



IJS

International Journal of Sciences

Published online 03 20, 2022
ISSN 2763-5392



Report of the incidence of syphilis in a municipality in the southern “Zona da Mata” region of Pernambuco from 2010 to 2018

Carla Graziela dos Santos Oliveira^{1*}, Stefanny Rafaela Alves Filho², Danielle Cavalcanti de Almeida Messias de Barros³, Sandra Maria Correia de Santana⁴, Natália Fernanda Bezerra de Melo⁵, Neidejane Trajano do Nascimento⁶, Leandro Amaro da Silva⁷, Paulo Rosemberg Rodrigues da Silva⁸, Samia Dayana Lemos de Lacerda⁹, Edilene Jeronimo dos Santos¹⁰, Crislene Benicy Silva de Souza¹¹, Igor Gustavo Alves das Neves¹², Larissa Ranielle Barreto Martins Pereira¹³, Mayara Paes de França Silva¹⁴, Jaíse Braz Cabral¹⁵, Josefa Maria Oliveira Xavier¹⁶, Wedja da Silva Lima¹⁷, Ana Cecília Amorim de Souza¹⁸

1 Graduated in Nursing from UNIVISA, post-graduated in neonatal and pediatric ICU from FAVENI

2 Graduated in nursing - UNIVISA

3 Nurse family health specialist Oncology and hematology.

4 Director of SS physiotherapy - Master in biomedical engineering - Specialist in urogynecology, Proctology and Obstetrics

5 Undergraduate nursing student - UNIVISA

6 Biological Sciences (UFPE) Specialization in Clinical Analysis (FAFIRE)

7 Nurse Regulator SES PE - Nurse Nephrologist - Health Services Manager

8 Nurse and Coordinator - SAMU- Umbuzeiro/PB - Emergency nurse

9 PhD student of the graduate program in Therapeutic Innovations-UFPE - Professor and coordinator of the nursing course at UNIFACOL

10 Nurse (FUNESO) - Public health (Guararapes College)

11 Nursing at the UNINASSAU

12 Graduating in Physiotherapy - UNIVISA

13 Bachelor's degree in Nursing from the Federal University of Pernambuco, Academic Center of Vitória (UFPE/CAV) - Specialist in public health with emphasis on FHP and family health from Faculdade Novo Horizonte (FNH)

14 Nurse (UNIVISA), post-graduate in Nursing Auditing (FAVENI)

15 Nurse (UNIVISA) Specialist in Health, Public Health and Family Health Audit.

16 Occupational Therapy UFPE

17 Graduated in Nursing from UNINASSAU - Post-graduated in Acupuncture (ABA - Brazilian Association of Acupuncture, Work Nursing (CEFAPP).

18 Professor at the University of Vitória de Santo Antão – UNIVISA

E-mail addresses: Carla Graziela dos Santos (carla.grazyela@hotmail.com), Stefanny Rafaela Alves Filho (Anacecilia.cge@gmail.com), Danielle Cavalcanti de Almeida Messias de Barros (danicavalcanti78@hotmail.com), Sandra Maria Correia de Santana (ss.oliveira10@hotmail.com), Natália Fernanda Bezerra de Melo (fernandaamelo93@gmail.com), Neidejane Trajano do Nascimento (janebiologa@hotmail.com), Leandro Amaro da Silva (leandrobm2011@gmail.com), Paulo Rosemberg Rodrigues da Silva (Paulorosemberg2007@hotmail.com), Samia Dayana Lemos de Lacerda (samia.lacerda@ufpe.br), Edilene Jeronimo dos Santos (jeronimoedilene299@gmail.com), Crislene Benicy Silva de Souza (crislenebenicy@gmail.com), Igor Gustavo Alves das Neves (IgorGAlves98@gmail.com), Larissa Ranielle Barreto Martins Pereira (larranielle@gmail.com), Mayara Paes de França Silva (mayarapfranca@gmail.com), Jaíse Braz Cabral (jaisecabral@hotmail.com), Josefa Maria Oliveira Xavier (jomaxl@hotmail.com), Wedja da Silva Lima (wedjada@gmail.com), Ana Cecília Amorim de Souza (anacecilia.cge@gmail.com)

*Corresponding author

To cite this article:

2 Oliveira, C.G.S.; Filho, S.R.A.; Barros, D.C.A.M.; Santana, S.M.C.; Melo, N.F.B.; Nascimento, N.T.; Silva, L.A.; Silva, P.R.R.; Lacerda, S.D.L.; Santos, E.J.; Souza, C.B.S.; Neves, I.G.A.; Pereira, L.R.B.M.; Silva, M.P.F.; Cabral, J.B.; Xavier, J.M.O.; Lima, W.S.; Souza, A.C.A. Report of the incidence of syphilis in a municipality in the southern "Zona da Mata" region of Pernambuco from 2010 to 2018...

Oliveira, C.G.S.; Filho, S.R.A.; Barros, D.C.A.M.; Santana, S.M.C.; Melo, N.F.B.; Nascimento, N.T.; Silva, L.A.; Silva, P.R.R.; Lacerda, S.D.L.; Santos, E.J.; Souza, C.B.S.; Neves, I.G.A.; Pereira, L.R.B.M.; Silva, M.P.F.; Cabral, J.B.; Xavier, J.M.O.; Lima, W.S.; Souza, A.C.A. **Report of the incidence of syphilis in a municipality in the southern "Zona da Mata" region of Pernambuco from 2010 to 2018.** *International Journal of Sciences*. Vol. 3, No. 2, 2022, pp.158-163. ISSN 2763-5392.

Received: 03 02, 2022; **Accepted:** 03 04, 2022; **Published:** 03 20, 2022

Abstract: Congenital syphilis disease caused by the bacterium *Treponema pallidum*, has been a disease for epidemiological surveillance purposes since 1986. Its form of transmission occurs from the infected mother untreated or treated incorrectly to the fetus through transplacental, the drug used for treatment is penicillin, an antibiotic derived from mold produced by the fungus *Penicillium chrysogenum*. The test for diagnosis of Congenital Syphilis should be performed at the first prenatal consultation, in the last three months of pregnancy and at the time of parturition. Therefore, in order to be able to make the diagnosis accurately, it is necessary to evaluate the clinical history of the mother, also to perform the physical examination of the offspring and to have the results of the tests. To investigate the incidence and prevalence of congenital syphilis at the Regional Hospital of Palmares. This is a quantitative, descriptive study, data were collected through secondary data collection - SINAN. Case of congenital syphilis in 2018 (n=9) and detection rate (n=14.3); cases of gestational syphilis in 2018 (n=23) and detection rate (n=20.4). The results of the study revealed a significant increase in syphilis indices and indicators in 2018.

Keywords: Infectious disease. Congenital Syphilis. Syphilis. Epidemiology

1. Introduction

The disease caused by the bacterium *Treponema pallidum* called Congenital Syphilis (CS) has been a disease for epidemiological surveillance purposes since 1986, classifying as compulsory notification. Congenital syphilis is a form of transmission of the infected mother who does not treat or who did not perform the correct treatment for the fetus through transplacental, preceding the bacterium *Treponema pallidum*, and can be transmitted to the fetus at any stage of pregnancy or clinical picture of the disease of the genitor¹.

Congenital syphilis in pregnant women will result in neonatal, morbid neonatal deaths and abortions. The drug used for treatment is penicillin, a natural antibiotic that derives from mold produced by the fungus *Penicillium chrysogenum* (or *P. notatum*), which will be used according to the stage of the disease. There are two phases of giving indications of CS: Early, which is when the onset occurs up to two years of life of the child where in most cases its signs and symptoms are asymptomatic and late congenital syphilis where the onset will be after the second year of life of the child. A percentage of about 70% in the case of early congenital syphilis shows no symptoms, however the newborn may be born early, and may also develop abnormal liver augmentation, megalospeny, jaundice, among others. In late CS, manifestations are rare and will result from the healing of the disease, possibly involving several organs¹.

The test for diagnosis of CS should be performed at the first gestational consultation, in the third trimester of pregnancy and at the time of parturition. Taking into account also that care should also be effective during childbirth so that sequelae do not occur in the baby, such as blindness, deafness and mental disability².

The number of reported cases of CS is increasing more

and more throughout the country, and although it is a disease requires compulsory notification the number of diagnosed cases will depend on the service that has been provided in each municipality, so a low number of cases indicates that, possibly there are failures in the process of collection and /or notification³.

Brazil currently seeks to control and eradicate congenital syphilis, however, the statistical data that have been collected show that, in order to reduce and or absence of new cases, there will be a need to increase local surveillance systems. The treatment of CS is carried out in a short period of time and is easily accessible, and all cases of mandatory notification are mandatory, with the SUS as responsible for providing all treatment to the mother, spouse and newborn⁵.

Between 1998 and June 2018, reported according to the Notifiable Diseases Information System (SINAN) were n= 188,445 cases of congenital syphilis in infants younger than one year, of which n= 57,422 (30.5%) lived in the Northeast region. However, in 2018, there were (n=7,030) cases of congenital syphilis in the Northeast region, and all cases were reported in the state of Pernambuco⁶.

The increasing rates and incidence rate in both acquired and maternal and neonatal syphilis are high, the quantity of notification via SINAN is present, with a propensity to increase, even with the increase in maternal-infant care, especially in the prenatal care of health professionals who perform the screening of infectious diseases, as is the case with syphilis. From 1999 to 2014, the year that statistically presented the lowest number of cases (n=407) four hundred and seven, and incidence rate, with (n=2.8) cases per 1,000 live births was that of 2008. Since then, the incidence of new cases has been increasing, thus reaching (n=1258) cases in 2014. Along the longitudinal route(n=10,024) children were diagnosed with congenital syphilis⁷.

In 2010, the World Health Organization / Pan American Health Organization (WHO/PAHO) approved the Action Plan for the Elimination of Syphilis Transmission in the Americas, which proposed reducing the incidence to 0.5 cases per 1000 live births or less by the year 2015. However, few countries have achieved this goal, which demonstrates how difficult it is to control the infection. In Brazil, despite good prenatal coverage, this goal was not achieved, possibly due to the low quality of prenatal care. The neonatal syphilis mortality rate in 2015 was 7.4 per 100,000 live births (LB)^{8,9}.

2. Methodology

This is a descriptive comparative epidemiological study with approach to cohort study, whose data were collected through the secondary database of the Notifiable Diseases Information System (SINAN), provided by DATASUS/Ministry of Health. Data were collected from the records in the notification forms for the following diseases: Gestational Syphilis and Congenital Syphilis in the SINAN Database from 2010 to 2018, where the data collected were by region, gender and age group. The Informatics Department of the Unified Health System (DATASUS) provides information that can serve to support objective analyses of the health situation, evidence-based decision-making and the development of health action programs.

Data tabulation in the Department of Informatics of the Unified Health System (DATASUS) was carried out through the Notifiable Diseases Information System (SINAN), which is powered by the notification and investigation of cases of diseases and injuries that are on the national list of diseases of compulsory notification, which is the aim of the study. The variables studied in the database were: number of cases, age group, region and year of notification.

A Database was built in the Biostat Statistical Program with the variables included in the study. For the analysis of these data, percentage calculations were used to observe the dispersion among the collected variables, analyzed by simple percentage. The information was analyzed using the Statistical Program Biostat version 5.0 for the formatting of the data.

3. Results and Discussion

Between 2016 and 2018, a total of (n= 87) cases of Congenital Syphilis were present in the Region of the Southern "Zona da Mata" of the State of Pernambuco (**Table 1**). In this period, were reported (n=04) in 2016, (n=33) in the year 2017 and (n=50) in 2018 confirmed cases of syphilis, which represents an increase of approximately 1,250%. Regarding cases of syphilis acquired by sex (**Table 2**) from 2010 to 2018, males were predominant in most years, with a higher index in 2018 (n=46) compared to females (n=14).

For the year 2018 (**Table 3**), with the confirmed cases of gestational syphilis reported in the Notifiable Diseases Information System (SINAN) for the Palmares region, it verified (n=23) chaos with detection rate (n=20.4), comparison between the years 2010 to 2018. In (**Table 4**)

they describe the trimester of notification of the pathology in pregnant women, where the 3rd trimester presents (n=13) cases. With predominance (**Table 5**) of the age group from 20 to 29 years (n=9).

Table 1 - Cases confirmed by congenital syphilis reported in the Notifiable Diseases Information System for the Palmares health region, from 2010 to 2018.

Year of Notification	Confirmed cases
2010	0
Detection rate	0.0
2011	1
Detection rate	1.7
2012	0
Detection rate	0.0
2013	2
Detection rate	3.2
2014	0
Detection rate	0.0
2015	3
Detection rate	4.8
2016	2
Detection rate	3.2
2017	9
Detection rate	14.3
Total	109

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Accessed 26/03/2019. MS/SVS/DCCI - Department of Chronic Diseases and Sexually Transmitted Infections. NOTES:(1) Data as of 30/06/2019; (2) Preliminary data for the last 5 years.

Table 2 - Cases of syphilis acquired, by sex, reported in the Palmares health region, referring to the municipality of Palmares/PE period from 2010 to 2018.

Year	Sex	Total
2010	Female	-
	Male	-
2011	Female	-
	Male	1
2012	Female	-
	Male	-
2013	Female	1
	Male	1
2014	Female	-
	Male	-
2015	Female	1
	Male	2
2016	Female	1
	Male	1

4 Oliveira, C.G.S.; Filho, S.R.A.; Barros, D.C.A.M.; Santana, S.M.C.; Melo, N.F.B.; Nascimento, N.T.; Silva, L.A.; Silva, P.R.R.; Lacerda, S.D.L.; Santos, E.J.; Souza, C.B.S.; Neves, I.G.A.; Pereira, L.R.B.M.; Silva, M.P.F.; Cabral, J.B.; Xavier, J.M.O.; Lima, W.S.; Souza, A.C.A. Report of the incidence of syphilis in a municipality in the southern "Zona da Mata" region of Pernambuco from 2010 to 2018...

2017	Female	3
	Male	6
2018	Female	14
	Male	46
TOTAL		70

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Accessed 26/03/2019. MS/SVS/DCCI - Department of Chronic Diseases and Sexually Transmitted Infections. NOTES: (1) Data as of 30/06/2019; (2) Preliminary data for the last 5 years.

Table 3 - Confirmed cases of gestational syphilis reported in the Notifiable Diseases Information System for the Palmares region, in the years 2010 to 2018.

Year	Number of Cases	Detection rate
2010	7	7.9
2011	3	2.7
2012	4	3.4
2013	11	9.4
2014	7	4.0
2015	8	4.3
2016	2	1.5
2017	14	12.4
2018	23	20.4
TOTAL		

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Accessed 26/03/2019. MS/SVS/DCCI - Department of Chronic Diseases and Sexually Transmitted Infections. NOTES: (1) Data as of 30/06/2019; (2) Preliminary data for the last 5 years.

Table 4. Confirmed cases of pregnant women with syphilis according to gestational age per year of diagnosis 2010-2018 for the Palmares/PE region.

Year	1st Tri	2nd Tri	3rd Tri	Gestational age Ignored	Ignored	Total
2010	2	4	1	-	-	7
2011	-	-	2	1	-	3
2012	-	2	2	-	-	4
2013	1	-	8	2	-	11
2014	2	2	3	-	-	7
2015	2	4	2	-	-	8
2016	-	1	1	-	-	2

2017	3	2	9	-	-	14
2018	3	7	13	-	-	23
TOTAL	13	22	41	3	-	79

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Accessed 26/03/2019. MS/SVS/DCCI - Department of Chronic Diseases and Sexually Transmitted Infections. NOTES: (1) Data as of 30/06/2019; (2) Preliminary data for the last 5 years.

Table 5. Cases of pregnant women with syphilis according to age group, reported by SINAN in the municipality of Palmares/PE by diagnosis year 2010-2018.

Year	10 to 14 years	15 to 19 years	20 to 29 years old	30 to 39 years old	40 or more	Ignored	Total
2010	-	2	5	-	-	-	7
2011	-	1	5	-	-	-	6
2012	-	2	2	-	-	-	4
2013	-	4	4	2	1	-	11
2014	1	2	4	-	-	-	7
2015	1	1	4	-	-	-	6
2016	-	1	1	-	-	-	2
2017	-	6	8	-	-	-	14
2018	-	7	9	7	-	-	13
TOTAL	2	7	9	7	1	-	26

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Accessed 26/03/2019. MS/SVS/DCCI - Department of Chronic Diseases and Sexually Transmitted Infections. NOTES: (1) Data as of 30/06/2019; (2) Preliminary data for the last 5 years.

Table 6. Cases of congenital syphilis in children under one year of age and incidence rate (per 1,000 live births) per year of diagnosis. Brazil, 2010-2018.

Year	Number of Cases	Detection rate
-------------	------------------------	-----------------------

2010	3	3.4
2011	-	-
2012	-	-
2013	5	4.3
2014	3	1.7
2015	6	3.3
2016	7	5.2
2017	9	8.0
2018	6	5.3
TOTAL	39	

Source: MS/SVS/DCCI - Department of Chronic Diseases and Sexually Transmitted Infections. NOTES: (1) Data as of 30/06/2019; (2) Preliminary data for the last 5 years.

This study presents important aspects regarding the epidemiology of syphilis in a municipality in the southern “Zona da Mata” of Pernambuco, where we re-report and describe the numbers and profiles of syphilis carriers, however, the discrepancy of records entre the records from 2010 to 2017 to 2018, as well as the considerable increase in cases in 3 trimesters of gestation. As a consequence, the high detection rates in 2018 increased the infant mortality rate due to this disease, with peaks in 2011 and 2014, a situation also observed in other regions of Brazil. Similar rates have been found in other countries, reinforcing the idea that syphilis represents a global public health problem^{10,11}.

For Canto *et al.*, 2019 congenital syphilis (CS) is one of the main causes of mortality in several countries, especially in Latin America. This study aimed to analyze the fetal and infant mortality of CS reported to the Health Information System, through the Mortality Information System (SIM) of a State of northeastern Brazil from 2010 to 2014. However, the study describes the fragility of information systems as well as data fed in most information systems: underreporting, non-notifications, timely notification, non-notification of abandonment of patients undergoing treatment¹².

The frequency of prenatal consultations has been demonstrated by some studies as one of the most important variables related to pregnancy, childbirth and the newborn in the prevention of infant morbidity and mortality and its components. Strict follow-up during prenatal care allows early identification and intervention to minimize damage to maternal and child health. Thus, the guarantee of quality prenatal care organized in order to ensure accessibility to pregnant women can detect maternal and fetal diseases, especially syphilis in pregnant women, thus improving the possibility of survival of the newborn and reducing the prevalence of intrauterine growth retardation, prematurity and the occurrence of low birth weight¹³.

As a result of the study, the infant mortality rate of neonatal syphilis was 16.3 per 100,000 live births¹². For this study that analyzed a municipality in the southern “Zona da Mata” of Pernambuco, between 2010 and 2014, cases of syphilis were reported (n=32) in pregnant women. For this same period, the incidence of syphilis in neonates were (n=8) cases.

4. Conclusions

The results of the study revealed a significant increase in syphilis indices and indicators in 2018. However, the increase in the disease can be declared as a good sign, since in Brazil syphilis is an endemic pathology. Furthermore, we can mention the underreporting of syphilis, which leads to ignorance of the reality of deaths from this disease, hindering the development of public policies aimed at its prevention.

References

- [1] BRASIL. São Paulo. Secretaria de Estado da Saúde. Centro de Controle de Doenças. Programa Estadual e DST/AIDS. Centro de Referência e Treinamento DST/AIDS. Guia de Bolso para o manejo da sífilis em gestantes e sífilis congênita. São Paulo: Secretaria de Estado da Saúde. 2016. 112p.
- [2] BRASIL. SINAN, SISTEMA DE AGRAVOS DE NOTIFICAÇÃO - SÍFILIS CONGÊNITA - Publicado: Terça, 08 de março de 2016, 21h54. Disponível em: <http://portalsinan.saude.gov.br/sifilis-congenita>. Acessado em 2017, set. 22.
- [3] Domingues, R. M. S. M.; LEAL, M. C. Incidência de sífilis congênita e fatores associados à transmissão vertical da sífilis: dados do estudo Nascer no Brasil. Cad. Saúde Pública vol.32 no. 6 Rio de Janeiro 2016 Epub June 01, 2016.
- [4] BRASIL. Ministério da Saúde. Secretaria de Vigilância em Saúde. Departamento de DST, Aids e Hepatites Virais. Protocolo Clínico e Diretrizes Terapêuticas para Atenção Integral às Pessoas com Infecções Sexualmente Transmissíveis / Ministério da Saúde, Secretaria de Vigilância em Saúde, Departamento de DST, AIDS e Hepatites Virais. – Brasília: Ministério da Saúde, 2015.120 p.: il.
- [5] BRASIL. Secretaria de Estado da Saúde de São Paulo. Coordenadoria de Controle de Doenças. Centro de Referência e Treinamento DST/Aids – SP. Programa Estadual e DST/Aids de São Paulo. Guia de Bolso para o manejo da sífilis em gestantes e sífilis congênita. São Paulo: Secretaria de Estado da Saúde. 2016. 60-65p.
- [6] BRASIL. DATASUS, SÍFILIS CONGÊNITA – CASOS NOTIFICADOS NO SISTEMA DE INFORMAÇÃO DE AGRAVOS DE NOTIFICAÇÃO – BRASIL - Casos confirmados por Região de notificação segundo Ano Diagnóstico Período: 2018. Disponível em: <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sinanet/cnv/sifilisbr.def> acessado em 2019, mar. 10.
- [7] BRASIL. Ministério da Saúde. Secretaria de Vigilância em Saúde. Boletim Epidemiológico. Monitoramento dos casos de sífilis congênita, ANO 5 | Nº 1, 1º SEMESTRE | JANEIRO|2016. Disponível em: http://portal.saude.pe.gov.br/sites/portal.saude.pe.gov.br/files/boletim_sifilis_pe_-_2016.pdf acessado em 2017 Dez 18.
- [8] IBGE - Instituto Brasileiro de Geografia e estatística. População estimada: Diretoria de Pesquisas, Coordenação de População e Indicadores Sociais,

6 Oliveira, C.G.S.; Filho, S.R.A.; Barros, D.C.A.M.; Santana, S.M.C.; Melo, N.F.B.; Nascimento, N.T.; Silva, L.A.; Silva, P.R.R.; Lacerda, S.D.L.; Santos, E.J.; Souza, C.B.S.; Neves, I.G.A.; Pereira, L.R.B.M.; Silva, M.P.F.; Cabral, J.B.; Xavier, J.M.O.; Lima, W.S.; Souza, A.C.A. Report of the incidence of syphilis in a municipality in the southern "Zona da Mata" region of Pernambuco from 2010 to 2018...

Estimativas da população residente com data de referência 10 de março de 2019. Disponível em: <https://cidades.ibge.gov.br/brasil/pe/palmares/panorama>. Acessado em 2019, mar. 10.

- [9] Organización panamericana de la salud. Iniciativa Regional para la eliminación de la transmisión materno infantil del VIH y de la sífilis congénita em América Latina y el Caribe: estratégia de monitoreo regional. Washington; 2010.
- [10] Newman L, Kamb M, Hawkes S, Gomez G, Say L, Seuc A, *et al.* Estimativas globais de sífilis na gravidez e resultados adversos associados: análise de dados multinacionais de vigilância pré-natal . PLoS Med. 2013; 10 (2): e1001396 10.1371 / journal.pmed.1001396
- [11] Ministério da Saúde (Brasil). Secretaria de Vigilância em Saúde. Departamento de DST, Aids e hepatites virais. Boletim Epidemiológico - Sífilis. Ministério da Saúde; 2016.
- [12] Canto *et al.* Fetal and infant mortality of congenital syphilis reported to the Health Information System. PLoS One. 2019; 14(1): e0209906. doi: 10.1371/journal.pone.0209906
- [13] Hauck FR, Tanabe KO, Moon RY. Racial and ethnic disparities in infant mortality. Semin Perinatol 2010; 35:209-20.