

Investigation of congenital syphilis cases: tool for surveillance, permanent education and management

Investigação dos casos de sífilis congênita: ferramenta para vigilância, educação permanente e gestão

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ABSTRACT

Introduction: Even though syphilis is an easily detectable and treatable disease, it is still considered a major public health problem, which may lead to Congenital Syphilis (CS). **Objective:** To analyze the final conclusion and the situations of vulnerability of cases of CS reported in Niterói in 2018 and 2019. **Methods:** A review of the reported cases of CS, except for abortions, diagnosed in 2018 and 2019, was carried out through SINAN forms and research questionnaires. **Results:** Of the 46 cases of CS in 2018 and the 107 cases in 2019, 8 (17.4%) and 4 (4%) did not undergo prenatal care, respectively; 2 (4.4%) and 4 (4%) were not screened for CS in the prenatal period; 3 (6.5%) and 13 (12%) were screened, but not treated; 11 (23.9%) and 17 (16%) did not receive an adequate treatment; 10 (21.7%) and 23 (21%) were reactive in the screening process, received adequate treatment, but were reinfected; 9 (19.6%) and 32 (30%) were reactive in the screening process, received adequate treatment, but had confirmed CS due to other criteria; 3 (6.5%) and 12 (11%) were non-reactive in prenatal care, but reactive in childbirth; and 0 (0%) and 2 (2%) were reactive, considered a serological scar, untreated, but confirmed by other criteria. The “low-income family” vulnerability aspect appears 21 times in 2018 and 50 times in 2019; “alcohol user”, 11 times in 2018; “frequent change of address”, 18 times in 2019. **Conclusion:** The social context of pregnant women living in Niterói in 2018 and 2019 may have determined the outcome of congenital syphilis.

Keywords: syphilis, congenital; epidemiological monitoring; health information systems.

RESUMO

Introdução: A sífilis, embora seja um agravo de fácil detecção e tratamento, ainda é considerada um grave problema de saúde pública, podendo acarretar a sífilis congênita. **Objetivo:** Analisar a conclusão final e as situações de vulnerabilidade dos casos de sífilis congênita residentes em Niterói (RJ) notificados em 2018 e 2019. **Métodos:** Foi realizada revisão dos casos de sífilis congênita residentes notificados, exceto abortos, com diagnóstico em 2018 e 2019, por meio das fichas do Sistema de Informação de Agravos de Notificação e dos questionários de investigação. **Resultados:** Dos 46 casos de sífilis congênita em 2018 e 107 em 2019, temos respectivamente que 8 (17,4%) e 4 (4%) não fizeram pré-natal; 2 (4,4%) e 4 (4%) não fizeram triagem para sífilis congênita no pré-natal; 3 (6,5%) e 13 (12%) fizeram triagem, porém não trataram; outros 11 (23,9%) e 17 (16%) não fizeram o tratamento adequado; 10 (21,7%) e 23 (21%) foram reagentes na triagem, tratamento adequado, porém reinfetaram; 9 (19,6%) e 32 (30%) foram reagentes na triagem, tratamento adequado, porém confirmaram sífilis congênita por outros critérios; 3 (6,5%) e 12 (11%) foram não reagentes no pré-natal, porém reagentes no parto; 0 (0%) e 2 (2%) foram reagentes, considerados cicatriz sorológica, não tratados, porém confirmaram por outros critérios. A vulnerabilidade família de baixa renda apareceu 21 vezes em 2018 e 50 vezes em 2019, usuária de álcool (11) em 2018, mudança frequente de domicílio (18) em 2019. **Conclusão:** O contexto social das gestantes residentes em Niterói em 2018 e 2019 pode ter determinado o desfecho de sífilis congênita.

Palavras-chave: sífilis congênita; monitoramento epidemiológico; sistemas de informação em saúde.

INTRODUCTION

Sexually transmitted diseases (STDs) are considered as a public health issue due to their major impact on the health of people and populations all around the world. Syphilis has been preventable and curable since the discovery of penicillin, but despite prevention and control actions, which are available at a low cost, is still a challenge for health systems, especially due to its potential for vertical transmission (VT), causing congenital syphilis (CS)⁽¹⁾.

Brazil has been signatory of international agreements to eliminate CS since 1992, but in 2016 syphilis was recognized as a major public health issue in the country. The prevention of VT of syphilis became a priority in the Pluriannual Plan, increasing its visibility and importance in the public health scenario in Brazil⁽²⁾.

The World Health Organization (WHO)⁽³⁾ has established that, until 2021, the actions of STD control and prevention would focus on

syphilis, aiming at a 90% reduction of cases until 2030. This includes proposals of stronger surveillance activities, bringing up the theme and its relevance in the proper instances.

CS is considered as a marker of prenatal care quality for being a disease that is not only preventable, but also easily diagnosed and treated. Mostly, it occurs due to errors in prenatal care⁽⁴⁻⁶⁾. According to Donalísio et al.⁽⁷⁾, CS can reveal mistakes in prenatal health care related to diagnosis, treatment, investigation and/or notification, besides being a marker of transmission among adults in the community.

The advent of Information Note n. 2, from September 19, 2017, which changes the criteria to define cases for notification of acquired syphilis, syphilis in pregnant women and CS in the Surveillance Guide from the Health Surveillance Secretariat/2017⁽⁸⁾, identified the need to revise the notified and investigated cases in the years after this change, justifying the choice of 2018 and 2019.

Through data systematization, the objective was to analyze the notification records and the investigation questionnaires of VT, therefore establishing an epidemiological profile of notified cases among residents of Niterói, in the state of Rio de Janeiro, in order to obtain more specific and qualified information and to improve the understanding of each case and the scenario of CS in the city,

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proposing actions to prevent and control this condition, according to the identified demands, as well as promoting permanent education to health professionals.

OBJECTIVE

To analyze the cases of CS in residents from the city of Niterói (RJ), diagnosed in 2018 and 2019, in order to contribute with prevention and control policies for this condition.

METHODS

A cross-sectional, retrospective, descriptive surveillance study was performed, whose objects were the notified and investigated cases of CS diagnosed in 2018 and 2019, from residents of Niterói. The source of this study was a database from the city's epidemiological surveillance department, formed by data from the Notifiable Diseases Information System (SINAN) referring to the notified cases of CS and to the investigation questionnaires of VR requested by the IST/AIDS and viral hepatitis council, in the work process of notified cases in the mentioned biennium.

Notifications of cases of CS were identified among residents and non-residents of Niterói diagnosed in 2018 and 2019. All cases were inserted in an entry spreadsheet, which aimed at registering and controlling all of the received notifications. For all of the cases of those living in Niterói, the filling out of a questionnaire to investigate VT was requested. The notification/investigation forms and the questionnaires were qualified to define the cases that contemplated the criteria for CS or not.

The cases that contemplated criteria for residents with CS were inserted in an analysis spreadsheet containing all of the variables for posterior verification. For these cases, a copy of the notification form of CS was sent with the investigation questionnaire to the unit of reference in the territory, which should be answered based on the data search through the records, interview with the users and field visit, to be then returned to technical advisement.

The investigation questionnaire is composed of the following sections:

- identification of the investigation unit and respondent of the questionnaire, as well as investigation date;
- mother's data;
- data to identify the child;
- mother's epidemiological history;
- prenatal care;
- birth;
- childcare.

With the devolution of the investigation questionnaires, the provided data were inserted and updated in an analysis spreadsheet, thus forming a specific database with the list of all cases and their variables.

Based on this database, a descriptive analysis was performed, and the simple frequency rates of the data from notification/investigation forms, as well as questionnaires of VT investigation, were calculated using the Microsoft Excel® software. The analysis was performed considering maternal sociodemographic variables, such

as age group, race/ethnicity and schooling; prenatal characteristics; maternal epidemiological history and vulnerabilities; laboratory and clinical data of the child; case defining situation; treatment, evolution and conclusion of the case.

This study was approved by the Research Ethics Committee, report n. 4.693.795, from May 5, 2021.

RESULTS

In the study period, the Health Surveillance Coordination (COVIG) received 204 notifications of CS in 2018. After analysis and qualification, it was observed that 79 were from non-residents, and 125 were from residents of Niterói; of these, 25 were children exposed to maternal syphilis. Then, the reference health units were requested to investigate the cases in their territories through investigation questionnaires. After their analysis, of the 100 cases that appeared as CS in SINAN, we observed that 19 notifications were from outside the coverage area; 33 were exposed children; and 48 were considered as CS. For the purposes of this study, the cases that led to abortion (2) were excluded from the analysis for being cases in which prenatal care was not initiated; therefore, there was no sufficient information to be analyzed.

In 2019, COVIG received 402 notifications of CS; of these, 169 were from non-residents, and 233 from residents of Niterói, of whom 65 were children exposed to maternal syphilis. After the investigation of cases, of the 168 cases that counted as CS in SINAN, we observed that 29 were cases from non-residents, 28 did not meet the criteria for CS, and 111 had criteria for CS, and therefore remained as cases. The four cases that evolved as abortions were excluded from the analysis for the aforementioned reason.

For this study, we used a section of the investigation questionnaire about the mothers' epidemiological history, which listed and allowed to check the risk behaviors and the situations of vulnerability experienced during the pregnancy of the investigated child; it also had an open-ended question that allowed to include other situations that had not been contemplated.

Therefore, we were able to notice that the same case could have one or more vulnerability aspects. Now, we will show their prevalence in the investigated cases.

In **Figures 1 and 2**, we can observe that the most prevalent vulnerabilities among the notified and investigated cases were low income family, which represented 52.2% of the cases in 2018 and 47.7% of the cases in 2019; followed by alcohol and drug user, which, in 2018, represented 41.3% of the cases and, in 2019, 31.6%. Among the other situations of vulnerability, the following were reported.

Facing the challenge that is to try, demonstrate and understand each notified and investigated case in 2018 and 2019 and the possible causes that led to its occurrence, a classification was proposed for the conclusion of the cases. Eight conclusion categories were organized so that, at the end of the individual analysis of each case, it was possible to fit the case in one category and understand the outcome.

As observed in **Table 1**, in 2018, in the city of Niterói, of a total of 46 women, 11.0 (23.9%) underwent prenatal care, had a reactive screening test during prenatal care, however, did not undergo proper treatment and confirmed CS for other criteria. In the two analyzed

years, the second most common conclusion was that the mothers who underwent prenatal care were tested for syphilis in prenatal care, received proper treatment, however, were reinfected: 10.0 (21.7%) in 2018 and 23.0 (21.5%) in 2019.

DISCUSSION

The analysis revealed that most pregnant women underwent prenatal care and were tested during this follow-up. When we observe the conclusion table, we can see that most of the pregnant women

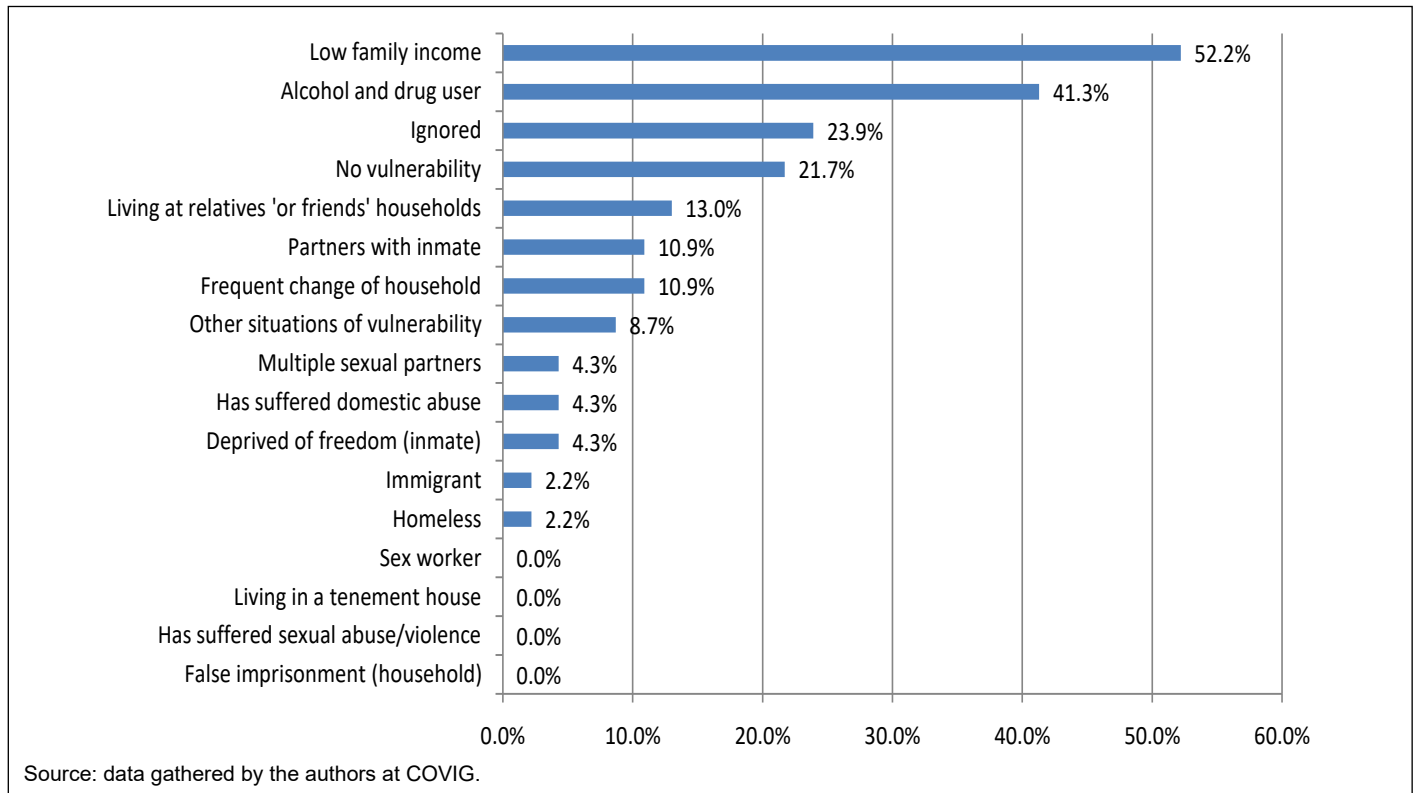


Figure 1 – Prevalence of maternal vulnerabilities during prenatal care in 2018.

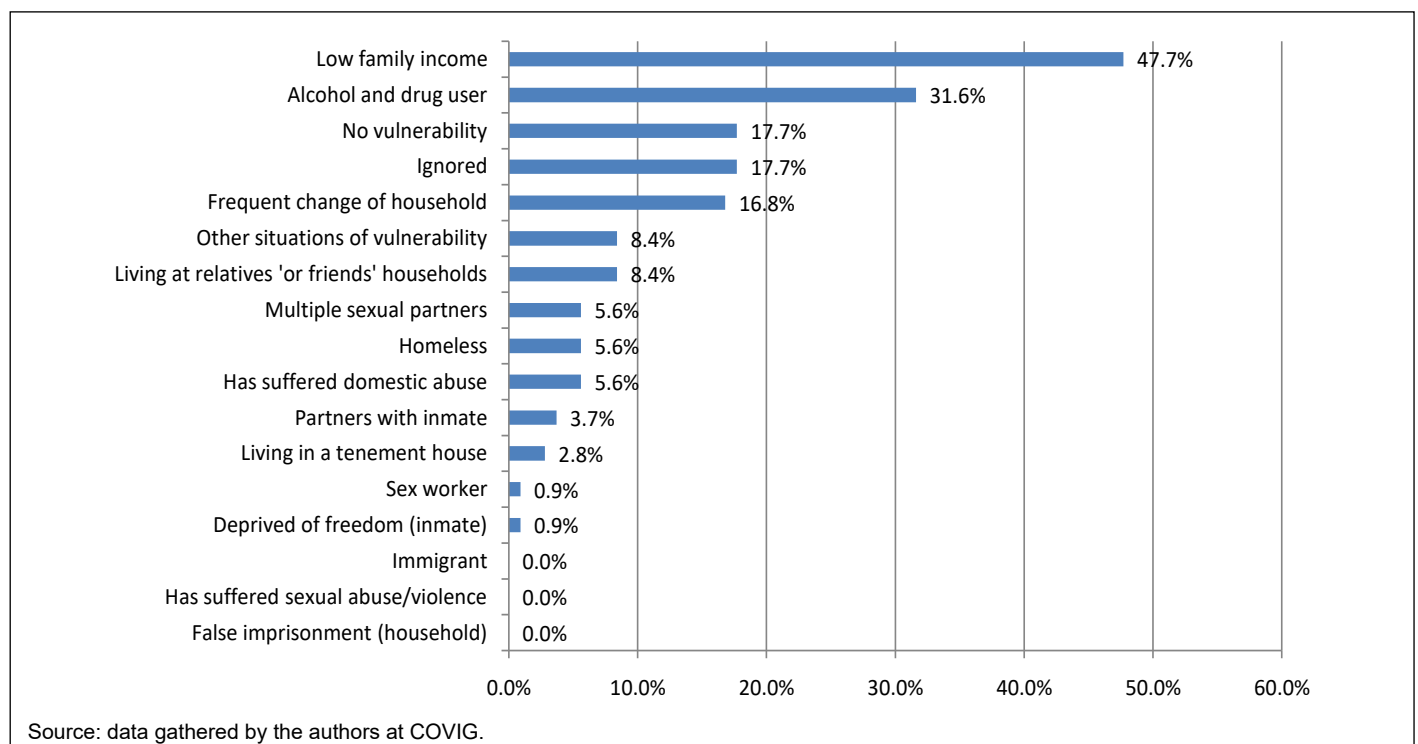


Figure 2 – Prevalence of maternal vulnerabilities during prenatal care in 2019.

diagnosed in 2018 were not properly treated for syphilis; however, when we analyze conclusions 5 and 6 together, we notice that the most frequent cases received a proper treatment: 19.0 (41.3%).

In cases diagnosed in 2019, most pregnant women received proper treatment for syphilis during prenatal care; however, their newborns had confirmed cases of CS due to other criteria. Conclusions 5 and 6 in 2019 account for 55.0 (51.4%), that is, it is possible to observe that most pregnant women received proper treatment. The frequency was also high among pregnant women who, even with proper treatment for syphilis during prenatal care, were reinfected in both analyzed years. The low income vulnerability factor was the most common one in both years.

Studies have shown that, in groups considered to be more vulnerable, the occurrence of CS is higher. The concept of vulnerability considers the individual and the collective as one, and, within the years, epidemics have been evaluated to understand the health-disease process under the macro and microstructural perspectives⁽⁹⁻¹²⁾.

The concept of vulnerability, which can refer to knowledge and information about specific problems and attitudes in order to take on protective conducts or practices, also refers to economic, gender and ethnicity/racial relations, besides religious beliefs, social exclusion, health services and the way the latter manage the reduction of vulnerability contexts⁽¹³⁾.

Considering that families or the collectivity can be vulnerable for not disposing of conditions to face the risks to which they are exposed, we can conclude that vulnerability should not be taken for risk, but instead considered in its different senses: individual, social and institutional, or programmatic. The notion of risk has been criticized and pointed by other authors as a situation that is apart from the individual's problems, highlighting that the social and environmental contexts also produce disease^(14,15).

Therefore, it is important to consider that these vulnerabilities may have reflected on the impossibility of offering adequate treatment to these women, considering that we identified a maternal profile, in this study, composed of young, brown and low-schooling women. These findings reveal the existence of circumstances that are not part of the decision-making range of the individual, such as illiteracy, low schooling, low income and major social inequality⁽¹²⁾.

We must not disconnect public health from health social determinants, especially in Brazil. Economic, psychological and cultural conditions can influence the occurrence of health issues and risk factors in the population. The access to health services is universal and a constitutional guarantee; however, these vulnerabilities mean the difficulty of individuals to access these public services⁽¹⁶⁻¹⁸⁾.

The proper management of syphilis among pregnant women, both for its prevention and its diagnosis and treatment, goes through the responsibility of the sanitary coverage territory, the involved health professionals and the pregnant women, who should be informed about their condition and have the physical and social capacity to be co-responsible for their own healthcare.

The fact that most women whose children had CS in 2018 and 2019 presented vulnerabilities such as having low income, being alcohol and/or drug users, having moved frequently and, during pregnancy, having lived in the households of relatives and/or friends reveals how these health problems surpass the biomedical field and are related to social demands that present themselves as barriers to advance in the control of the issue. The frequent change of households revealed in this study is an extra challenge for the health network when it comes to the continuity and follow-up of cases and the guarantee of full care.

In the attempt to synthesize and group the conclusions of each case, the categories were organized and presented in **Table 1**. The analysis showed there is a difference in the conclusion between cases of CS among residents of Niterói in the studied years. In 2018, the prevalence was of cases with reactive diagnostic tests in the screening process, during prenatal care, and inadequate treatment in 23.9% of the cases. In the same year, Fundação Municipal de Saúde carried out a Simplified Public Selection Process that aimed at the temporary hiring of servers for health care and administrative services in the Family Health Strategy/Family's Physician program, and called new professionals to be hired and to work in Family Health Units. Among the professional categories were family physicians, nurses, nursing technicians, health community agents, dentists and public health supervisors, among others⁽¹⁹⁾.

Because of the call of candidates who were approved in the test, many former professionals left either by choice or because they did not pass the test. On the other hand, many new professionals arrived and brought experiences from other cities. When we think of the Family Health Strategy as a practice that aims at promoting a closer relationship between health professionals and the community, through principles of integrality, connection and longitudinal care⁽²⁰⁾, we observe that the permanence of these professionals in the strategy is essential for success⁽²¹⁾, besides the knowledge that is accumulated based on actions of continued and permanent education. However, it is important and necessary that health units, of any level, have updated routines, in accordance with norms and protocols from the Ministry of Health, which allow the continuity

Table 1 – Distribution of the conclusions of cases of congenital syphilis after investigation in 2018 and 2019.

Conclusion	2018		2019	
	N	%	N	%
1-Did not undergo prenatal care.	8.0	17.4	4.0	3.7
2-Was not screened for congenital syphilis during prenatal care.	2.0	4.3	4.0	3.7
3-Reactive screening, however, untreated during prenatal care.	3.0	6.5	13.0	12.1
4-Reactive screening, inadequate treatment.	11.0	23.9	17.0	15.9
5-Reactive screening, adequate treatment, however, was reinfected.	10.0	21.7	23.0	21.5
6-Reactive screening, adequate treatment, however, confirmed congenital syphilis due to other criteria.	9.0	19.6	32.0	29.9
7-Non-reactive screening in prenatal care, however, reactive at childbirth.	3.0	6.5	12.0	11.2
8-Reactive screening, considered as a serological scar, untreated, confirmed due to other criteria.	0.0	0.0	2.0	1.9
Total	46	100.0	107	100.0

Source: data gathered by the authors at COVIG.

of surveillance and care actions, especially addressed to acquired syphilis and syphilis in pregnant women.

In 2019, the prevalent cases were those that, during prenatal care, presented reactive diagnostic tests, obtained proper treatment, however, confirmed CS due to other criteria, which occurred in 29.9% of the cases. These women, even without identifying characteristics of reinfection and receiving adequate treatment, had children who were considered to have CS, since they presented with some change after childbirth, for instance, a symptom, fluid changes or long bone x-rays. Even in cases of doubt, newborns are treated to reduce the consequences of a possible syphilis infection, but it is important that the differential diagnosis be assessed.

It is worth to mention that, in the two studied years, there was a high frequency of cases that presented reactive diagnosis in screening process, with proper treatment; however, with history or evidence of reinfection (21.7%, in 2018, and 21.5%, in 2019). This finding leads us to think about the high number of non-treatment of sexual partner(s) of pregnant women, once again showing how important it is for the couple to participate in prenatal care. On the other hand, we should emphasize the need for health teams to insist on the priority of care addressed to sexual partners of pregnant women in the health unit.

The occurrence of CS is closely related to very poor women, or those with very vulnerable lifestyles, and some specific risk factors may range between the several regions of the country with time. Each country, or region, should know about its own situation and make their health system more efficient. Without knowing exactly where the flaws are, health actions can lose their main focus⁽²²⁾. In the city of Niterói, actions such as the increasing offer of social support and dialogue with mental health services, teams of damage control and care addressed to the homeless population should be reinforced in order to reduce the individual and collective barriers that were shown in this analysis.

It is important to emphasize the importance of epidemiological surveillance of CS in the different levels of the organization – primary care, due to the core role of Family Health teams; sanitary districts and the central levels of the Municipal Health Secretariat –, collecting data and generating information to plan on local control actions, meaning that every new case should be interpreted as a flaw in the work process (that should eliminate the condition). The emphasis of CS as a public health issue, with managers and professionals in charge of health care, is essential for the decision-making process⁽²³⁾.

Some limitations of studies that use secondary data sources, with probable under notification and possibly the low quality and incomplete information, may impact this analysis. However, the investigation questionnaires of VT were also essential to minimize this limitation, allowing the teams in reference units and surveillance of the city to qualify the data. Few data were ignored in the analyzed characteristics, besides having enabled the qualification of SINAN's notification/investigation forms.

The analysis has some restrictions regarding the possible inferences on the observed results, since a comparative analysis of a control group or a comparison group was not performed. We considered the comparison with the notified cases of children exposed to maternal syphilis that were not characterized as cases of CS; however,

we understood that this would not be an appropriate group, since it would not represent the total population of cases of children considered as exposed to maternal syphilis, since there is no orientation to notify such cases. On the other hand, it is recommended that this analysis be performed, for comparative purposes, of the notified group of children exposed at least in a sample base, because it is a group of exposed individuals that did not result in cases.

As strong aspects, this study shows the applicability of the use of investigation questionnaires of VT in the epidemiological surveillance routine of cases of CS. This instrument, when properly filled out by the reference units of the territory, brings relevant and complementary information that is not contemplated by the CS investigation/notification form, and, therefore, helps to elucidate the cases. After the review of the cases based on the investigation analyzed by the questionnaires, the number of CS occurrences decreased in the two studied years. It was possible to identify the ones who were not residents of the city and those who did not meet the criteria for CS, bringing more reliability to the number of cases that should really be notified in SINAN. And the investigation of these cases allows to think of actions for the permanent and continued education process with the health network, as well as the planning of other actions aiming at controlling the disease.

CONCLUSION

It is possible to conclude that the occurrence of CS is multifactorial, so it is necessary that the actions to control it include not only matters related to prenatal care and pregnant women, but the context in which these cases are inserted. A closer look towards the vulnerabilities that have been reported allows to visualize the several aspects that lead to the disease, and that should lead to the sensibilization of health administrators and professionals, so they can rethink the solutions to eliminate this condition from the city.

Participation of each author

Ana Lúcia Fontes Eppinghaus participated in the research conception and design, data collection and orientation; Antônio José Leal Costa participated in the study conception, design and orientation; Márcia Santana participated in the study conception and design; Yasmin Nascimento Farias participated in the study conception, design and data collection; Fábria Lisboa de Souza and Marcella Martins Alves Teófilo participated in the study conception and design, data collection, analysis, data interpretation and writing of the paper; Kamilla Cabral Kosa participated in the study conception and design, bibliographic review, data collection, analysis, and interpretation and writing of the article.

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Conflict of interests

There is no conflict of interest to be reported.

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