

# INCIDENCE OF SYPHILIS IN PREGNANT WOMEN IN THE COUNTRYSIDE OF SÃO PAULO FROM 2018 TO 2020

**Bianca Garcia Botelho de Andrade<sup>1</sup>, Jaqueline Fernandes<sup>1</sup>, Amanda Fedozi Tonon<sup>1</sup>, Eleusa Gomes Muniz Ribeiro<sup>1</sup>, Rogério Rodrigo Ramos<sup>1,2\*</sup>, José Martins Pinto Neto<sup>1,3</sup>, André Wilian Lozano<sup>1,3</sup>**

<sup>1</sup>Universidade Brasil (UB), Fernandópolis, SP, Brazil

<sup>2</sup>Centro Universitário de Santa Fé do Sul (UNIFUNEC), Santa Fé do Sul, SP, Brazil

<sup>3</sup>Fundação Educacional de Fernandópolis (FEF), Fernandópolis, SP, Brazil

\*Corresponding author:

e-mail address: [rogerio.enfer@gmail.com](mailto:rogerio.enfer@gmail.com) tel. +55 17 3465 4200

## ABSTRACT

*Syphilis is caused by the bacterium *Treponema pallidum* and is transmitted sexually, hematogenously or vertically, and may occur in any time of pregnancy. It is one of the major concerns and high rates of pregnant women with syphilis, which leads to congenital syphilis. The aim of this study was to investigate the incidence of syphilis in pregnant women in the state of São Paulo from 2018 to 2020 in epidemiological surveillance. The study is an epidemiological, descriptive observational research of quantitative analysis with secondary data, notified in the Notifiable Diseases Information System (SINAN), which is the database of the Department of Informatics of the Unified Health System (DATASUS), of pregnant women with syphilis, between 2018-2020. The collection of secondary data was authorized of São Paulo State. We found 50 women with unspecified syphilis in the last 3 years, of these 36 are pregnant women with syphilis and 7 cases of congenital syphilis. There has been a large increase in pregnant women with syphilis in the last year, however, there has been an eradication of congenital syphilis during this period. With this, it can be emphasized the importance of screening and early treatment of pregnant women in the Primary Health Care Network to promote health promotion and to offer quality of health services to mothers.*

**Keywords:** Syphilis, *Treponema pallidum*, Pregnant Women, Prenatal Care, Sexually transmitted disease.

## 1. Introduction

Syphilis is a sexually transmitted infection (STIs) caused by the hematogenous or vertical *Treponema pallidum* bacterium, which can occur at any time during pregnancy. To track and treat this disease, it is important that all pregnant women receive prenatal care. STIs is one of the concerns in public health, in which high rates of pregnant women with syphilis are observed, which can lead to congenital syphilis<sup>[1]</sup>. Thus, it presents a health risk, since the maternal morbidity rate, congenital infections and perinatal mortality are high<sup>[2]</sup>.

Congenital syphilis is a disease that can be avoided, if the pregnant woman is diagnosed early and promptly treated, as well as her sexual partner(s). However, the occurrence of the disease indicates failures in prenatal care, so serological screening is an effective measure, as well as treatment with benzathine penicillin in the 1<sup>st</sup> trimester of pregnancy, in the 3<sup>rd</sup> trimester, in hospitalization for childbirth or in case of abortion/stillbirth, exposure to risk or sexual violence. Following these measures, the risk of adverse outcomes for the fetus is minimal<sup>[3]</sup>. Vertical transmission of syphilis in pregnant women can lead to severe results, especially in the second and third trimester of pregnancy, such as fetal death, stillbirth, premature birth, low birth weight and congenital infections of the baby<sup>[4]</sup>. For the authors, the most consistent action for the control of congenital syphilis is to ensure a comprehensive and quality prenatal care, ensuring early diagnosis and timely treatment<sup>[5,6]</sup>.

According to the World Health Organization (WHO), syphilis is the most common STI in the world, with approximately 6 million new cases per year, with more than half a million cases of congenital syphilis worldwide, resulting in more than 200,000 stillborn and neonatal deaths. As a result, congenital syphilis is considered the second leading preventable cause of fetal death in the world, second only to malaria<sup>[7]</sup>.

These considerations indicate that syphilis is a reemerging public health problem, so the physician or other health professional stands out as a pillar in primary care, that is, acting with excellence in the screening, prevention and treatment of the disease to promote the promotion of health and quality of life of pregnant women. For this reason, the research is justified by the interest in identifying the incidence of syphilis in pregnant women by collecting data from diagnoses notified in the National System of Notifiable Diseases (SINAN), from the database of the Department of Informatics of the SUS (DATASUS), allowing the analysis of age group, educational level, congenital and unspecified syphilis.

In view of the above, this study was carried out with the objective of investigating the incidence of syphilis in pregnant women in the state of São Paulo, Brazil, from 2018 to 2020.

## **2. Methodology**

The study is an epidemiological research, descriptive observational analysis of quantitative analysis, with secondary data provided by the Epidemiological Surveillance, from the diagnoses notified in SINAN, from the DATASUS<sup>[8]</sup> database, relating to pregnant women with syphilis in the period 2018 to 2020, from the form "Diseases and Diseases of Notefile", a document completed by any health professional who suspected or confirmed syphilis in pregnant women<sup>[9]</sup>.

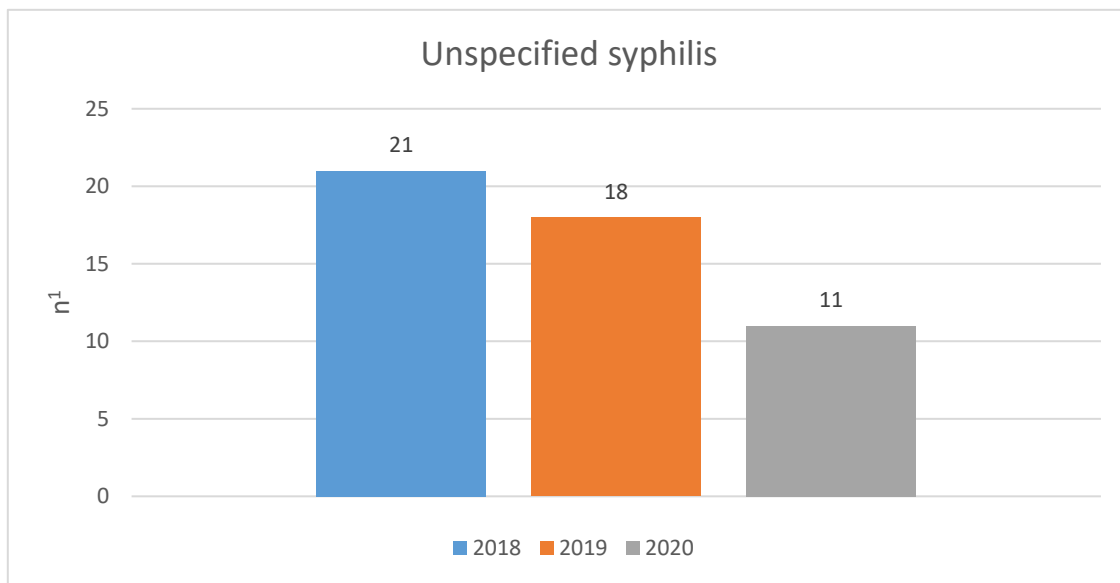
Because it is secondary data, observational method and study that does not involve human beings, it was not necessary to submit it to the Research Ethics Committee of the University of Brazil (UB). The collection of secondary data was authorized by the Municipal Health Secretary of Fernandópolis. This is a Scientific Initiation study approved by the Institutional Program of Scientific and Technological Initiation of UB conducted from January to December 2021.

During the analysis, we collected the number of unspecified cases of syphilis, schooling, cases of pregnant women with syphilis, age group of pregnant women with syphilis and cases of congenital syphilis, after which data were tabulated for descriptive analysis.

In the case of a descriptive study, based on the data collected, graphs were elaborated by the Microsoft Excel 2010 Program to better expose the results and elaborate the analyses, as well as the discussions found in chapter 3.

### 3. Results and discussion

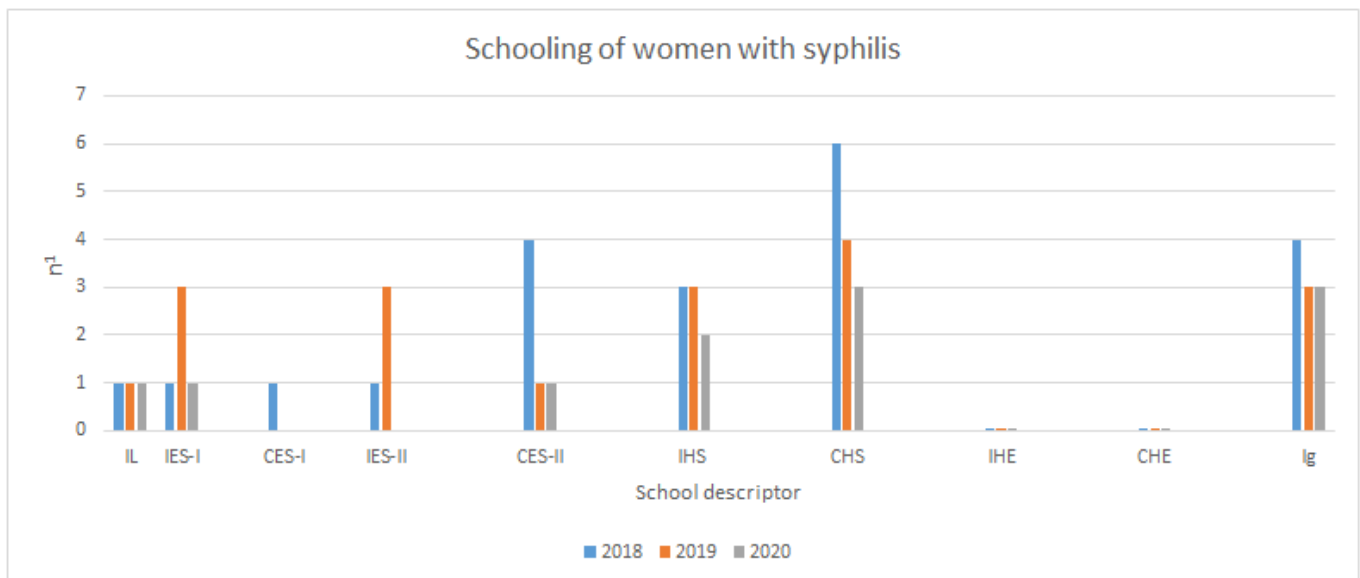
Fifty unspecified cases of syphilis were found in women between 2018 and 2020. Figure 1 shows that in 2018 there was a greater number of cases (n 21) (42%), decreasing in 2019 to 18 cases (36%) and in 2020 reducing to 11 cases (22%). In relation to the three years, it is worth mentioning that there was a 78% reduction in cases of unspecified syphilis in 2020.



**Figure 1.** Cases of unspecified syphilis in women in the city of Fernandópolis/SP, 2018-2020.

**Legend:** n¹ (number of women with unspecified syphilis).

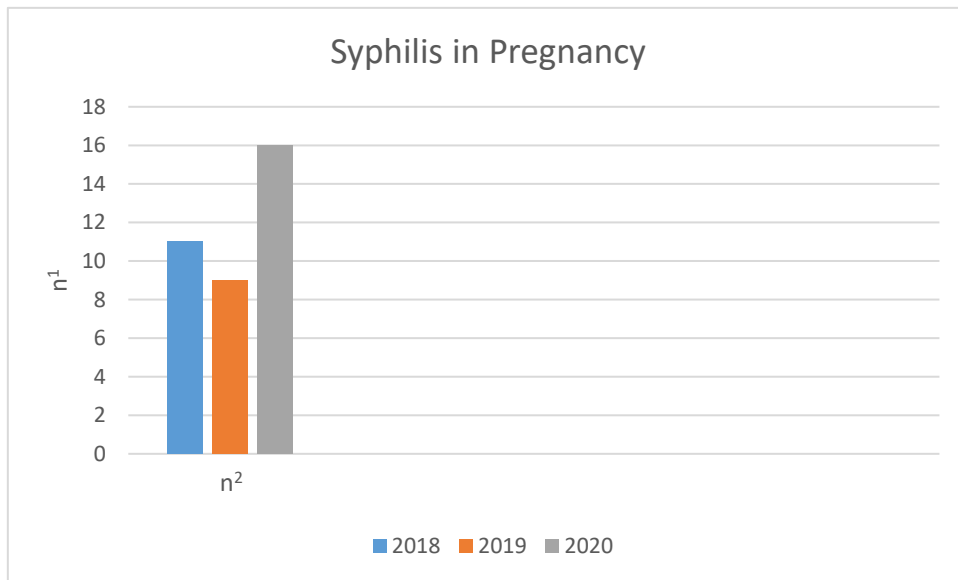
Figure 2 shows that most women with unspecified syphilis are literate (74%), only 6% are illiterate, the other 20% (ignored) are not registered in DATASUS. There is a gap in higher education because no woman is studying or has completed the undergraduate course. In addition, in 2020, income inequality between social classes was affected by the new coronavirus pandemic.



**Figure 2.** Schooling of women with unspecified syphilis, city of Fernandópolis/SP, 2018-2020.

**Legend:** n<sup>1</sup> (number of women); Illiterate (IL); Incomplete Elementary School I (IES-I); Complete Elementary School I (CES-I); Incomplete Elementary School II (IES-II); Complete Elementary School II (CES-II); Incomplete High School (IHS); Complete High School (CHS); Incomplete Higher Education (IHE); Complete Higher Education (CHE); Ignored (Ig).

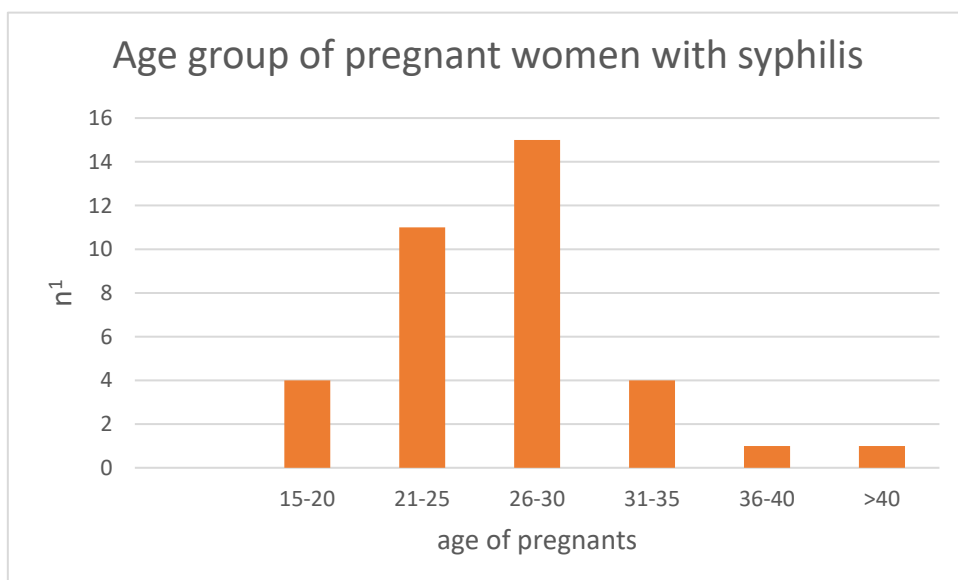
Figure 3 shows the number of cases of pregnant women with syphilis in 2018 (n 11), with a slight reduction to 9 cases in 2019, but in 2020, a worrying increase (n 16). These data represent 36 cases of pregnant women with syphilis in the state of São Paulo in these 3 years. It is important to highlight the research of Cavalcante *et al.*<sup>[10]</sup> in his study, 171 cases of syphilis were identified in pregnant women in the city of Palmas/TO from 2007 to 2014, that is, 171 cases in 8 years, and the city of Palmas has 306,296 inhabitants in 2020 and Fernandópolis 69,402 inhabitants and the years studied by each city, and Fernandópolis had a significant number of cases in these 3 years studied. The explanation for this increase suggests that the prognosis of the disease is not being effective, because of this, the authors Silva *et al.*<sup>[11]</sup> report that it is essential to improve the quality of care, with increased inventory of materials, professional qualification and articulation between the different points of support networks for diagnosis, treatment and follow-up to significantly reduce cases of the disease.



**Figure 3.** Number of syphilis cases in pregnant women, Fernandopolis /SP, 2018-2020.

**Legend:** n¹ (number of pregnant women with syphilis); n² (each column represents the year studied).

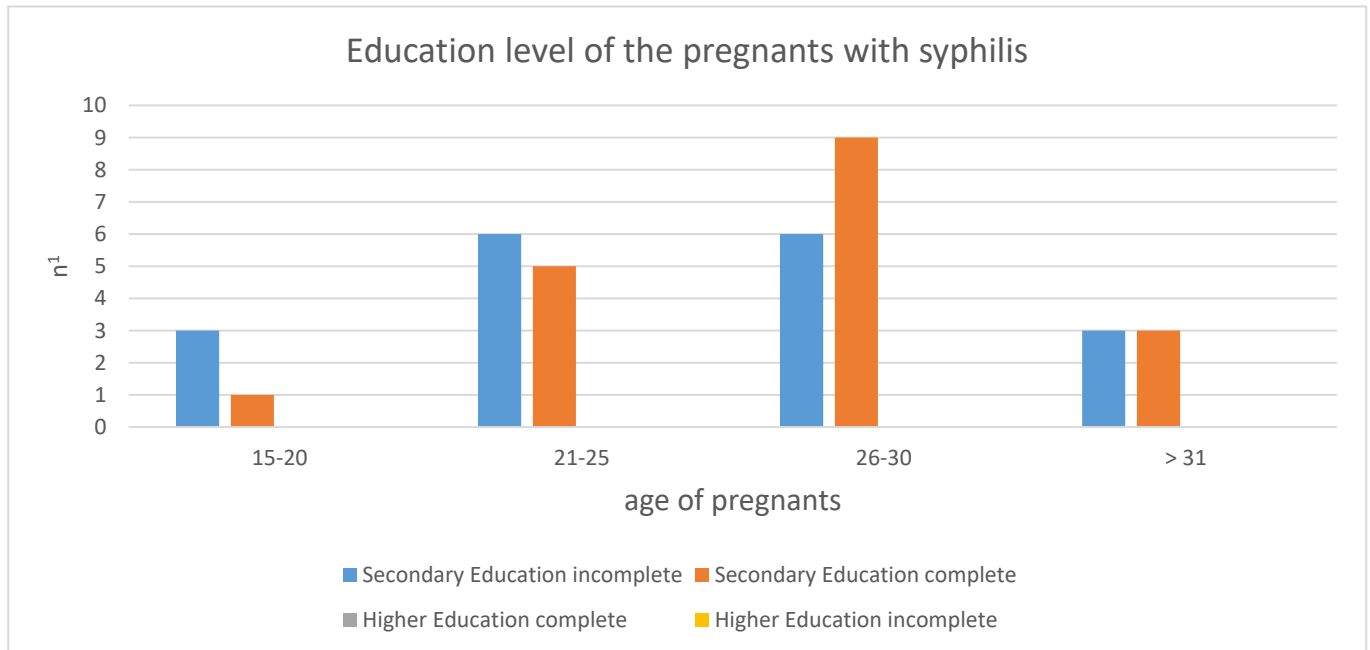
Figure 4 shows the rate of 41.7% (n 15) of pregnant women with syphilis between 26 and 30 and 30.6% (n 11) of pregnant women between 21 and 25. Regarding the age of 15 to 20 and 31 to 35, both with 4 cases (11.2%), and 36 to 40 and above 40, both with 1 case (2.65%). The age group from 15 to 20 and from 21 to 25 (41.7%) represents a good percentage of women with syphilis. It is notepoint that the age of pregnant women with syphilis draws attention, due to 41.7% of women being at least 15 years old and at most 25. This age group is due to pregnant women with little cognition about STIs, limited knowledge about the disease, fear and non-treatment of the sexual partner, inadequate treatment, besides the lack of understanding and training in the management of syphilis by health professionals and the lack of guidance to pregnant women<sup>[11]</sup>.



**Figure 4.** Age group of pregnant women with syphilis, Fernandopolis/SP, 2018-2020.

**Legend:** n¹ (number of pregnant women).

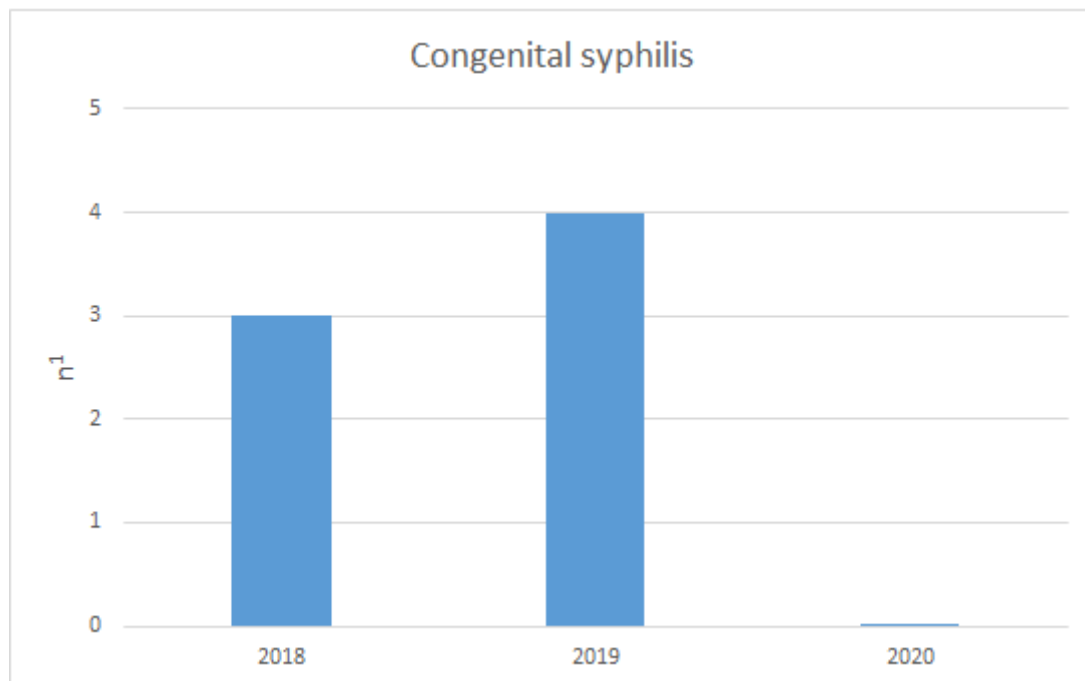
Figure 5 shows that 50% (n 18) of pregnant women with syphilis do not have complete high school education, and this number stands out in the age group of 15 and above 31. The other 50% (n 18) represent schooling with complete high school. It is important to highlight that none of the pregnant women had higher education. The mother's low schooling and ethnicity, as well as the late admission of the pregnant woman to start prenatal care, in addition to the insufficient number of consultations and the non-performance of tests for diagnosis are factors associated with the disease<sup>[12]</sup>.



**Figure 5.** Schooling of pregnant women with syphilis, Fernandópolis/SP, 2018-2020.

**Legend:** n<sup>1</sup> (number of pregnant women).

Figure 6 shows cases of congenital syphilis. Figure 3 cases in 2018, 4 cases in 2019, which confirms the increase of one case between 2018 and 2019, while in 2020 shows the eradication of congenital syphilis. Compared to the study by Cavalcante *et al.*<sup>[10]</sup>, 204 cases of congenital syphilis were identified in the city of Palmas, thus, it is noticed that prenatal care and early treatment performed by the Unified Health System (SUS) improved the quality of care and were significant for health promotion for pregnant women in the city. In this investigation, it was possible to observe that, through the treatment and prevention of the disease, congenital syphilis can be avoided. It should be emphasized that the quality of pregnancy and childbirth care is a determining process in reducing the rates of vertical transmission of syphilis, and disease control is based on serology and the appropriate treatment of pregnant women and partners<sup>[13]</sup>, as well as the incentive to sexual education among young and low-income people<sup>[9]</sup>.



**Figure 6.** Congenital syphilis, Fernandópolis/SP, 2018-2020.

**Legend:** n<sup>1</sup> (number of pregnant women with congenital syphilis).

However, prenatal care is essential for maternal and child health. During this period, activities related to health promotion and identification of risks for pregnant women and fetuses should be developed, thus allowing the prevention of numerous complications, in addition to minimizing or eradicating risk factors and behaviors associated with various health problems of pregnant women<sup>[14-16]</sup>. The Ministry of Health recommends prenatal care with at least six consultations with health professionals, two of them performed by a doctor. It also guides the beginning of care in the first trimester of pregnancy<sup>[17]</sup>. Official data show high coverage of prenatal care in Brazil, where almost 90% of pregnant women are assisted by qualified professionals<sup>[17]</sup>. However, it is important to emphasize that the results are still insufficient to control the various health problems related to pregnancy, without significant reduction in maternal and perinatal mortality rates<sup>[18,19]</sup>. This suggests further studies aimed at the treatment of pregnant women with syphilis, especially in the prevention of the disease, as well as good care during screening, which is the primary moment in prenatal care.

#### 4. Conclusion

The number of pregnant women with syphilis has increased in the last year, however, despite the increase in cases of pregnant women with syphilis in 2020, there was the eradication of congenital syphilis, which is due to a fruitful prenatal care, that is, screening and treatment of the disease at the beginning of pregnancy. Therefore, the health professional who works in primary care should play a fundamental role in screening and special attention to the treatment of the disease, thus ensuring maternal and child safety, consequently reducing the risk of complications, disability and even death of the mother and/or baby. Another crucial point, when a pregnant woman is diagnosed with syphilis, especially congenital syphilis, it is very important to guide mothers to have resilience to things that were not planned, so that they do not

lose self-control and discourage treatment, since the disease is considered the second cause of fetal death in the world but can be avoided if it is treated early, therefore, the good quality of care provided by professionals in prenatal care stands out.

## **Conflict of Interest**

The authors declare no conflict of interest.

## **References**

- [1] Magalhães DMS, Kawaguchi IAL, Dias A, Calderon IMP. A sífilis na gestação e sua influência na morbimortalidade materno-infantil. *Com Ciências Saúde*, 2011; 22(Sup 1): S43-S54. Available from: <https://pesquisa.bvsalud.org/portal/resource/pt/lil-619071>
- [2] Damasceno ABA, Monteiro DLM, Rodrigues LB, Barmpas DBS, Cerqueira LRP, Trajano AJB. Sífilis na gravidez. *Revista HUPE*, 2014; 13(3): 89-95. <https://doi.org/10.12957/rhupe.2014.12133>
- [3] Nonato SM, Melo APS, Guimaraes MDC. Sífilis na gestação e fatores associados à sífilis congênita em Belo Horizonte-MG, 2010-2013. *Epidemiol Serv Saúde*, 2015; 24(4): 681-694. <https://doi.org/10.5123/S1679-49742015000400010>
- [4] Korenromp EL, Rowley J, Alonso M, et al. Correction: global burden of maternal and congenital syphilis and associated adverse birth outcomes-estimates for 2016 and progress since 2012. *PLOS ONE*, 2019; 14(7): e0219613. <https://doi.org/10.1371/journal.pone.0219613>
- [5] Wolf T, Shelton E, Sessions C, Miller T. Screening for syphilis infection in pregnant women: evidence for the U.S. Preventive Services Task Force Reaffirmation recommendation statement. *Ann Intern Med* 2009; 150:710-6. <https://doi.org/10.7326/0003-4819-150-10-200905190-00009>
- [6] Centers for Disease Control and Prevention. Congenital syphilis - United States, 2003-2008. *MMWR Morbid Mortal Wkly Rep* 2010; 59:413-7. Available from: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5914a1.htm>
- [7] Organização Mundial da Saúde (OMS). Organização Mundial da Saúde pública novas estimativas sobre sífilis congênita. OMS, 2019. Available from: <https://www.paho.org/pt/noticias/28-2-2019-organizacao-mundial-da-saude-publica-novas-estimativas-sobre-sifilis-congenita>
- [8] Costa DF, Aanholt DPJV, Ciosak SI. A realidade da sífilis em gestantes: análise epidemiológica entre 2014 e 2018. *Revisa* 2021; 10(1): 195-204. <https://doi.org/10.36239/revisa.v10.n1.p195a204>
- [9] Melo MFRM, Silva KPM, Oliveira HF. Prevalência dos casos de sífilis em gestantes no período de 2010 a 2019 em Sergipe. *Research, Society and Development*, 2021; 10(13): e596101321617. <http://dx.doi.org/10.33448/rsd-v10i13.21617>
- [10] Cavalcante PAM, Pereira RBL, Castro JGD. Sífilis gestacional e congênita em Palmas, Tocantins, 2007-2014. *Epidemiol Serv Saúde*, 2017; 26(2): 255-264. <https://doi.org/10.5123/S1679-49742017000200003>
- [11] Silva PL, Galvão MTG, Silva EF, Borges BVS, Lira JAC, Magalhães RLB. Factors related to the loss of follow-up in pregnant women with syphilis: an integrative review. *Rev Rene*, 2021; 22: e60257. <https://doi.org/10.15253/2175-6783.20212260257>



- [12] Domingues RMSM, Leal MC. Incidência de sífilis congênita e fatores associados à transmissão vertical da sífilis: dados do estudo Nascer no Brasil. *Cad Saúde Pública*, 2016; 3(6): e00082415. <https://doi.org/10.1590/0102-311X00082415>
- [13] Campos ALA, Araújo MAL, Melo SP, Gonçalves MLC. Epidemiologia da sífilis gestacional em Fortaleza, Ceará, Brasil: um agravamento sem controle. *Cad Saúde Pública*, 2010; 26(9): 1747-1755. <https://doi.org/10.1590/S0102-311X2010000900008>
- [14] Ministério da Saúde. Secretaria de Políticas de Saúde. Área Técnica Saúde da Mulher. Programa de Humanização no Pré-natal e Nascimento. *Rev Bras Saude Mater Infant*, 2002; 2(1): 69-71. <https://doi.org/10.1590/S1519-38292002000100011>
- [15] Kilsztajn S, Rossbach A, Carmo MSN, Sugahara GTL. Assistência pré-natal, baixo peso e prematuridade no Estado de São Paulo, 2000. *Rev Saúde Pública*, 2003; 37: 303-310. <https://doi.org/10.1590/S0034-89102003000300007>
- [16] Puccini RF, Pedroso GC, Silva EMK, Araújo NN. Equidade na atenção pré-natal e ao parto em área da região metropolitana de São Paulo, 1996. *Cad Saúde Pública*, 2003; 19(1): 35-45. <https://doi.org/10.1590/S0102-311X2003000100005>
- [17] Secretaria da Vigilância em Saúde, Ministério da Saúde. Plano estratégico - Programa Nacional de DST e AIDS. Brasília: Ministério da Saúde; 2005. Available from: [https://bvsms.saude.gov.br/bvs/publicacoes/plano\\_estrategico.pdf](https://bvsms.saude.gov.br/bvs/publicacoes/plano_estrategico.pdf)
- [18] Koffman MD, Bonadio IC. Avaliação da atenção pré-natal em uma instituição filantrópica da Cidade de São Paulo. *Rev Bras Saúde Matern Infant* 2005; 5(Suppl 1): 523-532. <https://doi.org/10.1590/S1519-38292005000500003>
- [19] Serruya SJ, Cecatti JG, Lago TG. O Programa de Humanização no Pré-natal e Nascimento do Ministério da Saúde no Brasil: resultados iniciais. *Cad Saúde Pública*, 2004; 20: 1281-1289. <https://doi.org/10.1590/S0102-311X2004000500022>