

EPIDEMIOLOGICAL ANALYSIS OF CONGENITAL SYPHILIS IN THE STATE OF CEARÁ, BRAZIL

Hellen Livia O Catunda¹, Igor C Mendes¹, Erison T Oliveira¹, Elizian BR Bernardo¹, Karine C Bezerra¹, Deise Maria N Sousa², Lara L Oliveira², Camila C Costa³, Ana Kelve C Damasceno⁴

ABSTRACT

Introduction: congenital syphilis is a systemic infectious disease of chronic evolution caused by the *Treponema pallidum* bacterium dissemination to the fetus through the placenta of infected pregnant women untreated or treated improperly, occurring at any stage of pregnancy or clinical stage of the disease. **Objective:** epidemiological analysis of congenital syphilis in the State of Ceará from 2007 to 2010. **Methods:** documentary study conducted in March, 2013, through the database available at the Center for Information and Analysis in Health which keep the information about the National System of Notifiable Diseases records. There were 1,577 notifications of congenital syphilis cases. **Results:** the following results were observed: 71.78% (n = 1,132) of women who had their children diagnosed with congenital syphilis attended to prenatal consultation; 46.16% (n = 728) had a diagnosis of syphilis identified only during delivery/curettage; about 69.5% (n = 1,096) of pregnant women partners did not undergo any treatment for congenital syphilis. It was noted that over 90% of children were diagnosed with congenital syphilis until the sixth day of birth, and the most prevalent final classification was recent syphilis with 83.83% (n = 1,322) of cases. The most common clinical evolution for children had a favorable outcome, as more than 75% of them underwent treatment and remained alive during the studied period. **Conclusion:** the thorough analysis of congenital syphilis cases and the factors involved in the process are of fundamental importance to support the actions to prevent and control the disease.

Keywords: syphilis, congenital syphilis, health surveillance, STD, prenatal.

INTRODUCTION

Congenital syphilis is a systemic infectious disease of chronic evolution subject to acute outbreaks and latency periods when left untreated. It is caused by the dissemination of *Treponema pallidum* bacterium to the fetus by placental route through the untreated or improperly treated infected mother, and may occur at any phase of gestation or clinical stage of the disease⁽¹⁾.

Although syphilis is a disease of easy diagnosis and effective treatment of pregnant women, its mother-to-child transmission is still considered a public health problem due to the high frequency of serious effects on the pregnancy and on the child, such as miscarriage, stillbirth, or perinatal death⁽²⁾, with a chance of transmission from 70 to 100% in the primary and secondary stages of the disease, and of 30% in the late stages of maternal infection⁽³⁾.

Therefore, in order to facilitate the epidemiological surveillance of congenital syphilis, the disease was included in the notifiable illnesses list since 1986. In addition, the Ministry of Health set up a goal to be accomplished: the improvement in the quality of prenatal care and timely diagnosis and treatment of gestational syphilis cases in order to prevent the vertical transmission of the disease⁽³⁾.

Despite all efforts for the prevention of congenital syphilis and its control, 16,911 cases of the disease were reported in Brazilian States between 2007 and 2009, showing that the incidence remains

high⁽⁴⁾. In the State of Ceará between 2001 and 2006 1,203 cases of congenital syphilis were reported, and a growing increase in the course of this period has occurred⁽⁵⁾.

It is recommended that all pregnant women carry out the syphilis test at the beginning of pregnancy, being the serologic tests the main way to establish the diagnosis. Among them, there are non-treponemal tests such as VDRL, in which the result is described qualitatively in “reagent” and “not” reagent, and quantitatively by means of titrations, for example 1:2 and 1:32, and treponemal tests such as TPHA, FTA-Abs and ELISA, which are specific tests used to confirm the infection⁽³⁾.

However, the elimination of congenital syphilis as a public health problem requires the reduction of its incidence through an organized and quality prenatal care, and its emergence is considered an event that exposes the limitations of health services, especially in the basic attention⁽⁶⁾.

It is known that the congenital syphilis can be controlled through appropriate diagnosis and treatment of pregnant women during prenatal follow-up. Thus, educational strategies should be developed on prenatal care and childbirth to ensure the promotion and prevention of health and appropriate diagnoses and treatment⁽⁷⁾, i.e., a humanized and capable prenatal care and childbirth aiming at the health and well-being of both the mother and the baby.

Prenatal examination is a right of every pregnant woman and a duty of health professionals, including nurses, who should do so in their best way in order to reduce the syphilis vertical transmission, also including sexual partners of positive VDRL women to prevent their reinfection.

The importance of epidemiological identification of congenital syphilis is then verified, and both maternal and neonatal characteristics noted as well, so that health professionals could be able to perform interventions that prioritize not only the early identification but also the treatment of syphilis in pregnant women.

This study was developed at the Federal University of Ceará (UFC).

¹ Nursing graduates from the Federal University of Ceará.

² Nurses. Master's degree graduates in Nursing by the Postgraduation Nursing Program at the Federal University of Ceará.

³ Nurse. Doctorate in Nursing graduate by the Postgraduation Nursing Program at the Federal University of Ceará.

⁴ Nurse. PhD in Nursing. Professor at the Federal University of Ceará.

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OBJECTIVE

Epidemiological analysis of congenital syphilis in the State of Ceará, verifying the prenatal care for pregnant women who had their children diagnosed with congenital syphilis, as well as treatment for syphilis by these pregnant women partners, the diagnosis period of syphilis in pregnant women and the age group, the classification of syphilis and the clinical evolution of children with congenital syphilis from 2007 to 2010.

METHODS

This is a transverse type and documentary study with a quantitative approach held in the city of Fortaleza, State of Ceará, in the Center for Information and Analysis in Health (NUIAS) of the Health Office of Ceará (SESA-CE).

NUIAS is the SESA's area responsible for storage and processing of information from the National System of Notifiable Diseases (SINAN). The study population was composed of all notified cases of congenital syphilis in SINAN from 2007 to 2010, consisting of 1,577 cases. Data were collected in March, 2013, from the State database available in the NUIAS SESA-CE, which contains the information compiled from SINAN's records.

The variables investigated in this study are the following: pregnant women prenatal care; period of syphilis diagnosis in pregnant women, treatment for syphilis by pregnant woman partner, age group of syphilis diagnosis in children, final classification of disease and clinical evolution.

Data obtained were organized and presented in graphs and charts and analysed according to the absolute and relative frequencies.

The research project was submitted to the Research Ethics Committee of the Federal University of Ceará, and approved under protocol no. 139/10. All ethical and legal aspects of the resolution no. 196/96 of the National Health Council-CNS on research involving human subjects⁽⁸⁾ were fulfilled.

RESULTS

In the historical series evaluation it was observed that between 2007 and 2010 1,577 cases of congenital syphilis were notified in the State of Ceará. The analysis of **Figure 1** showed that most women who had their children diagnosed with congenital syphilis attended to some prenatal consultation during the gestational period, equal to 71.78% (n = 1,132) of cases. However, there was still a considerable percentage of women who did not attend to any prenatal consultation, i.e. 23.84% (376) of cases.

When a percentage analysis of each year under study was carried out, it was noted that there was no regularity in the frequency of these prenatal pregnant women consultations. In 2007 and 2008 there was an increase of the percentage of these prenatal visits, 73.92% and 79.36%, respectively. In 2009 this percentage dropped to 66.93%, and in 2010 reached 70.64% of pregnant women with children diagnosed with congenital syphilis who attended to prenatal care.

Other identified results are related to the period of syphilis diagnosis in pregnant women, and it was verified that 46.16% (n = 728) of women had the diagnosis of syphilis identified only during childbirth or curettage, whereas 41.34% (n = 652) were diagnosed on prenatal care according to **Figure 2**.

In the course of each year, an increase in the percentage of cases of syphilis diagnosis was observed during the childbirth/curettage in women who had children with congenital syphilis in 2009 and 2010 when compared to previous years. While in 2007 and 2008 the percentage of diagnoses of the disease during childbirth/curettage were around 40%, in 2009 and 2010 the percentage surpassed 50% of cases, ahead of what would be the appropriate moment of the prenatal diagnosis of syphilis in pregnant women.

Regarding the treatment for syphilis by the pregnant women partner, a disturbing data was noted: about 69.5% (1,096) of women's partners did not carry out the treatment, according to **Figure 3**.

Evaluating each year's percentage, it was noted that the rates of treatment for syphilis by the partner remained below 25%. It should also be noted that these data obtained lower numbers, equal to 13.76% (n = 70) of cases in 2010.

Table 1 analysis evidenced that most children was diagnosed with congenital syphilis until the sixth day of birth, surpassing 90% of cases during all years evaluated in this research. The final ranking of the most prevalent syphilis strain was the recent syphilis, equivalent to 83.83% (1,322) of cases. In addition, the most common clinical evolution presented a favorable outcome, in which more than 75% of children during each year of the study received treatment and remained alive.

It is worth mentioning the considerable number of subentries identified in the following variables: final classification and clinical evolution. In the first variable, the ignored cases represented 23.49% (n = 74) of cases in 2008. Concerning the clinical evolution variable, the number of subentries remained above 10% throughout the analysed period under review, especially in 2010, when 21.56% (n = 47) of ignored cases were identified.

DISCUSSION

This study identified that although most women who had their children diagnosed with congenital syphilis received prenatal care, a considerable number of them did not have any prenatal consultation or these data were registered as an ignored information. Given this fact, the quality of prenatal consultations is questioned, as even for those who attended to consultations it is observed that neither treatment nor interventions occurred properly, considering the amount of cases of syphilis vertical transmission.

Due to the above mentioned, it appears that rates related to prenatal care percentage remained high. However, they are still below the Ministry of Health recommendations, which advocates that antenatal coverage must be performed properly, with quality, covering 100% of pregnant women. The main purpose of prenatal care is to attend woman since early pregnancy in a qualified and humanized way, adopting a cozy procedure and timely interventions. The prenatal care should ensure the early assistance to pregnant woman (up to 120 days of gestation), with at least six prenatal consultations and the provision of basic laboratory tests, especially VDRL⁽⁹⁾.

According to data from the National System of Notifiable Diseases (SINAN) of the National Program for STD and Aids of the Ministry of Health, only 75% of nearly three million women who conceive annually in Brazil carry out prenatal care. Only 50% of these are tested for VDRL at the beginning of prenatal period and

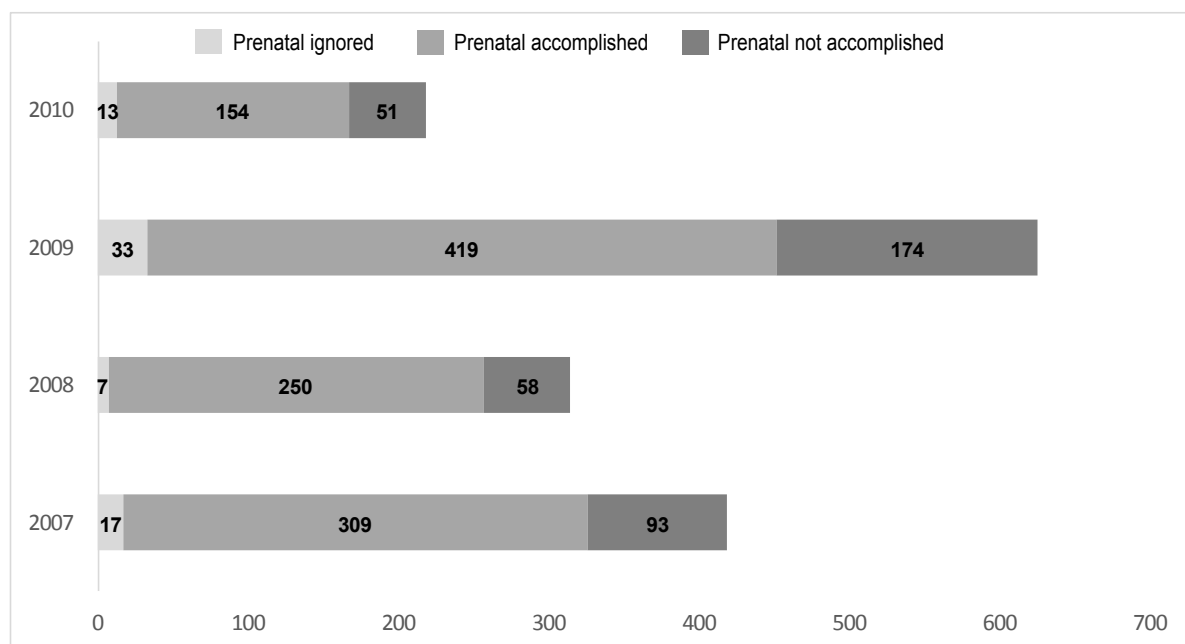


Figure 1 – Number of newborns diagnosed with congenital syphilis according to prenatal care by pregnant women – Ceará, 2013.

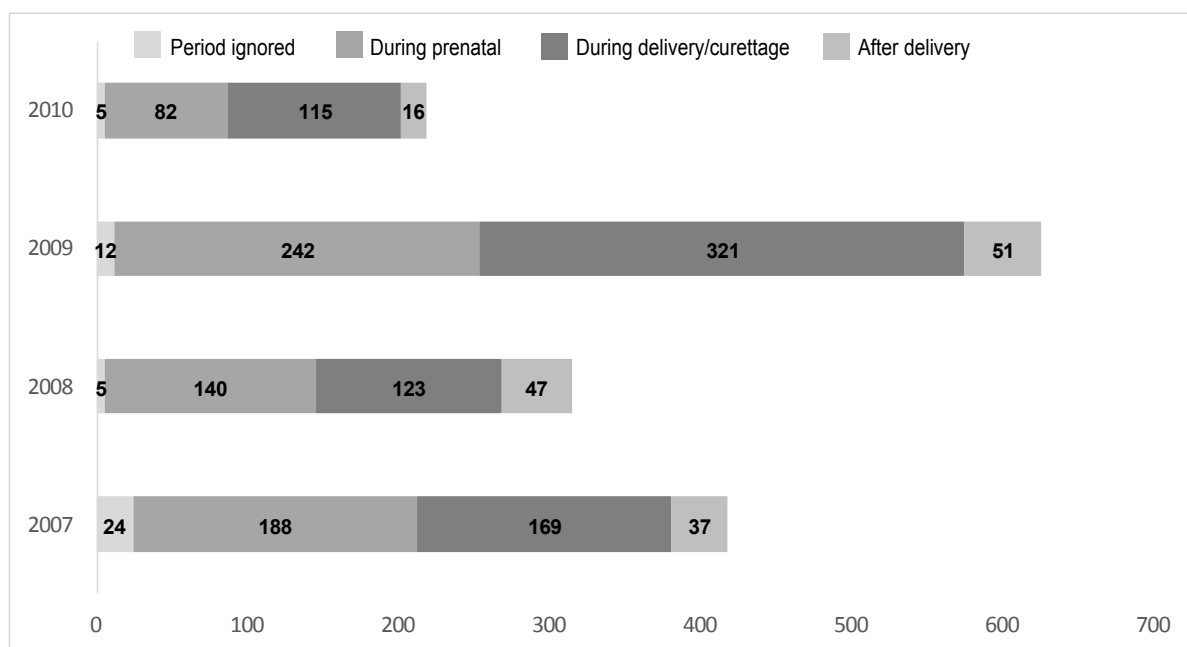


Figure 2 – Number of newborns diagnosed with congenital syphilis according to period of syphilis diagnosis in pregnant women – Ceará, 2013.

only 23% repeat this test in the third quarter of pregnancy, as recommended by Brazilian standards⁽⁹⁾.

Study of 46 recent mothers who had a history of syphilis or positive VDRL assisted in a maternity ward in the State of Pará, pointed out that only 55.6% of VDRL tested pregnant women received prenatal care and only 13.9% repeated the test in the third quarter. The study also showed that only 53.8% of mothers who had a diagnosis of syphilis during prenatal period received appropriate treatment, data that also denounces the low quality of the prenatal care. Incomplete or even incorrect prenatal care, either by late beginning or nonattendance at consultations, impedes the implementation of

a routine for the diagnosis of syphilis and its early intervention, and can explain many cases of congenital syphilis⁽¹⁰⁾.

It also became evident in a study conducted with 16,158 parturients that despite the availability of cheap and efficient prophylactic resources for the reduction of mother-to-child transmission, 75.1% of pregnant women showed at least one syphilis test result during the hospitalization for childbirth, but only 16.9% presented the results of two tests; 11.8% had prenatal card, but had no result of syphilis. Moreover, even among women who have six or more prenatal consultations, the coverage of two tests for syphilis in pregnancy is low, only 26.2%, and 2.6% of women were completely excluded since syphilis

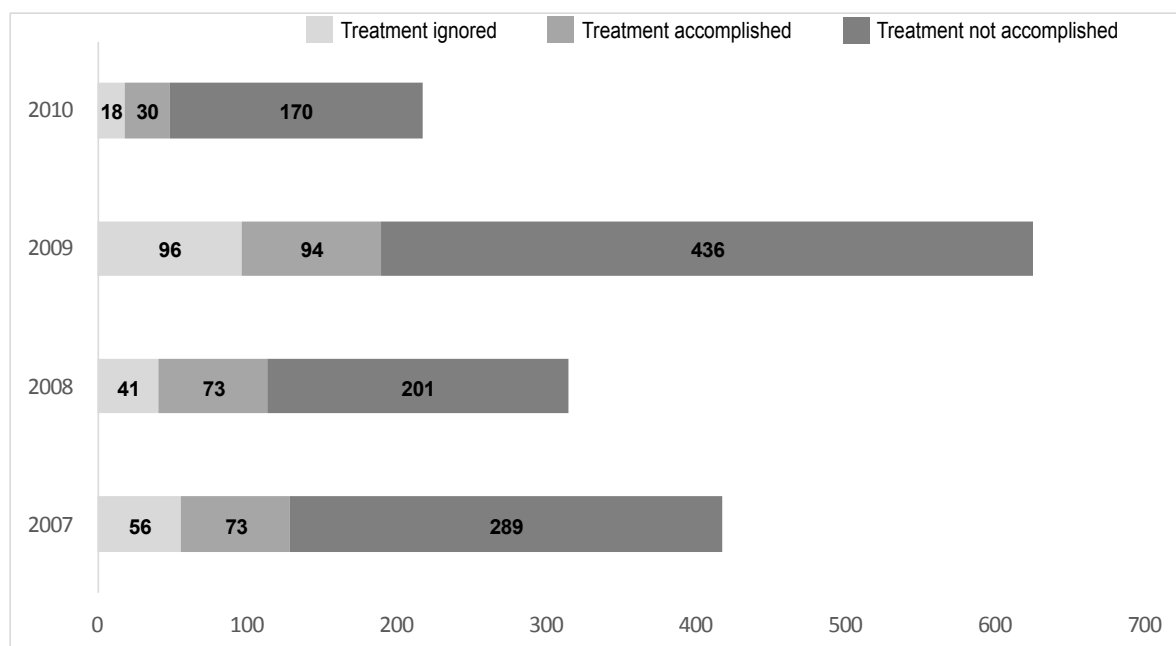


Figure 3 – Number of newborns diagnosed with congenital syphilis according to treatment of syphilis by partners of pregnant women – Ceará, 2013.

Table 1 – Number of newborns diagnosed with congenital syphilis according to children age group, final classification and clinical evolution of syphilis in newborns – Ceará, 2013.

Age Group	Period							
	2007	%	2008	%	2009	%	2010	%
Up to 6 days	402	96.17	294	93.33	608	97.12	214	98.16
7 to 27 days	8	1.91	8	2.54	6	0.96	3	1.38
28 days to 365 days	6	1.44	12	3.81	9	1.44	1	0.46
1 year or more	2	0.48	1	0.32	3	0.48	0	0
Final classification								
Recent syphilis	361	86.36	227	72.06	509	81.31	175	80.28
Late syphilis	1	0.24	4	1.27	6	0.96	0	0
Miscarriage by syphilis	4	0.96	10	3.18	49	7.83	23	10.55
Ignored	52	12.44	74	23.49	62	9.9	20	9.17
Clinical evolution								
Alive	325	77.75	269	85.39	488	77.95	165	75.68
Death by syphilis	38	9.09	9	2.86	9	1.44	4	1.83
Death – another aggravation	9	2.15	4	1.27	3	0.48	2	0.92
Ignored	46	11.01	33	10.48	126	20.13	47	21.56
Total	418		315		626		218	

testing did not occur during prenatal care or childbirth. Therefore, it is necessary to point out that the absence of detection of syphilis during the prenatal period means a lost opportunity for intervention in infected pregnant women, limiting the possibilities for reducing the incidence of cases of congenital syphilis⁽¹⁾.

It was observed that between 2007 and 2010 most syphilis diagnoses were held at time of delivery or curettage, the phase woman

should have had the proper prenatal care, should have made at least two VDRL tests and should have received the diagnosis, together with the proper treatment for her and her partner as well, thus avoiding the exorbitant increase of congenital syphilis cases.

More than 95% of childbirths in Brazil occur in a hospital environment. If the health network is not able to detect and treat syphilis in pregnant women, there is one more opportunity to dis-

cover it during delivery. And the most important at this stage is to verify the vertical transmission of syphilis and treat infected newborns to prevent the manifestation of the disease or reduce its consequences⁽¹²⁾.

Some reference maternity wards of the city of Fortaleza offer VDRL test during childbirth, according to Projeto Nascir, but there is a need for its expansion to ensure the supply of VDRL to all par-turients and provide a maternal-fetal health adequate to the whole State of Ceará.

In a study developed in Rio de Janeiro with the purpose of evaluating the effectiveness of campaigns for the elimination of congenital syphilis, it was observed that prenatal care for over 80% of the cases of congenital syphilis mothers does not ensure early diagnosis of pregnant women nor the proper treatment, which would prevent cases of congenital syphilis⁽¹³⁾.

As for treatment for syphilis by partners of pregnant women who had their children diagnosed with congenital syphilis, our study noted that most of them did not carry out the treatment for syphilis, consisting in a means of reinfection by pregnant women. Thus, although pregnant women receive prenatal care properly and follow the treatment for syphilis effectively, they will still be susceptible to reinfection by partners who did not perform the treatment for syphilis, contributing to the elevation of the rates of congenital syphilis.

It should be emphasized the importance of notification at SINAN as one of the ways for the congenital syphilis control, because when collecting, transmitting and disseminating data on reportable diseases, SINAN becomes a relevant instrument to support health planning, setting priorities for action, besides allowing the evaluation of their impact⁽¹⁾.

Thus, it is evident the negligence of health services for the treatment of syphilis of pregnant women partners, which should be a priority, considering the risk of vertical transmission of the disease. Health professionals' unpreparedness is manifested both by the high number of cases in which there was no treatment of the partner and the high amount of treatments ignored, because it is the professional's duty to ensure the active search of partners, to advice and to treat properly.

According to a research, one criterion to define the cases of congenital syphilis is the untreated partners, including cases where there was inadequate treatment for pregnant women and also those who were not treated in accordance with the current treatment guidelines, or when the father is unknown or there is no documentation of his treatment⁽¹⁴⁾.

A research conducted in 2007 in the State of Ceará supports the data found in this study, confirming the high number of untreated partners and ignored treatments, in addition to the existing problem of underreporting of cases through SINAN⁽⁵⁾.

It was observed that the age group concentrating the largest number of diagnoses of congenital syphilis is the first days of the neonate life. In accordance with the data of the documentary study, a research conducted in the city of Natal, State of Rio Grande do Norte, in order to trace the epidemiological profile of congenital syphilis identified that in most cases (90%) the disease was diagnosed in the first two days of life of the newborn, while only 9.1% of them were diagnosed between two and 28 days of life, and only 0.9% after 28 days of life⁽¹⁵⁾.

As for the final classification of congenital syphilis, it was identified a prevalence of syphilis considered recent throughout the period of this study. Confirming this data, a research developed in the city of Carapicuíba, State of São Paulo, observed that 94.0% of reported cases had the final classification as suspected congenital syphilis (31 cases), 3.0% of congenital syphilis confirmed (one case) and 3.0% dropped (one case). Of cases classified as congenital syphilis 100% were diagnosed as recent type⁽¹⁶⁾.

Regarding the clinical development of children identified with congenital syphilis, this study observed the prevalence of favorable outcomes. In a study published in Portugal, similar results have been observed, indicating that most newborns, 361 (77%), completed treatment with procaine or crystallized penicillin. Thirty-one (6%) were treated with benzathine penicillin. Finally, 75 NB (16%) did not adhere to any therapy, because the latter had less infectious risk. Thus, in the above mentioned cases NB had conditions to survive, grow and develop healthy⁽¹⁷⁾.

CONCLUSION

Congenital syphilis is still considered an important public health problem, although it is a disease of easy diagnosis and completely avoidable when treatment of pregnant women and her partner is performed properly. However, the occurrence rates of this aggravation remain high, constituting therefore a determining factor in the rise of maternal and perinatal morbidity and mortality indicators.

We then emphasize the importance of a thorough analysis of congenital syphilis cases, as well as of factors involved in the process of occurrence of the disease vertical transmission, such as prenatal care and testing recommended by the Ministry of Health, the early diagnosis in infected pregnant women and the development of their immediate treatment, because the implementation of these measures ensures the prevention and control of congenital syphilis.

In addition, it appears that mothers of children who caught congenital syphilis are at risk due to the lack of development of actions that prevent the occurrence of this disease, making them vulnerable to contract sexually transmitted diseases. It was also noted that there was a deficiency in healthcare in all cases, contributing to the incidence of CS.

Consequently the development of similar studies in other regions of the country becomes relevant, in order to analyse and evaluate the real situation of information and practices of health professionals in the prevention of vertical transmission of syphilis, as well as monitoring the effectiveness of educational programs and training of these professionals.

Conflict of interest

There is no conflict of interest to declare.

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Address to correspondence:

HELLEN LÍVIA OLIVEIRA CATUNDA

Rua Osvaldo Cruz - nº 1.772, apto. 602, Aldeota

CEP: 60125-150. Fortaleza - Ceará

E-mail: hellen_enfermagem@yahoo.com.br

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