

Congenital syphilis in the city of Vitória/ES in 2010-2020

Sífilis congênita no município de vitória/es no período de 2010 – 2020

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ABSTRACT

Introduction: Syphilis is a systemic infectious disease caused by *Treponema pallidum* and is a public health problem in Brazil, since it is epidemiologically growing in the Brazilian population. **Objective:** To describe the occurrence of congenital syphilis and the profile of reported cases in the population of the city of Vitória-ES. **Methods:** This was a descriptive study with a quantitative approach aimed at analyzing congenital syphilis. The study population consisted of all notifications found in the Notifiable Diseases Information System referring to congenital syphilis cases in the municipality of Vitória – ES in the period 2010–2020. **Results:** A total of 1,158 cases of congenital syphilis were reported in Vitória, where 36.4% were in the first trimester of pregnancy; most infants (95.7%) were diagnosed less than 7 days after birth. There was a predominance of mothers aged between 20 and 29 years (48.1%), and 61.8% of cases were recorded in brown-skinned pregnant women with low education. Prenatal care was provided to 76.2% of the pregnant women, but the treatment regimen was considered inappropriate in 54.1% of the cases. **Conclusion:** The large number of cases, despite failure in prenatal coverage with inadequate maternal treatment, point to poor quality of prenatal care, with congenital syphilis in the absolute majority of cases failing prenatal care. The findings indicate the need of improvements in the implementation of prenatal care that, if diagnosis and proper treatment occurs before the 36th week up to the 40th week, the case will be properly treated syphilis and will not be a congenital syphilis case.

Keywords: Syphilis, Congenital. Pregnant women. Prenatal care.

RESUMO

Introdução: A sífilis, uma doença infectocontagiosa sistêmica causada pelo *Treponema pallidum*, é um problema de saúde pública no Brasil, visto que se apresenta epidemiologicamente ascendente na população brasileira. **Objetivo:** Descrever a ocorrência da sífilis congênita (SC) e o perfil dos casos notificados na população do município de Vitória-ES. **Métodos:** Pesquisa descritiva com abordagem quantitativa, com o intuito de analisar a sífilis congênita; a população do estudo foi constituída por todas as notificações encontradas no Sistema de Informação de Agravos de Notificação (SINAN) referentes aos casos de sífilis congênita no município de Vitória-ES, no período de 2010 a 2020. **Resultados:** Foram notificados 1.158 casos de sífilis congênita no município de Vitória, que somaram 36,4% no primeiro trimestre da gravidez; a maioria das crianças (95,7%) foi diagnosticada menos de sete dias depois do nascimento. Verificou-se predominância em mães com idade entre 20 e 29 anos (48,1%); 61,8% dos diagnósticos foram registrados em gestantes da cor parda e baixa escolaridade. O pré-natal foi realizado em 76,2% gestantes, entretanto o esquema de tratamento foi considerado inadequado em 54,1% das notificações. **Conclusão:** O grande número de casos, não obstante a falha na cobertura pré-natal com inadequação do tratamento materno, aponta má qualidade de pré-natal, sendo a sífilis congênita na maioria absoluta dos casos falha no pré-natal. Os achados indicam a necessidade de melhorias na implementação do pré-natal que, se a conduta de diagnóstico e tratamento correto ocorrer antes da 36ª semana até 40ª semana, o caso será de sífilis adequadamente tratada e não será de sífilis congênita.

Palavras-chave: Sífilis congênita. Grávidas. Cuidado pré-natal.

INTRODUCTION

Syphilis is a systemic and sexually transmitted infectious bacterial infection with a chronic course. Its etiologic agent is *Treponema pallidum*. When the patient is not treated, it progresses over the years and, according to its evolution, it is classified into recent (primary, secondary and recent latent) and late (late latent and tertiary) syphilis.

Known since the 15th century, its study occupied all medical specialties, especially dermatology. Although effective treatment with penicillin has been available since the 1940s, syphilis is still a health problem in Brazil⁽¹⁾. The oldest reports of its discovery date back to 600 BC in Europe, but the first epidemic occurred in France in 1945, and from there it spread to the American continent^(2,3). The mode of transmission can be sexual, vertical or through blood. Vertical transmission occurs via the hematogenous route, infecting the fetus during pregnancy. There has been a report of direct infection of the fetus with *T. pallidum* during passage through the birth canal, since there

may be genital lesions in the pregnant woman. Vertical transmission may result in negative outcomes of pregnancy, such as abortion, stillbirth, preterm delivery, neonatal death and early or late congenital manifestations in live births. Sexual transmission is predominant. The sites of *T. pallidum* inoculation are, in general, the genitals, and there may also be extragenital manifestations (lips, tongue and areas of the skin with discontinuity). Transmission by blood transfusion can occur, but it has become very rare due to the control and testing of donated blood by blood centers, as well as the low survival of the bacteria at low temperature and outside the human body.

Sexually transmitted infections (STIs) represent the fifth most common cause of medical consultations in Brazil, and among all STIs caused by bacteria, syphilis is the most prevalent in the country. According to the World Health Organization (WHO), approximately 900,000 new cases of syphilis occur in Brazil each year⁽⁴⁾, thus making the disease a significant public health problem. In the country, the incidence of congenital syphilis (CS) in 2011 reached 3.3 cases per thousand live births, with the highest percentages observed in the Northeast and Southeast regions. These authors also report that there is underreporting and that perinatal mortality rates due to syphilis were evidenced only in the states of Espírito Santo (ES), Rio de Janeiro (RJ), São Paulo (SP), Paraná (PR), Santa Catarina (SC), Rio Grande do Sul (RS) and Mato Grosso do Sul (MS)⁽⁵⁻⁷⁾.

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In ES, in 2017, 3,706 cases of acquired syphilis, 1,596 of syphilis in pregnant women and 734 of CS were reported, and there were two deaths due to CS. ES has the second highest detection rate of acquired syphilis in the national scenario, with 87.9 cases per 100,000 inhabitants, second only to RS⁽⁸⁾.

The incidence rate of acquired syphilis in ES, in 2018, was 114.0 cases per 100,000 inhabitants, with the state ranking fifth among Brazilian states. In the country, the incidence rate in 2018 was 75.8 cases of syphilis per 100,000 inhabitants (SESA, 2019). In 2018, the state ranked eighth among Brazilian states in terms of the incidence rate of cases of CS. While in Brazil there were nine cases per thousand live births, in ES, the incidence rate of congenital syphilis was 10.5 children with syphilis for every thousand live births, but there are seven other states with higher rates than that, and they are: RJ, Pernambuco (PE), RS, Rio Grande do Norte (RN), Tocantins (TO), Ceará (CE) and Piauí (PI)⁽⁹⁾.

Syphilis is one of the diseases with the highest prevalence of mother-to-child transmission, both locally and worldwide. Although it is an easily detectable and treatable disease, it is still considered a serious public health problem, which can lead to CS, an indicator of quality of prenatal care. Despite the preventive measures already implemented, there has been an increase in the number of cases in the last decade, and CS should continue to be the subject of studies to come up with new prevention strategies.

In view of the above, this study is relevant, as it makes it possible to estimate the effectiveness of public policies and the quality of prenatal care, thus providing help for planning and monitoring interventions aimed at minimizing the incidence of CS in Vitória.

OBJECTIVE

To describe and evaluate the occurrence of CS and the profile of registered cases in the population of the city of Vitória/ES from 2010 to 2020.

METHODS

Data were analyzed using the program IBM SPSS Statistics version 24, whose characterization was presented in the form of observed frequency and percentage.

The population of Vitória, capital of ES, in the 2010 Census of the Brazilian Institute of Geography and Statistics (IBGE), was 327,801 for an estimated population of 369,543 inhabitants⁽¹⁰⁾. Vitória is the smallest capital in Brazil, one of the three that are an island. With a Municipal Human Development Index (HDI) of 0.845 in the 2010 Census, very different from that of 1991, with a much lower average (only 0.600), and its mortality rate is 8.63 deaths per thousand live births (Census/2020)⁽¹¹⁾.

This work was a descriptive research with a quantitative approach, with the aim of analyzing the number of cases of congenital syphilis in Vitória from 2010 to 2020.

The study population consisted of secondary data in the public domain, originating from notifications collected in the Information System for Diseases and Notifications (SINAN), obtained through the Department of Informatics of the Unified Health System (DATASUS), referring to cases of congenital syphilis from 2010 to

2020, material available on the website <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sinannet/cnv/sifilisES.def>.⁽¹²⁾

The information obtained was stored in a database in the Microsoft Excel program and later organized into tables and graphs and analyzed in the form of observed frequency and percentage. Stratification was performed by gestational age, race/color, clinical classification, child's age, diagnosis, mother's age range and education, prenatal care and maternal treatment regimen.

For this study, secondary and public domain data were collected, and therefore, there was no need for approval by the Human Subject Research Ethics Committee (CEP), in accordance with Resolution No. 510, of April 7, 2016.

RESULTS

Figure 1 shows that in Vitória from 2010 to 2020, 1,158 cases of CS were reported.

SINAN aims to collect, transmit and disseminate data routinely generated by the Epidemiological Surveillance System of the three spheres of government, through a computerized network to support the investigation process and help the analysis of epidemiological surveillance information on diseases of mandatory notification. Filling out instructions are strictly obeyed.

In **Figure 1**, the highest number of syphilis cases diagnosed according to gestational age¹ was observed in the first trimester (36.4%), and for clinical classification, it was observed in latent syphilis (34.5%).

As for prenatal care, 76.2% of the pregnant women received it, of which 54.09% were treated for syphilis inappropriately, that is 225 pregnant women, and only 2.6% received appropriate treatment, while 36.9% did not undergo the treatment. Graphs of the results are presented below to better illustrate the findings.

According to **Figure 1**, from 2010 to 2020, the number of cases of syphilis records was higher in the first quarter (36.4%), followed by the third quarter (30.1%) and finally the second quarter (26.9%).

Figure 2 shows the cases of pregnant women syphilis according to clinical classification; there were 400 records of latent syphilis (34.54%), followed

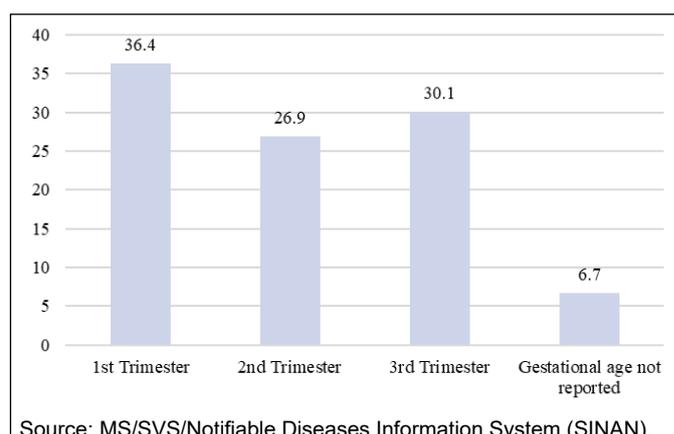


Figure 1. Cases of pregnant women with syphilis according to gestational age. Vitória, 2010-2020.

1 With the exception of the unreported.

by primary syphilis with 130 cases (11.23%) and secondary and tertiary with 74 cases (6.39%), while unreported data totaled 480 (41.45%).

In the years studied, most cases were women with brown skin, namely 61.78% (Figure 3).

Figure 4 shows that 76.20% (317) of pregnant women had prenatal care and 18.27% (76) did not.

Figure 5 demonstrates that the maternal treatment regimen was considered inadequate in 54.09% of cases (225 pregnant women).

DISCUSSION

Syphilis is one of the oldest known diseases and continues to cause great morbidity and perinatal mortality. Aiming at expanding the diagnosis and better epidemiological control, there has been an increase in the number of notifications in the last ten years; for example, in ES in 2017, 1,596 cases of syphilis were reported in

pregnant women along with 734 cases of CS, which included two deaths⁽¹³⁾. There is a correlation between lack of prenatal care and stillbirth rates due to genital syphilis⁽¹⁴⁾.

In Vitória in the period of 2010 to 2020, there were 1,158 reported cases of syphilis in pregnant women, 380 of CS, 19 of abortion and 14 of stillbirth. One-third of CS records are, most of the time, due to failure in prenatal care, that is, poor quality of care.

Syphilis is a disease known worldwide, which can affect various organs. It is easy to prevent; however, according to the WHO, there are about 900,000 new cases of syphilis. In Brazil, every year, the disease constitutes a significant public health problem⁽⁴⁾. Worldwide, the prevalence of the infection is 50 to 100 times higher in the United States compared to other industrialized countries⁽⁴⁾.

With regard to acquired syphilis, the 16 capitals⁽⁸⁾ that had a higher detection rate than the national rate in 2021 were Vitória (141.9 cases/100,000 inhab.), Palmas (129.6), Campo Grande (122.6), Belo

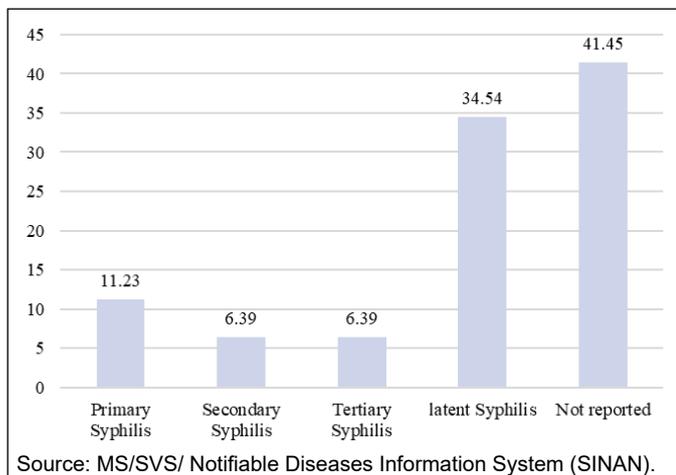


Figure 2. Cases of pregnant women with syphilis according to clinical classification.

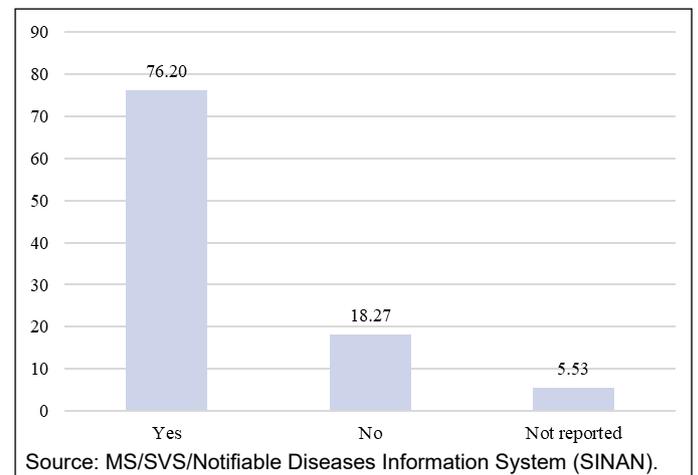


Figure 4. Cases of congenital syphilis according to information on maternal prenatal care by year of diagnosis. Vitória, 2010-2020.

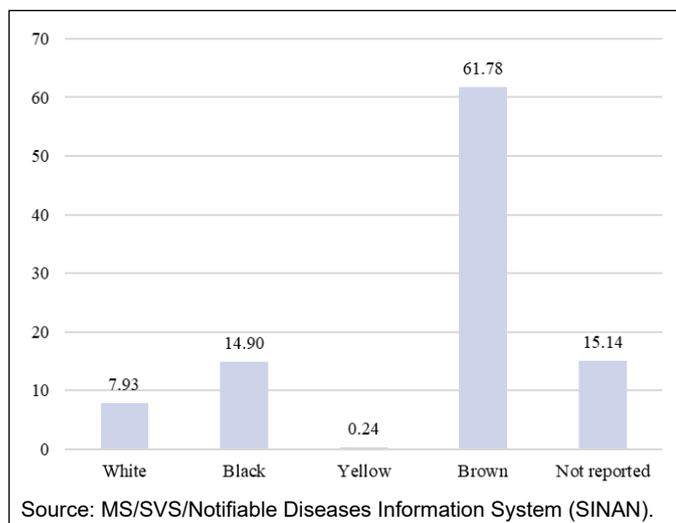


Figure 3. Cases of congenital syphilis according to race/color of mother by year of diagnosis. Vitória, 2010-2020.

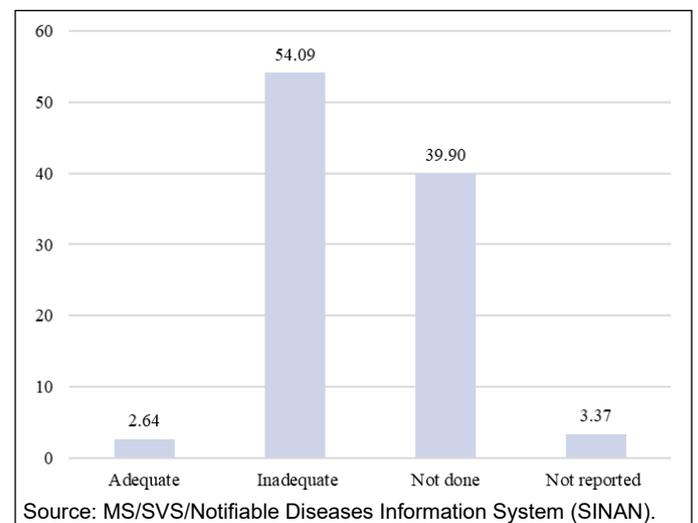


Figure 5. Cases of congenital syphilis according to the mother's treatment regimen by year of diagnosis. Vitória, 2010-2020.

Horizonte (120.4), Porto Alegre (120.0), Curitiba (115.8), Rio de Janeiro (112.4), Manaus (107.5), São Paulo (95.3), Goiânia (88.7), Cuiabá (87.9), Recife (78.2), Natal (74.3), Brasília (66.1) and Boa Vista (65.8). Bearing in mind that we are talking about capitals where the budget for health is often greater, but there is also a larger population. Vitória in 2021, had a higher rate than the national rate, so the question remains: will our contribution to detection or public investments be equipped with prevention against syphilis?

The evolution in STI cases, not only in Brazil, but in Latin America and the Caribbean, which recorded high rates of syphilis and CS, demonstrated a high prevalence in pregnant women⁽¹⁵⁾.

The approach taken in this work is in line with other studies on the percentage distribution of cases of pregnant women with syphilis according to gestational age. Our study showed 421 pregnant women (36.36%) of the cases diagnosed in the first trimester, 311 (26.9%) in the second and 348 (30.1%) in the third, as can be seen in **Figure 1**.

More cases of latent syphilis (400) were observed, that is, 34.54% in relation to primary and secondary syphilis in our study, as shown in **Figure 2**. We believe that these numbers are due to the high period of latency, which can be more than 20 years, that is, a period in which clinical signs of STI are not present so patients therefore do not seek treatment.

Testing errors⁽¹⁵⁾ were also found in some countries in Latin America and the Caribbean, as many laboratories did not employ standard procedures, such as the use of daily controls or routine calibration of equipment, the exception being Brazil, where pragmatic testing system has been established.

This work also showed a high unreported classification (41.45%), which refers to occurrences that cannot be classified, as they present a possible classification error. We also found more cases of primary (11.23%) than secondary and tertiary (6.39%) syphilis. In the 2021 epidemiological bulletin⁽⁸⁾, the same occurred: more cases of primary syphilis (28.6%) than secondary (5.4%) and tertiary (9.3%), but it differed from our study in relation to higher cases of latent syphilis (29.9%). In the present study, the unreported classification reached 41.45%, with latent classification in second place (**Figure 2**).

Regarding the previous data, there are controversies, since the diagnosis of primary syphilis is given when the patient presents a hard chancre lesion and adenomegaly. In practice, those who care for patients with syphilis rarely observe this situation, which leads us to reflect that those who care for these pregnant women do not know how to classify the stages of syphilis. On the other hand, having an unreported classification can be understood as disqualifying those who fill out the notification forms.

Furthermore, this information can be even more contested. For example, what is the training of the personnel who do the test, prenatal problems, socioeconomic issues and even lack of guarantee of the minimum number of medical consultations. These are problems that influence the control of vertical transmission of the disease.

Regarding skin color, 61.8% of the cases were diagnosed in brown-skinned pregnant women (**Figure 3**). The prevalent color of other studies⁽¹⁶⁾ corroborates the findings of this study, where 48.27% of CS cases were in brown women, a disparity of 13.90% in relation to white women. In this research, only 7.93 white women were registered, and thus, a racial inequality was observed, which

often also represents an economic inequality. It is worth mentioning that the color or race is considered to be that declared by the person in SINAN.

Keeping in mind the unreported data that, according to our analysis, refer to 63 patients (15.14%), are those who cannot be identified in terms of race. They probably were not self-declared.

In relation to Brazil, it was reported that care given to mothers with newborn diagnosed with CS is a measure of the quality of prenatal care⁽¹⁴⁾. The article reports low prenatal coverage in the country, but the capital of ES is an exception, with high prenatal coverage — 76.2% of pregnant women were followed up, 18.3% were not and 5.5% of the records referred to unreported data (**Figure 4**).

There are authors with their extensive research who cite poor quality of prenatal care^(17,18), since having prenatal care is not synonymous with good quality of care during this period, also because, as already mentioned, syphilis is completely curable with simple and inexpensive treatment. But this treatment has to be done 30 days before delivery, and if this does not occur, it is prenatal failure. This is unless the pregnant woman has contaminated herself three or four weeks before giving birth. Which is very rare in medical practice and surveillance of CS cases.

The Netherlands, for example⁽¹⁹⁾, has high coverage (over 99%) of prenatal screening for syphilis, bearing in mind that it is a developed country with a smaller population than Brazil.

The incidence of congenital syphilis and the rates of detection of syphilis in pregnant women per thousand live births increased about three times in this period (2010–2020), from 2.4 to 6.8 and from 3.5 to 12.4 cases per thousand live births, respectively⁽⁹⁾.

In Belo Horizonte and Belém do Pará, the predominance of young people with absent or incomplete prenatal care is evident⁽²⁰⁾. It is understood, therefore, that health education is the most concrete way to achieve the prevention and control of CS, which is in the commitment of primary care to offer quality prenatal care to pregnant women, guaranteeing an early diagnosis and adequate treatment to avoid vertical transmission of the disease.

This study demonstrated that, although most pregnant women had access to prenatal care, the findings point to weaknesses in preventing the congenital type of infection and in prenatal care, demonstrating the low effectiveness of promotion, prevention and adequate treatment actions in pregnant women.

All weaknesses are known and relevant, but failure in prenatal care is of fundamental importance for CS, which is absurd from a clinical-therapeutic point of view, because a well-performed prenatal care would eminently prevent CS.

However⁽¹⁷⁾, although several scientific articles relate the poor quality of prenatal care to the increase in the incidence of CS, there are several other studies that point to factors such as underdiagnosis or maternal and paternal negligence as relevant causes for this increase. In this robust systematic review with the objective of identifying whether publications in scientific journals evaluated by Brazilian or foreign peers on CS, with Brazilian data, cite that absent or poor-quality prenatal care is one of the main problems for the occurrence and notification of SC cases, and concludes that only 21.64% (24/111) make it clear that SC corresponds to inefficiency in prenatal care. Such data is symptomatic and highly relevant as few authors see the heart of the matter.

The underreporting of cases has always been the state's reality over the years, which prevented us from knowing the magnitude of the problem⁽¹⁸⁾. After several attempts to sensitize health professionals, especially those who work in maternity hospitals, we are improving the notification system for CS in ES. Some simple but effective measures began to be implemented in some municipalities, such as the reorganization of prenatal care, with the request for tests as soon as the pregnant woman goes to the Basic Health Unit (UBS), integration of maternal and child programs, family health and growth acceleration (PSF-PAC) programs and STD/AIDS programs; implementation of strategies for the humanization of prenatal care and birth with minimal routines, which include two examinations to investigate syphilis during prenatal care (in the first consultation and at the beginning of the third trimester) and a third one on admission for childbirth.

The findings indicate the need for improvements and the implementation of prevention and health promotion strategies for pregnant women, which enable the dissemination of knowledge about this disease to minimize vertical transmission, improvements in the qualification of primary care professionals, improvement of prenatal care up to the end of the pregnancy, creation of conditions to trace the treatment, not forgetting that the partner's treatment is part of it as well. These initiatives can contribute to reducing the number of CS cases.

This work had some limitations, such as the use of secondary data, which may not infer the reality of the situation of this condition. CS has been a compulsorily notifiable condition since 1986⁽²¹⁾, when inadequate filling out of notification forms and underreporting were observed. CS leaves numerous consequences for the fetus, which were not reported in the notification form, specific or referring data on pathologies, such as those caused by Hutchinson's triad^(4,22).

Strengths

Our study demonstrated the need for more public policies to combat STIs, which is a universal evil. In the past, the disease epidemic devastated the Old World, decimating its population. Sadly, it terrifies the present day as well. It is a systemic infection, which we know is curable by following the treatment of the patient and their partner with appropriate medications. Congenital syphilis is also treated with penicillin, and good prenatal care is the starting point.

It is necessary for Brazil to have updated data on the disease, which is a public health problem, making it a benchmark for measuring the quality of public health.

Limitations

Our study had the limitation of underreporting, which is common in many areas of research, which can inevitably occur. We worked with data that we were unable to check, but we were able to reveal the need for the appropriate agencies to urgently seek improvements.

CONCLUSION

By describing and evaluating the occurrence of CS and the profile of cases in Vitória/ES in the period of 2010-2020, we concluded

that improvements are needed in the training of health professionals to avoid inadequate maternal treatment and consequently CS. Our experiences in this work demonstrate that the consolidation of public policies of promotion, prevention and timely treatment drastically reduced the cases of CS.

Approval by the Human Research Ethics Committee

No ethics committee review was needed since the study involved publicly available notification data from SINAN.

Participation of each author

LLMG: Writing – original draft, writing – review & editing. ALCR: Data curation, writing – original draft, writing – review & editing.

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Conflict of interests:

The authors declare no conflicts of interest.

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