The reality of syphilis in pregnant women: epidemiological analysis between 2014 and 2018

A realidade da sífilis em gestantes: análise epidemiológica entre 2014 e 2018

La realidad de la sífilis en gestantes: análisis epidemiológico entre 2014 y 2018

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REVISA

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RESUMO

Objetivo: conhecer as gestantes com sífilis no estado de São Paulo, últimos cinco anos disponíveis. **Método:** estudo epidemiológico, quantitativo descritivo transversal, com dados secundários, com diagnósticos notificados (Sistema de Informação de Agravos de Notificação) - banco de dados do Departamento de Informática do Sistema Único de Saúde, das gestantes com sífilis, período 2014-2018. **Resultados:** encontrado 44.894 gestantes com sífilis no estado de SP, com crescimento importante nos dois últimos anos, maior prevalência (53,1%) na idade de 20-29 anos, raças brancas (43,1%), ensino fundamental completo (27,9%) e médio completo (26,1%). Maior percentual de diagnósticos realizado no primeiro trimestre (49,4%) e, 3,9% das gestantes não realizaram tratamento. **Conclusão:** é um agravo crescente, com baixa qualidade no preenchimento das fichas de notificação, prejudicando a assistência/qualidade do pré-natal, interferindo nas análises adequadas, afetando a tomada de decisão para tratamento correto. Resultados podem auxiliar em ações de educação em saúde e prevenção dos grupos vulneráveis.

Descritores: Sífilis congênita; IST; doenças sexualmente transmissíveis; doenças venéreas bacterianas; treponema pallidum.

ABSTRACT

Objective: to get to know pregnant women with syphilis in the state of São Paulo, the last five years available. **Method:** epidemiological, quantitative, descriptive cross-sectional study, with secondary data, with notified diagnoses (Information System for Notifiable Diseases) - database of the Department of Informatics of the Unified Health System, of pregnant women with syphilis, period 2014-2018. **Results:** found 44,894 pregnant women with syphilis in the state of SP, with significant growth in the last two years, higher prevalence (53.1%) at the age of 20-29 years, white races (43.1%), complete elementary school (27,9%) and complete high school (26.1%). Higher percentage of diagnoses performed in the first trimester (49.4%) and 3.9% of pregnant women did not undergo treatment. **Conclusion:** it is a growing problem, with low quality in filling out the notification forms, impairing the prenatal care / quality, interfering in the appropriate analyzes, affecting the decision-making for correct treatment. Results can assist in health education and prevention of vulnerable groups.

Descriptors: Congenital syphilis; IST; sexually transmitted diseases; bacterial venereal diseases; treponema pallidum.

RESUMEN

Objetivo: conocer mujeres embarazadas con sífilis en el estado de São Paulo, los últimos cinco años disponibles. **Método:** estudio epidemiológico, cuantitativo, descriptivo transversal, con datos secundarios, con diagnósticos notificados (Sistema de Información de Enfermedades Notificables) - base de datos del Departamento de Informática del Sistema Único de Salud, de gestantes con sífilis, período 2014-2018. **Resultados**: se encontraron 44.894 gestantes con sífilis en el estado de SP, con crecimiento significativo en los últimos dos años, mayor prevalencia (53,1%) en la edad de 20-29 años, razas blancas (43,1%), primaria completa (27 , 9%) y bachillerato completo (26,1%). Mayor porcentaje de diagnósticos realizados en el primer trimestre (49,4%) y 3,9% de gestantes no recibieron tratamiento. **Conclusión:** es un problema creciente, con baja calidad en el llenado de los formularios de notificación, perjudicando la calidad / atención prenatal, interfiriendo en los análisis adecuados, afectando la toma de decisiones para el correcto tratamiento. Los resultados pueden ayudar en la educación sanitaria y la prevención de grupos vulnerables.

Descriptores: Sífilis congénita; IST; enfermedades sexualmente transmisibles; enfermedades venéreas bacterianas; Treponema pallidum.

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ORIGINAL

Introduction

Caused by a gram-negative bacterium, syphilis is a sexually transmitted infection (STIs), curable and exclusive to the human being, which has as an etiological agent Treponema pallidum. Because it is a silent infection, has an initial clinical picture that can be confused with other diseases, generate serious consequences for the infected and have one of the highest transmission rates, among the diseases that can be transmitted during the pregnancy-puerperal cycle, syphilis characterizes a major public health problem.[1]

Syphilis is divided into four stages, each containing specific symptoms of the disease. Initially, primary syphilis occurs, characterized by the appearance of a single painless lesion, usually in the genitals, but which can also arise in the anus, oropharynx, lips or hands. In secondary syphilis, the etiological agent is systemically housed and has as manifestations the cutaneous rash rich in treponema. After this stage, syphilis becomes latent, a phase in which the disappearance of the clinical manifestations of the secondary stage is evidenced and, finally, tertiary syphilis occurs, which may manifest a few years later, affecting the nervous, cardiovascular, mucous, tissue and bone system. [1]

The transmission of syphilis occurs predominantly through sexual contact, however, there is also vertical transmission to the fetus or transplacental route, called congenital syphilis, which can occur in any gestational phase and at any stage of the disease and is the result of not testing for syphilis during prenatal care or inadequate treatment.[2]

Congenital syphilis can be diagnosed in two stages, early and late. The clinical picture of early diagnosis is characterized by symptoms of prematurity, low birth weight, hepatomegaly, anemia, among others. On the other hand, late congenital syphilis is evidenced by developmental delay, neurological deafness, short jaw, seizures etc.[2]

In addition to the dysfunctions caused by congenital manifestation, syphilis during pregnancy can generate serious psychoemotional problems for pregnant women, since the occurrence of abortions, stillbirths, premature delivery and neonatal death are frequent.[2]

During pregnancy, several tests are performed in prenatal consultations, in accordance with the Prenatal Guide in Primary Care: State Department of Health of Rio Grande do Sul. Among these tests, the diagnosis of syphilis is made by immunological tests and direct examination, performed in the first and third trimester of pregnancy.[3]

Syphilis is a curable disease and its treatment is done with doses of Penicillin G Benzathena, according to the stage, being the only safe and effective option to treat pregnant women, and must be strictly followed and respected, so that there is a guarantee in the success of the therapeutic resource.[1]

Once it's vital importance for the performance of epidemiological surveillance and consequent control by the health system, acquired, gestational and congenital syphilis have a compulsory notification character, according to the current Ordinance of the Ministry of Health.[4]

The World Health Organization (WHO) estimates that one million pregnant women a year will be affected by this disease worldwide, putting more than 200,000 children at risk of premature death.[5]

Estimates published by the same Organization show that in 2016 there were more than half a million (approximately 661,000) cases of congenital

syphilis worldwide, resulting in more than 200,000 stillborns and neonatal deaths.[6]

In 2014, who set a goal of less than half a case of syphilis for 1,000 live births, Brazil is 16 times above. In 2007, the case rate was 1.9 per 1,000 children born alive and 10 years later 8.6 cases were found for every 1,000 children born alive.[7]

According to the Department of Informatics of the Brazilian Unified Health System (DATASUS), in 2017 4,013 cases of congenital syphilis were reported in the state of São Paulo, and among these, 3,347 pregnant women underwent prenatal care.[8] It is estimated that 25.6% of the cases of syphilis during untreated pregnancy result in early or late fetal deaths, of the cases reported to the Notifiable Diseases Information System (SINAN), 4.5% were cases of syphilitic stillborn and 3.9% abortions due to syphilis.[9]

In view of the above, this study aims to know how syphilis is and who are the pregnant women with syphilis in the state of São Paulo, in the period from 2014 to 2018, what age, schooling and race of the pregnant women are, as well as to verify the gestational age in which the diagnoses occurred and which treatment scheme was adopted in view of these results. This period was considered because it is the last five years available in SINAN, through the DATASUS database.

Method

This is an epidemiological study, descriptive cross-sectional, with secondary data, using the diagnoses notified in SINAN, from the DATASUS database, related to pregnant women with syphilis in the period from 2014 to 2018, considering as the last five years available in that database.

Data were collected regarding age, gestational age, schooling, race of pregnant women and treatment scheme in the proposed period.

Regarding a descriptive study, based on the collected data, a table and graph were elaborated to better expose the results and elaborate the analyses, as well as the discussions.

For being a secondary study, it was not necessary to submit it to the Research Ethics Committee of the School of Nursing of the University of São Paulo, as recommended by Resolution 466/12 of the National Health Council.

Results

Through the collection of data made available by SINAN, through the DATASUS database, and used in this study, we found a total of 44,894 pregnant women with syphilis in the state of São Paulo, between 2014 and 2018. These findings, presented in Figure 1, show that there has been a significant increase in cases over the years, however, there is a progressive growth in the occurrence of syphilis diagnoses in pregnant women from 2016.

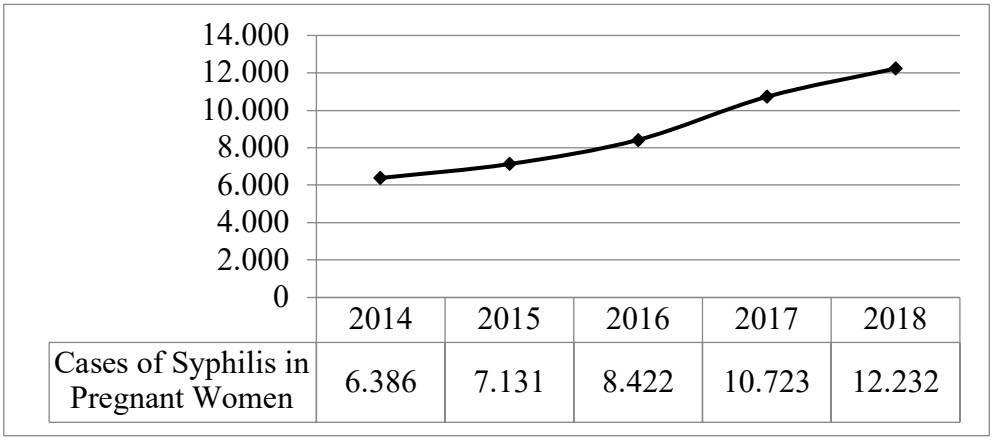

Figure 1-Evolution of syphilis cases in pregnant women per year of diagnosis, from 2014 to 2018, in the state of São Paulo, Brazil, 2020.

Data regarding age groups show that the highest percentage of syphilis diagnoses indicated was among pregnant women aged 20 to 29 years (53.1%), the other groups, 10 to 19 years and 30 years or more, occurred with a distribution of more or less similar with 24.0% and 22.9%, respectively (Table 1).

Table 1- Distribution of cases and percentages of syphilis in pregnant women, according to demographic variables, diagnosed between 2014 and 2018, in the state of São Paulo, Brazil, 2020.

Variables	n	%
Age Range[a]		
10 to 19 years	10.769	24,0
20 to 29 years	23.836	53,1
30 years or more	10.288	22,9
Total	44.893	100
Race		
White	19.338	43,1
Black	5.240	11,7
Yellow	265	0,6
Brown	17.379	38,7
Indigenous	91	0,2
Ignored	2.581	5,7
Total	44.894	100
Education[b]		
Illiterate	112	0,3
Incomplete Fundamental	9.816	21,9
Complete Fundamental	12.534	27,9
Full Medium	11.726	26,1
Complete Superior	633	1,4
Ignored	10.072	22,4
Total	44.893	100
Gestational Age		
1st Quarter	22.170	49,4
2nd Quarter	12.894	28,7
3rd Quarter	8.647	19,3
Gestational Age Ignored	1.183	2,6
Total	44.894	100

Treatment Scheme[c]		
Penicillin	41.951	93,4
Other Scheme	629	1,4
Unrealized	1.734	3,9
Ignored	577	1,3
Total	44.891	100

a) 1 notification is not recorded in SINAN for this variable, n= 44,893 (total cases considered for this variable)
b) 1 notification was classified in SINAN as 'not applicable' and was not included in the table, n= 44,893 (total cases considered for this variable)
c) 3 notifications are not recorded in SINAN for this variable, n= 44,891 (total cases considered for this variable

Regarding the variable race, the highest number of cases was found among white reported pregnant women (19,338 – 43.1%), followed by brown women (17,379 – 38.7%). The lowest number of cases found was among women considered indigenous (91 - 0.2%). It also occurs that there is a considerable number of 2,581 (5.7%), described as ignored, as can be seen in Table 1.

It was verified that the highest percentages for schooling were concentrated among pregnant women who had completed elementary and complete secondary education, 27.9% and 26.1% respectively. On the other hand, we have 1.4% of pregnant women with a complete university degree. As in the previous variable, the percentage given as ignored (22.4%) is significant, indicated in Table 1.

Gestational age, divided quarterly, had the highest percentage of diagnoses in the first trimester (49.4%). However, an important portion was diagnosed in the later trimesters, with 28.7% in the 2nd trimester and 19.3% in the last trimester of pregnancy (Table 1).

Regarding the treatment regimen performed in pregnant women with syphilis in the state of São Paulo, of the total of those diagnosed, 41,951 (93.4%) pregnant women were treated with at least one dose of penicillin. We had 1,734 (3.9%) pregnant women who did not undergo any treatment, which added to the ignored ones (1.3%), make up more than 5% of the diagnosed pregnant women (Table 1), contributing to the increase in births of patients with congenital syphilis.

In both variables, gestational age and treatment regimen, 1,183 (2.6%) and 577 (1.3%) of the ignored, respectively, that contribute to a reading of the problem incompletely (Table 1).

It was also found that there is no consonance of the data presented when comparing the results of the totals of the variables of the cases of the diagnoses, as described in Table 1, with one diagnosis less recorded in the SINAN database in the variables age and schooling and three related to the treatment scheme.

Discussion

Over the years studied, there was a significant increase in the number of cases of pregnant women with syphilis in the state of São Paulo, this increase may be related to the Stork Network program of the Unified Health System, implemented from 201110, which stimulates the women's support and follow-up from family planning, prenatal care, childbirth to the puerperium. On the other hand, it may also be associated with the implementation in primary care of rapid tests for screening of syphilis and reagent tests (treponemal and non-

treponemal), during prenatal care, which help to expand the access of the population for the detection of syphilis and consequent decrease in underreporting.[11-12]

The progressive growth, presented from 2016 on, can be explained by the change in the criteria for defining cases that began to consider the notifications of women during prenatal, childbirth and/or puerperium, who, regardless of whether they present symptoms or not, presented some positive reagent test. Until then, only women diagnosed with prenatal care were reported as syphilis during pregnancy.[13]

Analyzing the age group, it was evidenced that the highest concentration of pregnant women diagnosed with syphilis were between 20 and 29 years, as indicated by some studies that reinforce this trend of young women, sexually active and in the reproductive phase.[13] These findings explain the need for information from primary care on family planning and health education for protected sexual activities, thus avoiding STIs and related consequences, during and after pregnancy, if not properly treated.[12]

The data presented regarding race show that most pregnant women declare themselves white and brown, respectively. These results differ from national data9,14, in which the highest percentage of syphilis is seen in self-declared brown pregnant women, as well as from studies conducted in other states[15,16], as shown in the city of Montes Claros-MG, in which higher numbers of syphilis cases were found in pregnant women who self-reported as brown.[15]

However, some studies, such as ours, have indicated a higher proportion of syphilis in pregnant women who declared themselves white, such as são José do Rio Preto-SP[12] and in southern Brazil.17 Such findings can be explained by the population of women living in these places being mostly white.[18]

The lowest percentage related to race, seen in this study, was among self-declared indigenous women and that may also be due to low coverage in these localities, because they are places that have sociocultural barriers, in addition to geographic women.[19] However, it may be an indication of underreporting, as shown in a study conducted in the period from 2011 to 2014, in the indigenous population of Mato Grosso do Sul, where 45 cases of gestational syphilis, out of a total of 79, were not reported to SINAN, demonstrating a large number of sub-records.[20]

Our sample revealed a higher number of pregnant women with complete elementary and complete secondary education, similar to other national studies[12,16-17], which contradict the study conducted in maternity hospitals of the public health system in Brazil, between January 2010 and December 2011, in which it was found that the majority of pregnant women with syphilis had completed only elementary school.[14]

Although the level of education of the studied population is higher than the average and, still, having found pregnant women with complete higher education, there seems to be a difficulty in accessing the health network, information, diagnosis and appropriate treatment, and it is necessary that health education measures and actions occur for this group of young women and at fertile ages, considering the vulnerability existing in the social groups in which they live.[19]

Several studies express the high social vulnerability in which these pregnant women are exposed and also point out that low schooling, age group and race influence the increase in cases and contribute to syphilis in pregnant

women and congenital syphilis continue to be a major public health problem.[12,14,19]

The gestational age at which the diagnosis of syphilis is made is an important given, since the later the diagnosis, the greater the chance of the occurrence of congenital syphilis and other consequences for pregnant women and the conceptus, already mentioned in this study. The results presented for this variable showed that 49.4% of the diagnoses were made in the first trimester, and this value was satisfactory and similar to the national data.[13] The precocity of the tests is of vital importance, because the rate of infected pregnant women has been alarming, as pointed out in a study conducted in Guarapuava-PR between 2014 and 2015, in which 24 women were found, in a total of 27 pregnant women, diagnosed for syphilis in the first trimester of pregnancy.[21]

We noted that a significant percentage showed the diagnosis for syphilis in pregnant women in the second (28.7%) and third (19.3%) quarters, worrying results due to the consequences on the fetus and which are similar to the study conducted in Palmas-TO, in which 36.8% and 35.1% of late diagnoses were detected, performed respectively in the second and third trimester of pregnancy.[16]

The appropriate and safe treatment for gestational syphilis, according to the clinical protocol and therapeutic guidelines for the prevention of vertical transmission of syphilis[2], is performed with Penicillin. In this study, most cases of syphilis in pregnant women were treated with at least one dose of penicillin, but there is no information on whether the treatment was appropriate for each gestational age and phase of syphilis. There was also a significant percentage of pregnant women who did not undergo any treatment. This finding is reproduced in another study conducted with pregnant adolescents diagnosed with syphilis in curitiba city, PR, where 8.8% of them also did not undergo treatment.[22]

Based on these data, the reasons for this treatment should not have been performed in these pregnant women should be questioned. A study on the relationship between the offer of diagnosis and treatment of syphilis in primary care identified that a significant percentage of professionals did not administer penicillin, and only 22.71% of the municipalities in the Southeast region had the protocoled treatment. Possibly, this data is related to the fear of primary care professionals to anaphylactic reactions and structural scarcity to deal with possible complications resulting from.[23]

The variables gestational age and treatment regimen are important to verify the quality of prenatal care, since diagnosis and treatment are performed in primary care units. Failures in this process result in abortions, prematurity, deaths, children with congenital syphilis, generating psychosocial, physical and emotional exhaustion for those involved, in addition to longer hospitalization time and higher health costs.

The quality of prenatal care can also be noted, due to the quality of the records and notifications, a fact not evidenced in this study. Filling out the notification form incompletely results in serious consequences, since the lack of data makes it impossible to have real accuracy of the situation of syphilis in pregnant women in these population groups. The low quality of the records and the underreporting of gestational syphilis hinder the prevention of congenital syphilis and allow the increase of the case curve, consequently causes this STi, to continue to be a public health problem.

It is also worth mentioning that the data recorded in SINAN and made available by DATASUS, even if they allow an overview of the disease, make it impossible to further detail the situation of syphilis in pregnant women, since it was not possible to cross-reference the variables and with this, the analysis may have presented some vieses in the interpretation.

Conclusion

Through this study, it was possible to evidence that syphilis is still very present in the population and directly expose the social vulnerability existing in the country. The results showed a growing sample, especially in recent years and that most pregnant women diagnosed with syphilis were young, from 20 to 29 years old, in active sexual and reproductive phases. It was also evidenced that more than 50% of the women had attended elementary and high school, complete and, analyzing race, mostly, were self-declared white, considering the population profile found at the site of this study.

Regarding the gestational age in which the diagnoses were made, it was seen that they occurred mostly in the first trimester, despite having significant percentages in the other trimesters. Regarding the treatment regimen, as recommended by the current protocols, more than 90% of the diagnoses were performed with penicillin doses, but there is no information on whether the treatment was appropriate for each gestational age and syphilis phase.

Considering the consequences for those involved, more specific and targeted actions are needed for each extract of the population, because prevention, diagnosis and treatment are performed in primary care.

The fundamental aid for the knowledge of these data for future interventions are notifications and records. A low quality in filling out these instruments, having information ignored or presented incompletely, in addition to impairing care, is an indication of a lame quality of prenatal care, which interferes with an appropriate and consequent decision-making analysis, regarding the search for syphilis patients, their communicators and institutions, of the correct treatment.

It is worth remembering that the diagnosis of syphilis is simple, fast and easily accessible to the population in primary health care networks, as well as, its treatment is effective, when performed properly and low cost, which does not justify these results found, requiring greater involvement of all health agencies, professionals, from academia, to an effective education , seeking to guide, prevent, forward and control this STIs, which lead to such serious consequences and, despite new emerging diseases, continue to exist in our environment.

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References

1. Brasil. Ministério da Saúde. Protocolo Clínico e Diretrizes Terapêuticas (PCDT). Atenção Integral ás pessoas com infecções sexualmente tranmissíveis (IST). Brasília; 2015. 1–121 p.
2. Brasil. Ministério da Saúde. Protocolo clinico e diretrizes terapeuticas para

prevenção da transmissão vertical de HIV, Sífilis e Hepatites virais. Brasília; 2019. 1–269 p. Available from: http://journals.sagepub.com/doi/10.1177/1553350612460767
3. Secretaria de Estado da Saúde do Rio Grande do Sul. Guia do pré-natal na atenção básica. 2018;15. Available from: https://atencaobasica.saude.rs.gov.br/upload/arquivos/201901/09090527-guia-pre-natal-na-atencao-basica-web.pdf
4. Brasil. Portaria nº 204, de 17 de fevereiro de 2016. Define a Lista Nacional de Notificação Compulsória de doenças, agravos e eventos de saúde pública nos serviços de saúde públicos e privados em todo o território nacional, nos termos do anexo, e dá outras providências. Diário of da União. 2016;(32).
5. World Health Organization. Los criterios y procesos para la validación de la eliminación de la transmisión maternoinfantil del VIH y la Sífilis. OMS; 2015;1–32. Available from: http://www.womenchildrenhiv.org/wchiv?page=gtp-01-sp
6. Korenromp EL, Rowley J, Alonso M, Mello MB, Wijesooriya NS, Mahiané SG, et al. Global burden of maternal and congenital syphilis and associated adverse birth outcomes—Estimates for 2016 and progress since 2012. PLoS One. 2019;14(2):e0211720.
7. Batalha E. Sífilis é epidemia [Internet]. Radis. Rio de Janeiro: Fundação Oswaldo Cruz; 2019. Available from: https://radis.ensp.fiocruz.br/
8. Brasil. Ministério da Saúde; Secretaria de Vigilância em Saúde, Departamento de Doenças Crônicas e Infecções Sexualmente Transmissíveis. Indicadores e dados básicos da sífilis nos municípios brasileiros. Brasilia; 2017.
9. Domingues RMSM, Leal M do C. Incidencia de sífilis congénita y factores asociados a la transmisión vertical de la sífilis: datos del estudio Nacer en Brasil. Cad Saude Publica. 2016;32(6): e00082415.
10. Portal da Saúde - SUS. Rede Cegonha. Portal da Saúde - Rede Cegonha; 2016 Available from: http://dab.saude.gov.br/portaldab/ape_redecegonha.php
11. Ministério da Saúde. Nota técnica conjunto n.391/2012/SAS/SVS/MS. Realização do teste rápido da sífilis na Atenção Básica no ambito da rede cegonha; 2012. p. 5. Available from: http://189.28.128.100/dab/docs/sistemas/redecegonha/nt_n391_sifilis.pdf
12. Maschio-Lima T, Machado IL de L, Siqueira JPZ, Almeida MTG. Epidemiological profile of patients with congenital and gestational syphilis in a city in the State of São Paulo, Brazil. Rev Bras Saúde Matern Infant. 2019;19(4):865–72.
13. Brasil. Ministério da Saúde; Secretaria de Vigilância em Saúde. Sífilis 2017. Bol Epidemiológico 2017;48, n.36(2358–9450):41. Available from: http://www.aids.gov.br/pt-br/pub/2017/boletim-epidemiologico-de-sifilis-2017
14. Cunha ARC da, Merchan-Hamann E. Sífilis em parturientes no Brasil: prevalência e fatores associados, 2010 a 2011. Rev Panam Salud Pública. 2015;38:479–86.
15. Lafetá KRG, Martelli Júnior H, Silveira MF, Paranaíba LMR. Sífilis materna e congênita, subnotificação e difícil controle. Rev Bras Epidemiol. 2016;19:63–74.
16. Cavalcante PA de M, Pereira RB de L, Castro JGD. Syphilis in pregnancy and congenital syphilis in Palmas, Tocantins State, Brazil, 2007-2014. Epidemiol e Serviços Saúde. 2017;26:255–64.
17. Padovani C, Oliveira RR de, Pelloso SM. Syphilis in during pregnancy: association of maternal and perinatal characteristics in a region of southern

Brazil. Rev Lat Am Enfermagem. 2018;26.
18. IBGE. Censo demográfico. 2010; Available from: https://cidades.ibge.gov.br/
19. Domingues RMSM, Szwarcwald CL, Souza Junior PRB, Leal M do C. Prevalence of syphilis in pregnancy and prenatal syphilis testing in Brazil: Birth in Brazil study. Rev Saude Publica. 2014;48:766–74.
20. Tiago ZS, Picoli RP, Graeff SV-B, Cunha RV da, Arantes R. Underreporting of gestational, congenital and acquired syphilis among indigenous peoples in Mato Grosso do Sul State, Brazil, 2011-2014. Epidemiol e Serviços Saúde. 2017;26:503–12.
21. Soares LG, Zarpellon B, Soares LG, Baratieri T, Lentsck MH, Mazza V de A. Gestational and congenital syphilis: maternal, neonatal characteristics and outcome of cases. Rev Bras Saúde Matern Infant. 2017;17(4):781–9.
22. Moroskoski M, Rozin L, Batista MC, Queiroz RO, Silva SP. Perfil de gestantes adolescentes diagnosticadas com sífilis em Curitiba-PR. Rev Saúde Pública do Paraná. 2018;1(1):47–58.
23. Figueiredo DCMM de, Figueiredo AM de, Souza TKB de, Tavares G, Vianna RP de T. Relação entre oferta de diagnóstico e tratamento da sífilis na atenção básica sobre a incidência de sífilis gestacional e congênita. Cad Saude Publica. 2020;36:e00074519.

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