

Congenital syphilis in Ceará: epidemiological analysis of one decade

SÍFILIS CONGÊNITA NO CEARÁ: ANÁLISE EPIDEMIOLÓGICA DE UMA DÉCADA

SÍFILIS CONGÉNITA EN CEARÁ: ANÁLISIS EPIDEMIOLÓGICO DE UNA DÉCADA

Camila Chaves da Costa¹, Lydia Vieira Freitas², Deise Maria do Nascimento Sousa³, Lara Leite de Oliveira⁴, Ana Carolina Maria Araújo Chagas⁵, Marcos Venícios de Oliveira Lopes⁶, Ana Kelve de Castro Damasceno⁷

ABSTRACT

This study evaluates the incidence of congenital syphilis in the Brazilian state of Ceará from 2000 to 2009, describes the epidemiologic profile of pregnant women whose newborns had congenital syphilis and verifies the receipt of prenatal care and treatment of their partners. It is a retrospective study that was conducted in July 2010 using a Center for Information and Analysis in Health database that contains information on National Notifiable Diseases. There were 2,930 reported cases of congenital syphilis, demonstrating an annual ascending historical series. The majority of the pregnant women were 20 to 34 years of age (n=1,836, 62.7%), illiterate or with little education (n=1623, 55.4%) and had received prenatal care (n=2077, 70.9%). The inadequate treatment of women and the lack of treatment for their partners is a reality in Ceará. The incidence of congenital syphilis is a quality indicator of prenatal care. Therefore, its increase in the last ten years highlights the necessity of syphilis control.

DESCRIPTORS

Syphilis, congenital
Pre-natal care
Epidemiologic surveillance
Maternal-child nursing

RESUMO

O presente trabalho objetivou avaliar a incidência da sífilis congênita no Ceará de 2000 a 2009; descrever o perfil epidemiológico das gestantes cujos recém-nascidos tiveram sífilis congênita e verificar a realização do pré-natal e do tratamento dos seus parceiros. Trata-se de estudo documental, realizado em julho de 2010 a partir do banco de dados disponível no Núcleo de Informação e Análise em Saúde, que contém as informações das fichas do Sistema Nacional de Agravos de Notificação. Foram notificados 2.930 casos de sífilis congênita, demonstrando uma série histórica ascendente ano a ano. A maioria das gestantes realizou pré-natal (2.077; 70,9%), possuía de 20 a 34 (1.836; 62,7%) anos, nenhuma ou pouca escolaridade (1.623; 55,4%), O tratamento inadequado das gestantes e a falta de tratamento dos parceiros mostraram-se como realidade no SUS-CE. A incidência de sífilis congênita é um indicador da qualidade da assistência pré-natal. Logo, seu aumento nos últimos dez anos ressalta a necessidade de ações voltadas para seu controle.

DESCRIPTORIOS

Sífilis congênita
Cuidado pré-natal
Vigilância epidemiológica
Enfermagem materno-infantil

RESUMEN

Se objetivó evaluar la incidencia de la sífilis congénita en Ceará entre 2000 y 2009; describir perfil epidemiológico de gestantes cuyos recién nacidos presentaron sífilis congénita y verificar la realización del prenatal y de tratamiento de sus compañeros. Estudio documental, realizado en julio 2010, sobre banco de datos disponible en Núcleo de Información y Análisis en Salud, conteniendo informaciones del Sistema Nacional de Patologías de Notificación Obligatoria. Se notificaron 290 casos de sífilis congénita, demostrando una serie creciente año tras año. La mayoría de las gestantes tenía entre 20 y 34 años (1832-62,7%), ninguna o escasa escolarización (1623-55,4%) y prenatal efectuado (2077-70,9%). El tratamiento inadecuado de las gestantes y la falta de tratamiento de sus compañeros son una realidad en el SUS-CE. La incidencia de sífilis congénita indica la calidad de atención prenatal. Consecuentemente, su aumento en los últimos diez años resalta necesidad de acciones orientadas a su control.

DESCRIPTORIOS

Sífilis congénita
Atención prenatal
Vigilancia epidemiológica
Enfermería maternoinfantil

¹ RN. Master's student in Nursing, Universidade Federal do Ceará. Fortaleza, CE, Brazil. milinha_ita@yahoo.com.br ² RN. Ph.D. candidate in Nursing, Universidade Federal do Ceará. Fortaleza, CE, Brazil. lydia_v_freitas@yahoo.com.br ³ Undergraduate student in Nursing, Universidade Federal do Ceará. Tutorial Education Program Grantee – PET/MEC/SESU. Fortaleza, CE, Brazil. deisemnascimento@yahoo.com.br ⁴ Undergraduate student in Nursing, Universidade Federal do Ceará. Tutorial Education Program Grantee – PET/MEC/SESU. Fortaleza, CE, Brazil. lara.leite@hotmail.com ⁵ RN. Master's student in Nursing, Universidade Federal do Ceará. Fortaleza, CE, Brazil. aninhaaraujoc@hotmail.com ⁶ RN. Ph.D. in Nursing. Associate Professor, Nursing Department, Universidade Federal do Ceará. Fortaleza, CE, Brazil. marcos@ufc.br ⁷ RN. Ph.D. in Nursing. Adjunct Professor III, Universidade Federal do Ceará. Tutor, Tutorial Education Program PET/SESU/Enfermagem/UFC. Coordinator, Research Project Nursing in Maternal Health Promotion. Fortaleza, CE, Brazil. anakelve@hotmail.com

INTRODUCTION

Congenital syphilis is still considered an important public health problem, although the disease is easy to diagnose and completely avoidable when the pregnant woman and her partner are appropriately treated.

Among the different diseases that can be transmitted during the pregnancy-puerperal cycle, syphilis displays the highest vertical transmission rates, ranging between 70 and 100% in the primary and secondary phases and dropping to 30% in the late latent and tertiary phase of maternal infection. Congenital syphilis produces spontaneous abortion, stillbirths or perinatal death in approximately 40% of children infected through untreated mothers⁽¹⁾.

The number of cases of congenital syphilis is very high. In Brazil, 5,792 cases of congenital syphilis have been reported and investigated in infants under one year of age; 78% of the mothers had not received prenatal treatment, and 56% of the mothers were diagnosed with syphilis during the pregnancy. The partners were concomitantly treated in only 13.3% cases. Ignoring the significant number of underreported cases, these indicators may reflect the low quality of prenatal care in Brazil and/or the little importance health professionals have given to syphilis diagnosis and treatment, particularly during pregnancy⁽²⁾.

In the state of Ceará, the incidence levels of this problem are similar to national levels. Between 2001 and 2006, 1,203 cases of congenital syphilis were reported, with higher incidence rates in 2006, when 451 new cases were reported⁽³⁾.

In light of these data, it can be assumed that the congenital syphilis problem is closely related with access to and the low quality of prenatal care. The number of women who still do not have access to prenatal care is a source of concern. Women who participated in prenatal consultations and presented positive test results for syphilis included those who did not return to pick up test results, women who were diagnosed with syphilis during pregnancy but were not treated, or for whom treatment was not adequate and pregnant women whose partners were not treated concomitantly during the pregnancy.

In addition, during birth, many maternity centers do not routinely offer VDRL to parturient women, thus returning the infant and mother to the community with possible syphilis. This negligence of syphilis during pregnancy is promoting an increase in the number of congenital syphilis cases, which increases the demand for public policies and effective actions to eliminate this easy to control disease.

In view of the diagnostic simplicity and easy clinical/therapeutic management of syphilis during pregnancy,

this is considered a true marker of maternal-fetal health care quality⁽⁴⁾. In practice, however, prenatal care is outdated, as health professionals are not prioritizing congenital syphilis as a public health problem, and prevention measures are being ignored. It should also be highlighted that disease prevention measures are simple and low-cost, while the treatment of a child with congenital syphilis is quite long and costly.

In view of the above, the aim of this study was to evaluate congenital syphilis reporting rates in the Brazilian state of Ceará between 2000 and 2009, based on the National Health Problem Reporting System (SINAN) database, to describe the epidemiological profile of pregnant women whose newborns had congenital syphilis and to check the participation in prenatal care and treatment among pregnant women whose newborns had congenital syphilis and their partners' participation in treatment.

METHOD

A cross-sectional retrospective study with a quantitative approach was undertaken at the Health Informatics and Analysis Center (NUIAS) of the Ceará Health Secretariat (SESA-CE) in Fortaleza-CE. The NUIAS is the SESA sector responsible for storing and processing information from the National Health Problem Reporting System (SINAN).

The study population included all congenital syphilis cases notified in SINAN between 2000 and 2009 ($n=2.930$).

Data were collected in July 2010, based on the state database available at NUIAS/SESA-CE, which contains the information compiled from the SINAN forms. The following research variables were considered: number of congenital syphilis cases notified year by year, age, education, prenatal care, treatment of pregnant women whose newborns were diagnosed with congenital syphilis and treatment of their partners.

Appropriate syphilis treatment was considered as complete treatment according to the disease stage, using penicillin G benzathine and terminated at least 30 days before delivery, with concomitant treatment of the partner⁽¹⁾.

This study follows up on a study undertaken in 2008⁽³⁾ that used the same method, but this study covered a longer period. The importance of continuing the study is highlighted to permit the evaluation of reporting rates and reflections on the identification of the epidemiological diagnosis congenital syphilis in the state of Ceará. This study can also demonstrate gaps in the disease reporting process and enhance the awareness of health professionals in the identification of and participation in congenital syphilis prevention strategies.

...the congenital syphilis problem is closely related with access to and the low quality of prenatal care.

Data are presented in graphs and expressed in absolute and relative frequencies. For the sake of a more specific analysis, congenital syphilis rates per 10,000 live births were calculated in Ceará between 2000 and 2009, based on data available in DATASUS.

A dispersion graph of congenital syphilis rates per year was plotted, and a simple regression analysis was applied to describe the behavior of these rates by year. To check the linearity and normality premises of the linear regression residuals, Pearson's correlation coefficient was calculated and the Shapiro-Wilk test was applied, respectively. Statistical analyses indicate that both premises were respected. To adjust the model, the determination coefficient was calculated (R^2). Analyses were developed with the help of R software version 2.12.1.

The research project was submitted to the Research Ethics Committee at the Universidade Federal do Ceará and received approval under protocol 139/10. All ethical and legal determinations of the National Health Council – CNS Resolution 196/96 on research involving human beings were complied with⁽⁵⁾.

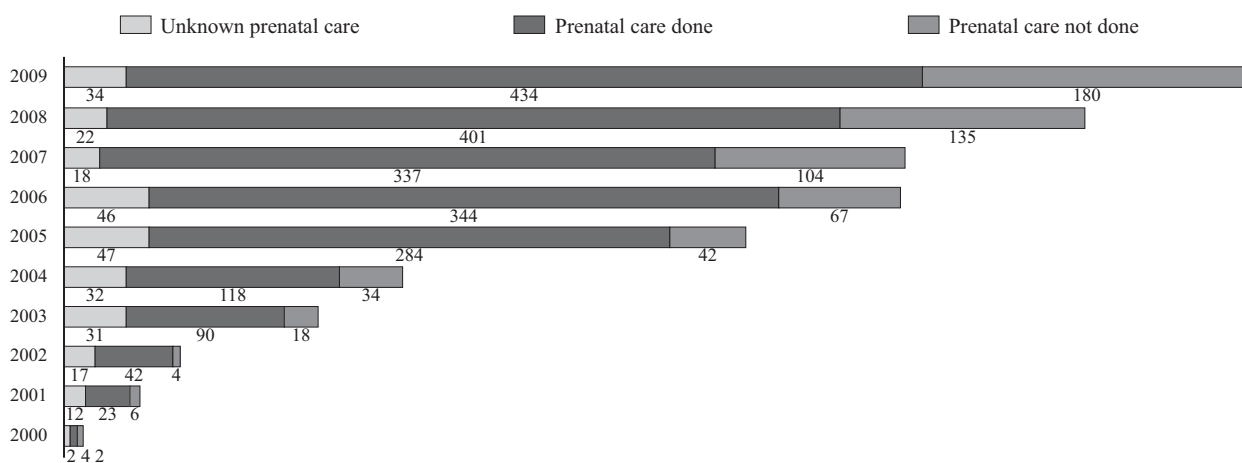
RESULTS

Between 2000 and 2009, 2,930 cases of congenital syphilis were reported in the state of Ceará. The age of the pregnant women with syphilis varied between 10 and 50

years old, with a majority of the women's ages between 20 and 34 years ($n=1,836$, 62.7%). A relatively significant percentage of adolescent mothers with syphilis was observed ($n=643$, 21.9%). In the over 35 years-old group, 256 (8.7%) cases were reported. It is noteworthy that the age was unknown for 195 (6.7%) women, revealing a considerable lack of recording of this item.

Education of the pregnant women ranged between illiteracy and 12 years or more of education. Illiteracy, in combination with functional illiteracy, corresponded to more than half of the research population ($n=1,623$, 55.4%), and only 195 (6.8%) women had more than 12 years of education. The missing data were also present in this variable, corresponding to 648 (23.3%) reported cases, which was even more significant when compared with the missing age data.

In addition, 2,077 (70.9%) pregnant women whose infants were diagnosed with congenital syphilis received prenatal care during the study period. Prenatal care receipt increased over the years, with absolute rates always higher than the number of ignored cases or non-receipt of prenatal care. The latter two variables were equivalent between 2000 and 2006. From 2007, the number of women who did not receive prenatal care became much higher than the number of ignored cases. Therefore, a reduction in the number of cases of under-registration can be inferred.

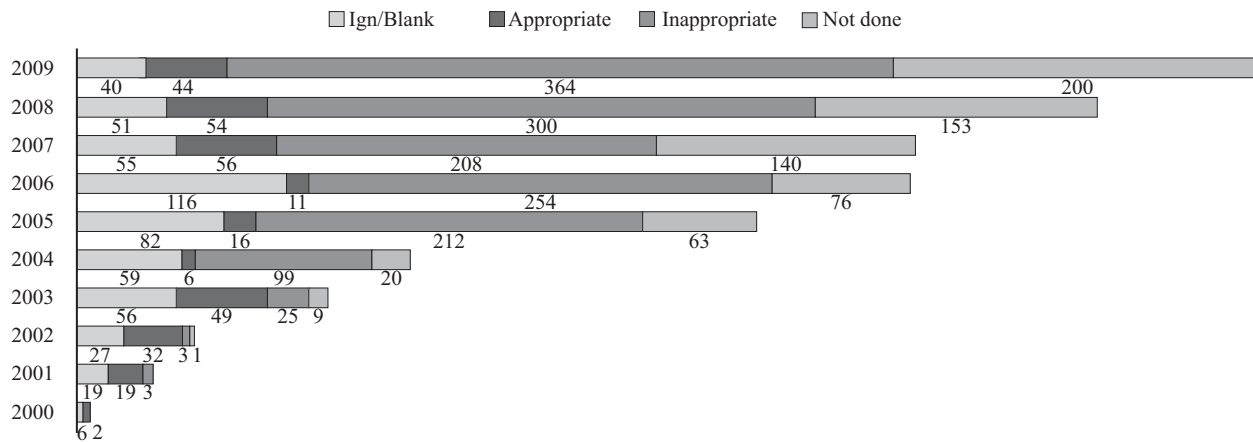


Source: National Health Problem Reporting System (SINAN), SESA-CE.

Figure 1 – Distribution of number of newborns diagnosed with congenital syphilis according to pregnant women's receipt of prenatal care - Ceará, 2010

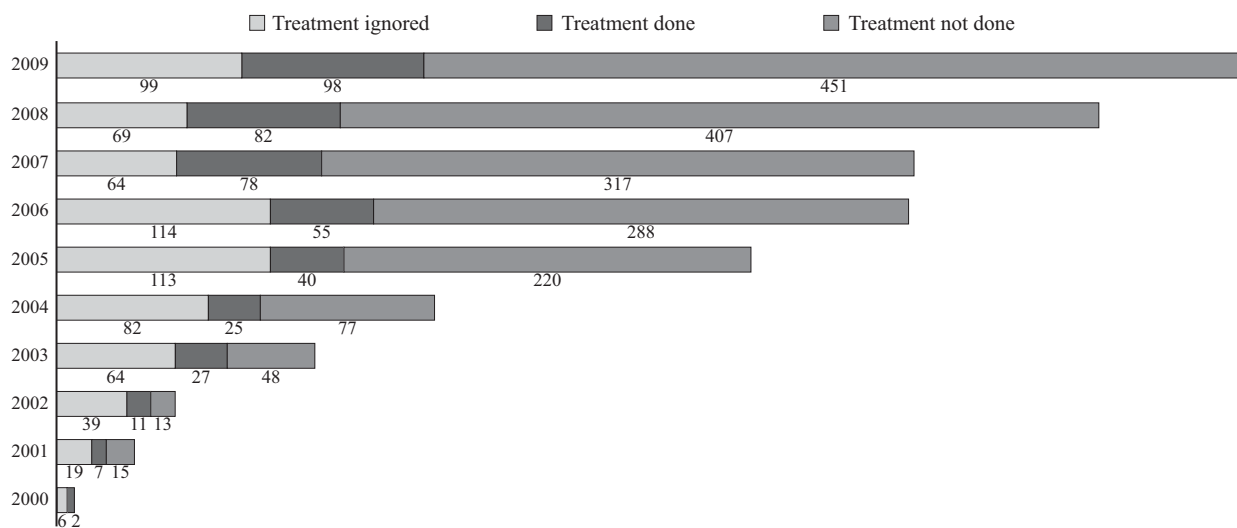
Inadequate syphilis treatment predominated, particularly in 2005, with the highest percentage of women receiving inadequate treatment recorded (56.8%), and in 2000, the lowest percentage, i.e., zero, was recorded. In addition, the ignored or blank data were constant. In percentage terms, appropriate treatment of the pregnant woman across the historical series remained far below half of the cases, except in 2002, when 50.8% of the pregnant women received adequate treatment.

When the distribution of the number of newborns diagnosed with congenital syphilis according to syphilis treatment by the pregnant women's partners is considered, a progressive increase in the total number of reported cases of untreated partners was found from year to year. Exceptions were noted in 2001 and 2002. In 2001, 15 undertreated cases were reported, followed by 13 cases in 2002. From 2005, however, the enhanced increase in these data is noteworthy and greatly surpasses



Source: National Health Problem Reporting System (SINAN), SESA-CE.

Figure 2 – Distribution of number of infants diagnosed with congenital syphilis according to syphilis treatment received by the pregnant women - Ceará, 2010.

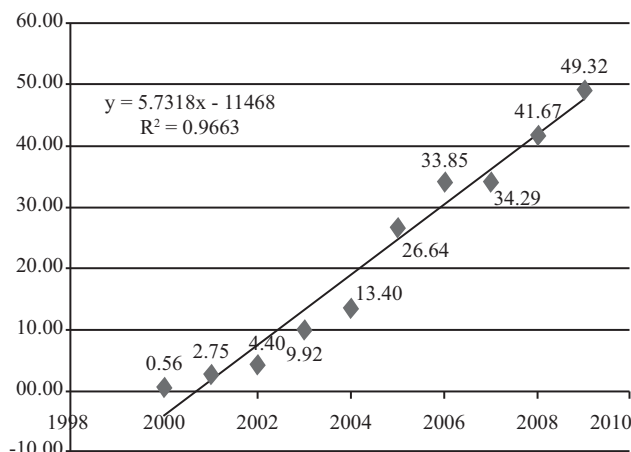


Source: National Health Problem Reporting System (SINAN), SESA-CE.

Figure 3 – Distribution of the number of newborns diagnosed with congenital syphilis according to syphilis treatment received by the pregnant women’s partners - Ceará, 2010.

the other years. In addition, the number of untreated partners exceeded the number of treated partners across the study period.

The reporting rate increased year by year, from 0.56 to 49.32 per 10,000 live births. The analysis of the linear relation between the congenital syphilis rates and the years of registration revealed a strong correlation ($r = 0.9829$, $p < 0.001$). The adjusted linear regression model indicated that, for each time unit, the congenital syphilis rate per year increased by 5.7318 ($t = 15.14$, $gl = 8$, $p < 0.001$). The determination coefficient indicates that 96.63% of the variation in congenital syphilis rates is explained by the time variation. In addition, the analysis of the normality premise of the regression model residuals indicated that they follow the normal law ($p = 0.9126$).



Source: National Health Problem Reporting System (SINAN), SESA-CE.

Figure 4 – Congenital syphilis rate per year in Ceará between 2000 and 2009 - Ceará, 2010.

DISCUSSION

The increase in the number of congenital syphilis cases reported year by year in Ceará demonstrates the need to develop effective actions for its control, as well as the need for health education of the population, as this is a totally avoidable disease, provided that the disease is diagnosed early and appropriate treatment is established for the infected pregnant woman and her partner.

This increase may also represent an improvement in case reporting over the years, attributable to advances in epidemiological surveillance by cities and the state of Ceará, human resource training, pregnant women's increased access to prenatal consultations as a result of the implementation of Family Health Strategy (FHS) teams, the implementation of the Prenatal and Birth Humanization Program (PHPN) and of the NASCER Project at referral maternity centers⁽³⁾. In addition, based on the number of expected cases, there is an estimated 67% underreporting of cases per year in SINAN⁽⁶⁾.

Although congenital syphilis and syphilis in pregnant women have been compulsory reporting problems since 1986 and 2005, respectively, the lack of uniform diagnoses and conduct continues, as well as errors in reporting mechanisms. The number of congenital syphilis cases, which is used to produce the incidence rates used in the Ministry of Health's National STD and Aids Program, is much lower than expected⁽⁶⁻⁷⁾.

Congenital syphilis affects children of mothers of all reproductive ages, demonstrating unprotected sexual practices independently of the age range. The highest concentration of reported cases is found among women between 20 and 34 years of age. This finding is explained by the fact that this is the peak of the reproductive phase, which implies more pregnancies in this age range, which is in line with studies in other Brazilian state capitals^(3,8-9). In a study on perinatal mortality due to congenital syphilis in Rio de Janeiro, based on 292 Reporting and Investigation Forms of Fetal and Neonatal Deaths, the findings indicated that, in 65.1% of cases, maternal ages ranged between 20 years and older, and 44.9% of the pregnant women were adolescents⁽¹⁰⁾.

Another relevant aspect is the large number of syphilis cases among pregnant adolescents. In a study undertaken in Fortaleza-CE, 34.5% of the pregnant women testing positive in the VDRL test were adolescents⁽⁹⁾. These findings confirm early and unprotected sexual initiation, indicating the need to encourage safe sexual practices and the postponement of the first sexual relationship.

Educational data evidenced a higher prevalence of women with low instruction levels. In a study in the city of Salvador, in which data from mothers and infants with syphilis were analyzed using SINAN investigation/reporting forms, the findings indicated that 35.7% of the pregnant women had finished primary education. What was

most noteworthy in regard to education, however, was the high level (60.4% of all cases) of missing data⁽⁸⁾.

Another source of concern is the occurrence of congenital syphilis cases in infants of mothers with 12 or more years of education, as this population is expected to have at least minimal knowledge concerning Sexually Transmitted Diseases (STDs), their prevention, and also about the importance of prenatal care.

Similar to other studies^(3,9), most pregnant women in this study received prenatal care. Despite the increasing number of prenatal care over the years, rising incidence levels were also found for congenital syphilis cases, which similarly culminated in 2009. These data can reveal both the quality of prenatal care, which remains below desired levels, and the increase in reported cases, which, although still below expected levels, have advanced.

As observed, prenatal care percentages have continued rising. This still is not part of Ministry of Health recommendations though, which indicate that prenatal care coverage should be appropriate in number and cover 100% of the pregnant women. The main goal of prenatal care is to offer qualified and humanized welcoming to women from the start of pregnancy, adopting welcoming behaviors with time interventions. Prenatal care needs to guarantee the early participation of the pregnant woman (up to 120 days of pregnancy), at least six prenatal consultations and basic laboratory tests (particularly VDRL)⁽⁴⁾.

In an epidemiological analysis of 46 postpartum women with antecedents of syphilis or positive VDRL attended at a maternity hospital in the state of Pará, only 55.6% of women who participated in prenatal care received the VDRL test, and only 13.9% of women repeated the test in the third trimester. In addition, only 53.8% of mothers diagnosed with syphilis in prenatal care received appropriate treatment, a finding that also indicates the low quality of prenatal care⁽¹¹⁾. Incomplete or even inappropriate prenatal care, whether due to a late start or lack of attendance at the consultations, impedes the syphilis diagnostic routine and early intervention.

It is known that the most effective measure to reduce and control the number of new congenital syphilis cases is high-quality prenatal care. Therefore, the following question is asked: what difficulties do health professionals face in offering prenatal consultations, during which VDRL should be requested in the first and third term and appropriate treatment should be provided to the pregnant woman and her partner? In view of this question, a cross-sectional study based on the review of charts and interviews with pregnant women with positive VDRL results at birth or during curettage was conducted. The results indicated a lack of knowledge of the importance of early diagnosis and that additional difficulties may exist that impede the ready offer of the VDRL. Thus, the scheduling of a new consultation by the obstetrician to define the treatment was needed⁽¹²⁾.

The present study also reveals a gap in the congenital syphilis reporting/investigation form, as it contains no information on how many prenatal consultations the pregnant woman has attended and the criterion specified to characterize *prenatal care done*. In other words, the records indicate that prenatal care was performed in the same way for women who participate in only one or in six consultations. This limits the detailed analysis of the prenatal care and congenital syphilis variables.

Coverage rates for syphilis screening during pregnancy remain below desired levels at primary health care units. In a retrospective study developed in São Paulo involving 33 congenital syphilis cases, 72.7% of the parturient women participated in prenatal follow-up, and only 54.2% were diagnosed with syphilis during their pregnancy though. This means that a significant and concerning number, i.e., 45.8%, of the women were only diagnosed when they were hospitalized to give birth⁽¹³⁾.

Approximately 95% of deliveries in Brazil happen in the hospital context. Hence, if the pregnant woman's syphilis diagnosis and treatment were not possible in primary care, birth offers yet another opportunity, when vertical syphilis transmission can be verified and infected infants can be treated, avoiding manifestations of the disease or reducing its sequelae⁽¹⁴⁾.

It should be highlighted, however, that only maternity hospitals where more than 500 deliveries happen per month are accredited by the NASCER Project in MS to offer VDRL, and the rapid HIV test during hospitalization for delivery, which restricts the ability of smaller maternity centers to identify syphilis and AIDS in Brazil. This limitation may be a source of concern for municipal managers; however, without guaranteed resources, offering these tests is often unfeasible.

The many women diagnosed during prenatal care represent another source of concern. This raises the following questions: what is the quality of prenatal care offered to the population? What makes a pregnant woman receive the syphilis diagnosis during pregnancy and nevertheless give birth to a child with congenital syphilis? What measures were taken in view of this situation? Was the pregnant woman treated appropriately or were treatment options discarded?

In similar studies^(11,14), it was found that most mothers who suffered from syphilis while pregnant had access to the health service at some time during the pregnancy, when they could have been diagnosed, could have received appropriate treatment or had their awareness raised with a resulting attendance at all prenatal consultations.

The constant presence of unknown or missing data should be highlighted, which permits inferences about how health professionals behave when completing reporting instruments. Completion instructions are attached to

the reporting form for congenital syphilis, which may be not be sufficient to provide clarifications for its correct completion. Hence, professionals need to be trained for this purpose.

The importance of reporting in SINAN is emphasized as one of the means of controlling congenital syphilis as, when collecting, transmitting and disseminating data on compulsory reporting problems, SINAN is a relevant instrument to support health planning, setting intervention priorities and permitting the evaluation of their impact⁽¹⁵⁾.

In regards to appropriate treatment for pregnant women diagnosed during pregnancy, in a similar study undertaken in Pará, which involved 46 congenital syphilis cases, only 53.8% of the mothers who were diagnosed with syphilis during prenatal care received appropriate treatment, which also demonstrates the low quality of prenatal care in Pará⁽¹¹⁾. In a study developed in São Paulo, involving 45 mothers of infants diagnosed with congenital syphilis, the mother's treatment before and after delivery was recorded as appropriate in less than 50% of cases⁽¹⁴⁾.

Based on a meeting among municipal managers, which was focused on obstetric care in the service micro-region of Sumaré, it can be inferred that the lack of proper treatment for the pregnant women suggests that health teams are unprepared to address a positive result or experience difficulties in readily informing the patient about the test result, which becomes available months after the request⁽¹⁴⁾.

The large number of partners who did not receive appropriate treatment for syphilis in this study also reveals the neglect of health services. This should be a priority, given the possibility of re-exposing the pregnant woman to *Treponema pallidum*, impeding the rupture of the disease transmission chain and reinforcing the increased incidence of vertical transmission.

In a descriptive, cross-sectional study of 1,500 parturient women, among the pregnant women with positive VDRL results, only 50% were able to take their partner to participate in prenatal care and receive orientations on syphilis treatment. An even smaller percentage persuaded their partner to be tested, and not all partners agreed with treatment⁽¹⁶⁾.

The lack of partner treatment includes cases in which the women received inappropriate treatment and others in which the partners were not treated according to current treatment guidelines, the identity of the father is unknown or documentation about his treatment is missing, which is one of the criteria necessary to define congenital syphilis cases⁽¹⁷⁾.

There were many partners who do not receive appropriate treatment limit syphilis control during pregnancy. Hence, pregnant women with syphilis are confronted with inefficient treatment, re-infection and vertical transmission⁽¹⁶⁾.

Men's absence from primary health care units is common and explained by the characteristics of care delivery based on the maternal-infant focus. In addition, men prefer services that respond to their health demands more rapidly, such as pharmacies and emergency departments⁽¹⁸⁾. Therefore, an interdisciplinary approach for families is recommended, with a view toward guaranteeing the monitoring of syphilis cases, treatment adherence and control of *Treponema pallidum* circulation⁽¹⁴⁾.

In a study involving health professionals from a philanthropic hospital in Belo Horizonte – MG, on the other hand, some institutions were already encouraging men's presence at health services⁽¹⁹⁾.

CONCLUSION

The present study findings highlight some fragile points in syphilis care and prevention: the inappropriate investigation of syphilis cases during pregnancy, the inappropriate treatment of pregnant women and partners who do not receive treatment.

REFERENCES

1. Brasil. Ministério da Saúde; Secretaria de Vigilância em Saúde. Programa Nacional de DST/AIDS. Diretrizes para controle da sífilis congênita. Brasília; 2006.
2. São Paulo. Secretaria de Estado da Saúde. Sífilis congênita e sífilis na gestação. Rev Saúde Publica. 2008;42(4):768-72.
3. Ximenes IPE, Moura ERF, Freitas GL, Oliveira NC. Incidência e controle da sífilis congênita no Ceará. Rev RENE. 2008;9(3):74-80.
4. Brasil. Ministério da Saúde; Secretaria de Atenção à Saúde, Departamento de Ações Programáticas Estratégicas. Área Técnica de Saúde da Mulher. Pré-Natal e Puerpério: atenção qualificada e humanizada. Brasília; 2005.
5. Conselho Nacional de Saúde. Resolução n. 196, de 10 de outubro de 1996. Dispõe sobre diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Bioética. 1996;4(2 Supl):15-25.
6. Ramos Junior AN, Matida LH, Saraceni V, Veras MASM, Pontes RJS. Control of mother-to-child transmission of infectious diseases in Brazil: progress in HIV/AIDS and failure in congenital syphilis. Cad Saúde Pública. 2007;23(3):370-8.
7. Menezes MLB, Marques CAS, Leal TMA, Melo MC, Lima PR. Neurosífilis congênita: ainda um grave problema de saúde pública. DST J Bras Doenças Sex Transm. 2007;19(3-4):134-8.
8. Almeida MFG, Pereira SM. Caracterização epidemiológica da sífilis congênita no Município de Salvador, Bahia. DST J Bras Doenças Sex Transm. 2007;19(3-4):144-56.
9. Campos ALA, Araújo MAL, Melo SP, Gonçalves MLC. Epidemiologia da sífilis gestacional em Fortaleza, Ceará, Brasil: um agravado sem controle. Cad Saúde Pública. 2010;26(9):1747-55.
10. Saraceni V, Guimarães MHFS, Theme Filha MM, Leal MC. Mortalidade perinatal por sífilis congênita: indicador da qualidade da atenção à mulher e à criança. Cad Saúde Pública. 2005;21(4):1244-50.
11. Araújo EC, Costa KSG, Silva RS, Azevedo VNG, Lima FAZ. Importância do pré-natal na prevenção da sífilis congênita. Rev Paraense Med. 2006;20(1):47-51.
12. Fernandes RCSC, Fernandes PGCC, Nakata TY. Análise de casos de sífilis congênita na maternidade do hospital da sociedade portuguesa de beneficência de Campos, RJ. DST J Bras Doenças Sex Transm. 2007;19(3-4):157-61.
13. Vieira AA. Contribuição ao estudo epidemiológico de sífilis congênita no município de Carapicuíba-SP: ainda uma realidade em 2002. DST J Bras Doenças Sex Transm. 2005;17(1):10-7.
14. Donalísio MR, Freire JB, Mendes ET. Investigação da sífilis congênita na microrregião de Sumaré, Estado de São Paulo, Brasil: desvelando a fragilidade do cuidado à mulher gestante e ao recém-nascido. Epidemiol Serv Saúde. 2007; 16(3):165-73.
15. Brasil. Ministério da Saúde; Secretaria de Vigilância em Saúde, Departamento de Vigilância Epidemiológica. Sistema de Informação de Agravos de Notificação – SINAN: normas e rotinas. 2ª ed. Brasília; 2007.

16. Miranda AE, Rosetti Filho E, Trindade CR, Gouvêa GM, Costa DM, Oliveira TG, et al. Prevalência de sífilis e HIV utilizando testes rápidos em parturientes atendidas nas maternidades públicas de Vitória, Estado do Espírito Santo. *Rev Soc Bras Med Trop.* 2009;42(4):386-91.
17. Paz LC, Pereira GF, Pinto VM, Medeiros MGPF, Matida LH, Saraceni V, et al. Nova definição de casos de Sífilis Congênita para fins de vigilância epidemiológica no Brasil, 2004. *Rev Bras Enferm.* 2005;58(4):486-7.
18. Figueiredo W. Assistência à saúde dos homens: um desafio para os serviços de atenção primária. *Ciênc Saude Coletiva.* 2005;10(1):105-9.
19. Galastro EP, Fonseca RMGS. A participação do homem na saúde reprodutiva: o que pensam os profissionais de saúde. *Rev Esc Enferm USP.* 2007;41(3):454-9.