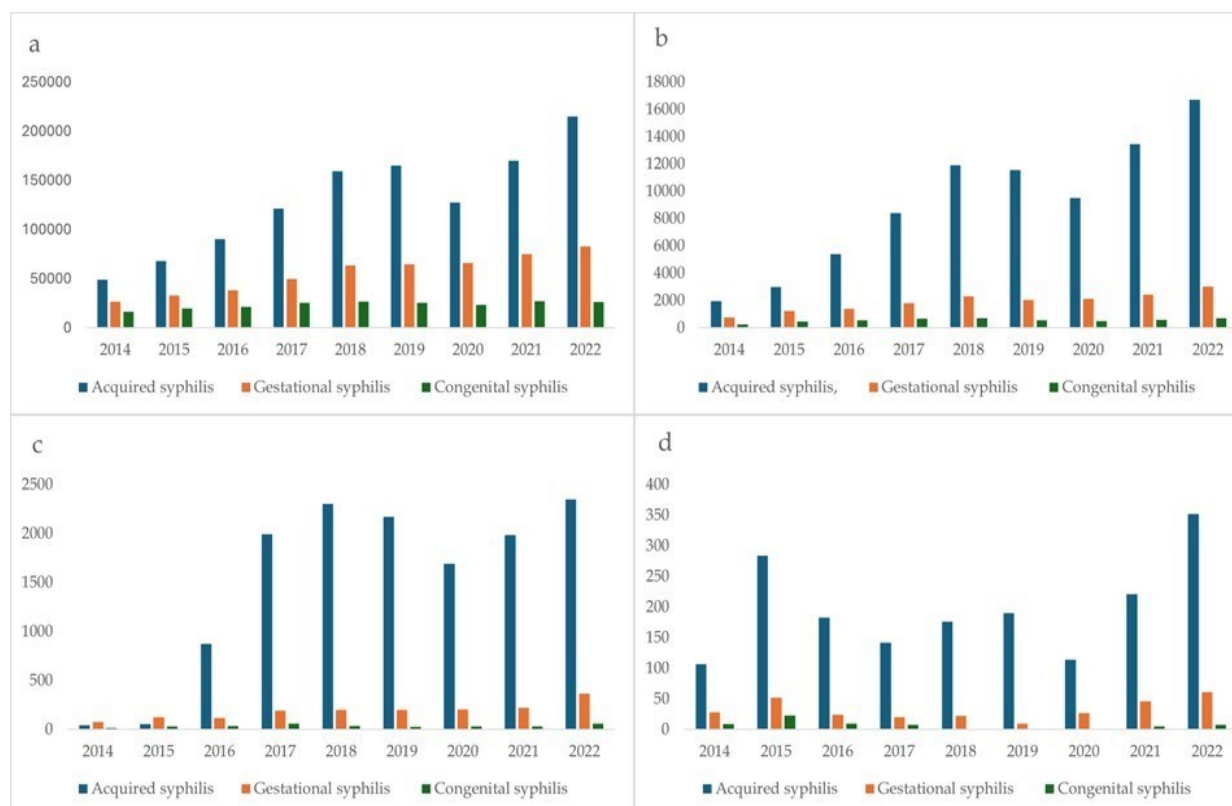
Data collection and tabulation were subjected to the calculation of relative frequencies and reported rates were calculated per 100,000 population and included overall annual rate. All results are presented using descriptive statistics. Descriptive analyses were performed using Microsoft Excel version 2308 (Microsoft365).

Ethical Aspects: This study used anonymized administrative health data provided by the Ministry of Health exempting submission to the Ethics and Research Committee.

Results

Graphic 1 shows the acquired syphilis, gestational and congenital syphilis notifications recorded in the Notifiable Diseases System during the period of 2014 to 2024.

Graphic 1. Acquired syphilis, gestational and congenital syphilis notifications recorded in the Notifiable Diseases System -Brazil (a), Santa Catarina (b), Joinville (c) and Jaraguá do Sul (d) from 2014 to 2022 (Sinan).



Source: DATASUS (Department of Informatics of the Unified Health System) in the Notifiable Diseases Information System (SINAN).

Of the three forms of syphilis, acquired syphilis has the highest number of notifications. In Jaraguá do Sul, the years 2015, 2021 and 2022 presented the highest notifications de Acquired syphilis, gestational and congenital syphilis. Acquired notifications reduced by around 40% from 2019 to 2020, then in 2021 and 2022 they showed an increase of 93% and 60% respectively. Joinville presented a slightly different pattern in relation to Jaraguá do Sul. As of 2016, a consistent increase was recorded in reports of acquired syphilis, with the years 2018 and 2022 being the highest records. Between 2021 and 2022, increases in notifications of acquired, gestational and congenital syphilis of 18, 65 and 87% were recorded, respectively. However, higher reduction (40%) in the notifications of acquired syphilis were observed between 2019 and 2020 as recorded in national and state data. National and state data record a reduction of 23% and 17% in notifications of acquired syphilis between 2019 and 2020, respectively.

National data indicate a progressive increase in notifications of acquired syphilis between 2014 and 2022. However, an 18% increase in notifications was observed in 2018 compared to 2017. Santa Catarina recorded an increase of 41% in the same period (2017-2018). The highest records in notifications occurred in 2021 and 2022. In this period, national data indicate an increase of around 25%, and Joinville recorded an increase of 18%. However, the city of Jaraguá do Sul recorded, in the same period, an increase of 60%.

Table 1 shows records of acquired syphilis notified in Brazil, annually, by education, ethnicity, gender and age group in Santa Catarina and Brazil during the period of 2014 to 2022.

During the study period, the epidemiological profile showed most cases of acquired syphilis occurred in the age group between 20 and 39 years old, of white and brown ethnicity and with low education (incomplete primary and secondary education). In Santa Catarina, the white ethnic group prevailed, while national data show that the brown and black ethnic population were more affected. Regarding gender, the male population was more affected than the female population.

In Jaraguá do Sul and Joinville, cases of gestational syphilis increased in recurrent age between 20 to 39 years which follow the national and state data. It can be considered as the sexually active phase with the greatest spread of the bacterium *Treponema pallidum*. Most women were with low education (incomplete primary and secondary education). Among the patients, primary and latent syphilis were prevalent during the period of study. In Joinville and Jaraguá do Sul, latent syphilis affected around 65% of pregnant women while national and state data show that around 44 and 35% were affected, respectively (Table 3).

Table 1. Percentage of records of acquired syphilis notified in Brazil, annually, by education, ethnicity, gender and age group in Jaraguá do Sul, Joinville, Santa Catarina and Brazil during the period of 2014 to 2022 (data presented in percentage values).

| | Jaraguá do Sul | Joinville | SC | Brazil |
|--|----------------|-----------|------|--------|
| Education | | | | |
| Illiterate | 0,4 | - | 0,1 | 1,0 |
| 1 st to 4 th year Elementary School (incomplete) | 4,8 | 1,4 | 1,4 | 4,6 |
| 1 st to 4 th year Elementary School (complete) | 1,3 | 1,9 | 1,9 | 2,9 |
| 5 th to 8 th year Elementary School (incomplete) | 17 | 1,6 | 1,6 | 10,1 |
| Elementary School (complete) | 9,3 | 6,0 | 6 | 7,3 |
| Incomplete high school | 11 | 5,9 | 5,9 | 9,0 |
| Complete high school | 41 | 6,5 | 6,4 | 19,8 |
| Incomplete Higher Education | 2,6 | 0,7 | 0,7 | 3,4 |
| Complete Higher Education | 6,3 | - | 1,2 | 4,7 |
| Ethnicity | | | | |
| White Ethnicity | 87,6 | 49,6 | 70,1 | 36,2 |
| Black Ethnicity | 2,2 | 1,45 | 4,5 | 10,4 |
| Brown ethnicity | 9,2 | 3,3 | 8,6 | 37,1 |
| Yellow ethnicity | 0,1 | 0,1 | 1,0 | 0,9 |
| Indigenous ethnicity | 0,05 | 0,01 | 0,4 | 0,5 |
| Gender | | | | |
| Men | 66 | 64,75 | 60,1 | 60,7 |
| Women | 34 | 35,25 | 39,9 | 39,3 |
| Age group | | | | |
| 10-14 | - | 0.1 | 0.3 | 0.5 |
| 15-19 | 6.9 | 5.9 | 8.7 | 9.6 |
| 20-39 | 68.1 | 62.6 | 63.4 | 58.6 |
| 40-59 | 21.9 | 25.4 | 21.8 | 23.2 |
| 60-64 | 1.5 | 2.4 | 2.4 | 3.2 |
| 65-69 | 0.9 | 1.7 | 1.5 | 2.2 |
| 70-79/80+ | 0.7 | 1.8 | 1.8 | 2.8 |

Source: DATASUS (Department of Informatics of the Unified Health System) in the Notifiable Diseases Information System (SINAN).

The notified cases of gestational syphilis in Santa Catarina and Brazil, by age group in the period of 2017 to 2021 are presented in Table 2.

Table 2. Notified cases of gestational syphilis in Jaraguá do Sul and Joinville, by age group in the period of 2014 to 2022 (relative values per 100,000 inhabitants).

| | Jaraguá do Sul | | | | Joinville | | | |
|------|-----------------------|-------|-------|-------|-----------------------|-------|-------|-------|
| | Age group (in years). | | | | Age group (in years). | | | |
| | 10-14 | 15-19 | 20-39 | 40-59 | 10-14 | 15-19 | 20-39 | 40-59 |
| 2014 | - | 6.2 | 10.6 | 0.6 | 0.4 | 4.5 | 10.4 | 0.2 |
| 2015 | - | 9.8 | 18.9 | 1.2 | 0.2 | 6.0 | 19.0 | 0.3 |
| 2016 | - | 3.6 | 10.7 | - | 0.2 | 6.1 | 18.1 | 0.9 |
| 2017 | - | 3.5 | 8.2 | - | 0.17 | 8.0 | 28.1 | 0.7 |
| 2018 | - | 0.6 | 12.0 | - | - | 7.7 | 31.4 | 0.8 |
| 2019 | - | - | 5.6 | - | - | 6.4 | 29.8 | 2.0 |
| 2020 | - | 2.7 | 12.7 | - | 0.2 | 6.7 | 30.8 | 1.0 |
| 2021 | - | 4.9 | 18.4 | 1.1 | - | 5.4 | 33.4 | 1.6 |
| 2022 | - | 4.4 | 25.2 | 2.7 | - | 8.0 | 49.7 | 1.8 |

| | Santa Catarina | | | | Brazil | | | |
|------|-----------------------|-------|-------|-------|-----------------------|-------|-------|-------|
| | Age group (in years). | | | | Age group (in years). | | | |
| | 10-14 | 15-19 | 20-39 | 40-59 | 10-14 | 15-19 | 20-39 | 40-59 |
| | | | | | 14 | | | |
| 2014 | 0.16 | 2.9 | 8.0 | 0.28 | 0.19 | 3.45 | 9.2 | 0.27 |
| 2015 | 0.22 | 4.9 | 12.6 | 0.38 | 0.22 | 4.2 | 11.3 | 0.32 |
| 2016 | 0.29 | 5.6 | 13.9 | 0.41 | 0.25 | 4.8 | 13.1 | 0.36 |
| 2017 | 0.21 | 6.6 | 18.3 | 0.51 | 0.30 | 6.2 | 17.0 | 0.47 |
| 2018 | 0.25 | 7.6 | 24.0 | 0.65 | 0.34 | 7.6 | 21.9 | 0.58 |
| 2019 | 0.19 | 6.1 | 21.6 | 0.54 | 0.31 | 7.3 | 22.5 | 0.59 |
| 2020 | 0.25 | 6.0 | 22.5 | 0.55 | 0.31 | 7.2 | 23.0 | 0.60 |
| 2021 | 0.14 | 5.8 | 26.4 | 0.70 | 0.33 | 7.5 | 26.6 | 0.71 |
| 2022 | 0.14 | 6.0 | 31.0 | 0.87 | 0.31 | 7.6 | 29.8 | 0.79 |

Source: DATASUS (Department of Informatics of the Unified Health System) in the Notifiable Diseases Information System (SINAN).

The majority of patients underwent non-treponemal screening and treponemal confirmation tests. The majority of the treponemal tests were reactive but between 8 and 14% of tests were not performed in both cities as in the state and Brazil. In most of the cases, the partners were not treated. In Jaraguá do Sul and Joinville presented a higher percentage of non-treatment for partner when comparing with national and state data.

Table 3. Percentage of reported confirmed cases of gestational syphilis by clinical classification and treponemal tests in Jaraguá do Sul, Joinville, Santa Catarina and Brazil the Notifiable Diseases Information System during 2014-2024.

| | Jaraguá do Sul | Joinville | Santa Catarina | Brazil |
|---|----------------|-----------|----------------|--------|
| Classification | | | | |
| Primary Syphilis | 13 | 9.1 | 29 | 26 |
| Secondary syphilis | 1 | 2 | 5 | 4.7 |
| Tertiary syphilis | 4.5 | 1.6 | 5.5 | 9.2 |
| Latent syphilis | 65 | 65 | 44.5 | 35 |
| Confirmation by treponemal tests | | | | |
| Reactive | 81 | 89 | 84 | 78 |
| Non-reactive | 3.5 | 1.2 | 3.3 | 3.2 |
| Not performed | 14 | 7.8 | 9.7 | 13 |
| Partner treatment | | | | |
| Yes | 9 | 13 | 19 | 18 |
| No | 89 | 81 | 65 | 55 |

Table 4. Percentage of registered cases of congenital syphilis by child's age, level of education and mother's age in Jaraguá do Sul, Joinville, Santa Catarina and Brazil in the Notifiable Diseases Information System during 2014-2024

| | Jaraguá do Sul | Joinville | SC | Brazil |
|------------------------------------|----------------|-----------|-------|--------|
| Child's age | | | | |
| 6 days | 97 | 99 | 96 | 94.6 |
| 7-27days | - | 1.3 | 1.4 | 1.9 |
| 28d-< 01 year | 3 | 1.3 | 1.8 | 1.6 |
| 01 year (12 -23 months) | - | - | - | 1.6 |
| 2-4 years | - | 1.3 | 0.1 | 0.1 |
| Level of mother's education | | | | |
| Illiterate | - | 0.6 | 0.7 | 0.6 |
| Incomplete Elementary School | 27.7 | 26 | 30.3 | 28.2 |
| Complete Elementary School | 12.3 | 19 | 14.2 | 10.0 |
| Incomplete high school | 21.5 | 12.9 | 14.6 | 12.6 |
| Complete high school | 33.8 | 31.5 | 24.0 | 17.3 |
| Incomplete Higher Education | - | 3.3 | 2.4.0 | 1.1 |
| Complete Higher Education | 3.1 | 2.7 | 2.2 | 0.9 |
| Mother's age | | | | |
| 10-14 y | - | 0.3 | 0.6 | 13.8 |
| 15-19 y | 27.7 | 20.1 | 20.1 | 22.0 |
| 20-24 y | 30.8 | 34.0 | 34.4 | 33.9 |
| 25-29 y | 18.5 | 20.4 | 22.0 | 20.9 |
| 30-34 y | 12.3 | 13.5 | 11.7 | 11.8 |

| | | | | |
|--------------------------------|------|------|------|------|
| 35-39 y | 3.1 | 7.2 | 6.8 | 6.1 |
| Performed Prenatal care | | | | |
| Yes | 90.8 | 82.6 | 85.6 | 81.3 |
| No | 9.2 | 16.8 | 11.4 | 13.1 |

Most cases of congenital syphilis occurred in infants up to 6 days old in all levels studied. Regarding the level of mother's education, most of them were with low education, mainly incomplete or complete elementary school and under the age of 30 years. In most cases prenatal care was provided.

Discussion

The present study is an epidemiological analysis with a retrospective and quantitative approach using data referring to notified cases of syphilis in Brazil and in the state of Santa Catarina and cities of the north region of the state: Jaraguá do Sul, and Joinville due the lack of epidemiological profile of syphilis in these cities.

According to the Epidemiological report of the Brazilian Health Surveillance Department (5), the acquired syphilis showed an increasing rate of detection until 2018, with subsequent stability, except in 2020, when a decline in the rate was observed, due to the pandemic by covid-19. However, in 2021 and 2022, the Acquired syphilis detection rates have reached levels higher than the pre-pandemic period, with an increase of 26% between 2021 and 2022. Also, a growing trend of gestational syphilis has occurred and according to the Epidemiological report of the Brazilian Health Surveillance Department a faster increase occurred between the years 2020 and 2022⁶.

During the most critical periods of the Covid-19 pandemic severe measures as isolation and social distancing were implemented which may have an impact on the frequency of sexual intercourse and the reduction in the number of partners(7). It has been suggested that the reduction in the incidence of notification of acquired syphilis may also be associated with a decrease in testing population, since the basic units were overloaded with patient care with respiratory symptoms(8). Furthermore, it has been postulated that the main causal factor in the decrease in incidence of acquired syphilis is the underreporting. When the measures of isolation and social distancing were more

flexible as well as the resumption of normal services in the basic units of health (occurred in the year 2021) were not sufficient for the identification of cases of syphilis acquired in the pre-pandemic values⁷. The main objective of disease reporting is to provide a foundation to implement public health policies that promote, protect, and control the health of the population⁹. In addition, underreporting may be due to failure to complete the SINAN notification form, failures in prenatal care and in the management of newborns of the disease¹⁰. Different trend was noticed in the USA where the CDC (Centers for Disease Control and Prevention) of the USA reported that primary and secondary syphilis cases dropped below 2019 levels during March and April 2020 but by the end of 2020 reported cases of syphilis increased 7% from 2019 to 2020¹¹. Some factors have been suggested for the increase of the cases as unsafe sexual activities, reduced STD (sexually transmitted disease) screening, lack of sufficient staff during the pandemic, and abandoning of STD programs and services¹².

In our study it has been observed the male gender was more affected than the female gender which reflects the fact that most of the partners did not undergo treatment. Furthermore, other studies have shown that the male gender is more affected than women due to the risk of behavior. During the decade of 2010 -2020 in Brazil the male gender was more affected than the female gender, however, both sexes showed increase of infection⁵. In Europe, the Annual Epidemiological Report for 2019 from the European Centre for Disease Prevention and Control (ECDC) reported that syphilis rates were nine times higher in men than in women, peaking in the male age group 25-34-years, especially in men who have sex with men. Furthermore, the age-specific rates have constantly been higher among the 25-44-year age groups and between 2010 and 2019 they almost doubled among those aged 35-44 years and 25-34 years¹³. In Brazil similar tendency was reported. High rates (52%) of acquired syphilis among men who have sex with men (MSM) were reported among this population group¹⁴. Such information justifies the statistics obtained in this study between the municipalities of Joinville and Jaraguá do Sul when obtaining a higher rate of acquired syphilis among white and young men.

The findings of this study strongly suggest a possible underreporting of both gestational and congenital syphilis in Brazil and in Santa Catarina. The notification of

syphilis, both in the gestational and congenital forms, is compulsory and its non-notification is a violation of Brazilian legislation. Underreporting can be considered as one of the biggest obstacles to the elimination of this disease in Brazil. It should be noted that underreporting further aggravates the situation of syphilis cases in Brazil by masking the reality of the condition. Due to the high mortality rates caused by the Covid-19 pandemic, the cases of syphilis as many other diseases were neglected. It has been estimated that in Brazil from 2007 to 2018, 45% of gestational syphilis were underreported and after corrected an increase in the rate incidence of 8 to 10% was estimated for the same period¹⁵.

In this study, most pregnant women were with low education (incomplete and complete high school), aged between 20-39 years old which may be related to the period of reproductive age in which women are. In most cases there was no treatment for the partner and most performed prenatal care. Similar results were reported in studies assessing the epidemiological profile of gestational syphilis in Santa Catarina between the years of 2015 and 2020. The authors reported the notified cases were mainly in pregnant women who have completed high school, aged between 20-39 years¹⁶. A study conducted in 2012 reported that in Santa Catarina most of the cases there was no treatment for the partner and most performed prenatal care¹⁷. Partner treatment plays an important role in the congenital syphilis incidence and the lack of partner treatment may contribute to a high incidence of the disease.

Low schooling and the age group with high sexual activity are factors that may contribute to a higher incidence of syphilis in these women. Other risks have associated with gestational and congenital syphilis as the poor quality of prenatal care and the urgent need to change public policies on care for pregnant women and newborns¹⁴. In addition, it has been pointed out the need for a health education, dialogue and care for illiterate pregnant woman living on the edge of poverty and in precarious sanitary conditions¹⁴.

This study presents limitations inherent to the method of using secondary and aggregated data and presents the identification of syphilis only from the Sinan system. It can be pointed out that the notification forms as limitations since they presented

many unfilled fields or fields with ignored information, reducing the amount of information important for the study. Nevertheless, this study was able to present the epidemiologic profile of syphilis in Brazil and Santa Catarina.

This study provided an epidemiological profile of syphilis at the level of Brazil and the state of Santa Catarina and other cities of the north region of the state. It shows that in Brazil as in Santa Catarina syphilis remains as a serious public health problem.

Conclusion

After analyzing the data, this study showed that most cases of acquired syphilis in Brazil occurred in the age group of 20-39 years, brown and black ethnicity, low education and majority male. Santa Catarina followed the national pattern, but the white ethnicity was more affected.

In Jaraguá do Sul and Joinville most pregnant women presented the latent form of the disease, under 39 years of age, white ethnicity, with low education, and although the majority received prenatal care, in the most of cases there was no partner treatment. Most cases of affected congenital syphilis were 6 days old infants.

Also, it was noticed that there was a reduction in notifications in the years of COVID-19 pandemic, years in which the pandemic was in its greatest period of incidence, hospitalizations and deaths suggest an underreporting of diseases.

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