

TEMPORAL ANALYSIS OF MORTALITY FROM CONGENITAL SYPHILIS IN BRAZIL AND IN THE NORTHERN REGION OF THE COUNTRY

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Abstract: Introduction: According to the WHO, congenital syphilis (CS) represents the second leading cause of preventable fetal mortality in the world. SC is a disease caused by the bacterium *Treponema pallidum* and transmitted vertically during passage through the birth canal or through the placenta. **Objectives:** To evaluate the time series of incident cases of death from CS in Brazil from 2015 to 2019. **Methods:** Cross-sectional, longitudinal, observational, descriptive study with a qualitative approach to CS mortality in Brazil and the North region, using information from the Department of Chronic Diseases and Sexually Transmitted Infections and Mortality Information System, available at DATASUS. **RESULTS:** In the period from 2015 to 2016, there was a small reduction in the number of deaths from CS in Brazil, with 235 and 195 cases, respectively. After that, there was a growing increase in mortality, between 2017 and 2018, which had 222 and 261 deaths, in that order and, finally, in 2019, there was a considerable drop in the number of deaths, with 173 cases. Regarding the gross mortality rate, in 2015 the North of the country had the highest rates, with 10.3%, compared to the rate in Brazil, of 7.8%. In 2016, there was a reduction in cases and the North region had lower rates than the national ones, with 5.9% and 6.8%, respectively. In 2017 and 2018, there was a progressive increase in this coefficient, and the North, with 7.7% and 9.4%, had rates higher than the national average, which were 7.6% and 8.9%. In 2019, there was a reduction in these rates, with 5.9% of the national average and 5.6% of the North region. **Conclusion:** It is necessary to improve the quality of prenatal care in the country. It is also necessary to adapt promotion and prevention strategies to the specific needs of different regions. Thus, it will be possible to guarantee the effectiveness of public policies aimed at the mother-child binomial.

Keywords: Brazil, Congenital Syphilis, morbidity and mortality.

INTRODUCTION

Congenital syphilis (CS) is a disease of systemic and chronic manifestations, caused by the bacterium: *Treponema pallidum* which is transmitted vertically from mother to fetus during passage through the birth canal or via the placenta. Contamination can occur at any gestational period or during the course of the infection in the pregnant woman, with most transmissions occurring during the primary and secondary stages of syphilis, while the tertiary and latency periods have the lowest rates (DOMINGUES & SADECK, 2017). Complications range from spontaneous abortion, fetal and neonatal deaths to asymptomatic conditions. Other conditions concern prematurity, low birth weight, skin lesions, respiratory distress, anemia, jaundice and chronic conditions such as blindness, deafness, malformations and mental deficits (ERRANTE, 2016) (SOUZA, 2019).

In view of this situation, effective management is necessary so that the complications described are avoided or mitigated. Prevention of CS starts with early identification of infected pregnant women and appropriate treatment. During the first prenatal consultation, all pregnant women must undergo the serological test (VDRL) or rapid test for syphilis, which must also be performed at the beginning of the third trimester (28 weeks) and at the time of admission for delivery. In addition, monitoring and presumptive treatment of the sexual partner must be included, in order to avoid the occurrence of reinfections and consequent transmission to the fetus (BRASIL, 2015).

For the treatment of infection in pregnant women, Penicillin G benzathine is administered intramuscularly, and the doses

and frequency of application depend on the clinical stage of the disease. This agent is also used in newborns with a proven diagnosis of syphilis, in addition to the crystalline and procaine varieties of penicillin, depending on the clinical manifestations and evolution of the infection (BRASIL, 2015). Late identification and inadequate treatment can have repercussions on the severe form of congenital syphilis in adulthood, associated with manifestations in the central nervous system (COOPER et al, 2016).

These are measures that aim to reduce the permanent increase in SC numbers in Brazil. According to data from the Ministry of Health, incidence rates have shown a progressive increase in the last decade, from 2 cases per 1000 live births in 2008 to about 9 cases per 1000 live births in 2018, and in that same year, the regions Southeast and Northeast had rates of 9.7 and 9.6 cases, respectively (BRASIL, 2019). The goal established by the WHO and adopted by Brazil establishes the incidence of 0.5 cases per 1000 live births as a parameter to consider CS eliminated (DOMINGUES & SADECK, 2017). The failure to comply with this recommendation is mainly due to the absence or low quality of prenatal care, as well as the late detection and treatment of gestational syphilis (CABRAL et al, 2017).

In addition, socioeconomic factors influence these statistics, and it is clear that the prevalence of CS is more expressive among women with low education, self-declared black or brown, who did not undergo prenatal care or did it in public health services (CAZARIN & MACIEL, 2018) (SARACENI et al, 2017). These characteristics impose difficulties in accessing health services, which are expressed in the delay in confirming the exams and initiating treatment, discontinuity and inadequacy of it (both for the pregnant woman and for the NB), lack of medication, among others (CABRAL et al, 2017).

Given this situation, the Ministry of Health established, in 2011, the Stork Network, structured for prenatal care, childbirth, birth and puerperium, in order to provide comprehensive care for the mother-child binomial. Such a program is fundamental in the process of eradicating CS and in reducing neonatal mortality, as it aims to expand the offer of rapid pregnancy tests, prenatal and syphilis detection tests. Another governmental measure is the Agenda for Strategic Actions for Reducing Congenital Syphilis in Brazil, established in 2016 and finalized in 2017, in accordance with the WHO and the Pan American Health Organization. Its objective is to strengthen epidemiological surveillance, assistance and the effective construction of health education and communication. These strategies play a key role in resolving the panorama of congenital syphilis in Brazil (CAZARIN & MACIEL, 2018).

The present study is justified by the expressiveness of congenital syphilis in the national scenario, as well as by the dimension of its consequences. Among these, infant mortality is mentioned, whose coefficients have gradually increased over the last ten years, from 1.9/100,000 live births in 2008 to 8.2/100,000 live births in 2018 (BRASIL, 2019). In addition, Silva et al (2019) highlights the psychological repercussions of the diagnosis and treatment of CS for mothers, who face feelings of fear, guilt and anxiety in the face of diagnostic confirmation and infection complications.

Therefore, as it is a condition that is easy to treat and prevent, it is necessary to improve the quality of prenatal care in the country, as well as the inclusion of partners in monitoring and sexual education programs. It is also necessary to adapt promotion and prevention strategies to the specific needs of the different regions and social conformations of the country. Thus, it will be possible to guarantee

the effectiveness of public policies aimed at the mother-child binomial and, consequently, achieve the goals of reducing CS (AZEVEDO et al, 2017).

GOAL

To evaluate the time series of incident cases of death from Congenital Syphilis in Brazil from 2015 to 2019.

METHODS

The present study was constructed from a cross-sectional approach, with observational, descriptive analysis and a quantitative approach. The data collected are related to mortality from Congenital Syphilis at the national as well as the regional level, represented specifically by the North region of the country and the Metropolitan Region of Belém. The active search for research data was carried out on the DATASUS website (Department of Information of the SUS) and its corresponding information systems: Department of Chronic Diseases and Sexually Transmitted Infections (DCCI) and Mortality Information System (SIM). The information collected was structured in historical series of cases and deaths from Congenital Syphilis, while the analysis was carried out with the help of tables and graphs, aiming at a better organization of data, measurement of information and elaboration of possible conclusions.

RESULTS AND DISCUSSION

Data from the World Health Organization estimated that in 2012, about 350,000 women had syphilis-related pregnancy complications and more than 100,000 children were born infected (W.H.O., 2016). Of these, a significant proportion of women and newborns are in Brazil. Between 1998 and 2008, there were high rates of CS in children under one year of age. In the same period, precisely at the

end of the 1980s, the campaign “Eradicate congenital syphilis by the year 2000” was created, with the objective of controlling the disease, especially in pregnant women, in order to prevent infection in newborns. However, the year 2000 presented the highest occurrences of the disease in question, a fact that corroborates the results found in the research. From then on, there was a significant reduction until 2013, followed by a progressive increase until 2016 and decreasing again until 2019 (ARNESEN; SERRUYA; DURAN, 2015).

Among pregnant women, there was a 1,047% increase in syphilis infection between 2005 and 2013, with a 135% increase in congenital syphilis notifications. Therefore, the importance of health professionals in the care of pregnant women is highlighted, especially with regard to the investigation of syphilis, early detection, correct notification and management, fundamental steps in the prevention of congenital syphilis in newborns (BRASIL, 2015).

The study showed an increase in deaths from congenital syphilis in the state of Pará and in the North region between 2012 and 2015. Accordingly, an increase in cases of congenital syphilis was observed in the 5 regions of Brazil between 2010 and 2015, a situation that culminated in with the highest national average rate of SC in 2015 (BEZERRA et al, 2019). The Northeast and Southeast had the highest annual rates. In 2015, the percentages of cases in the South were consistent with those in the Northeast and Southeast.

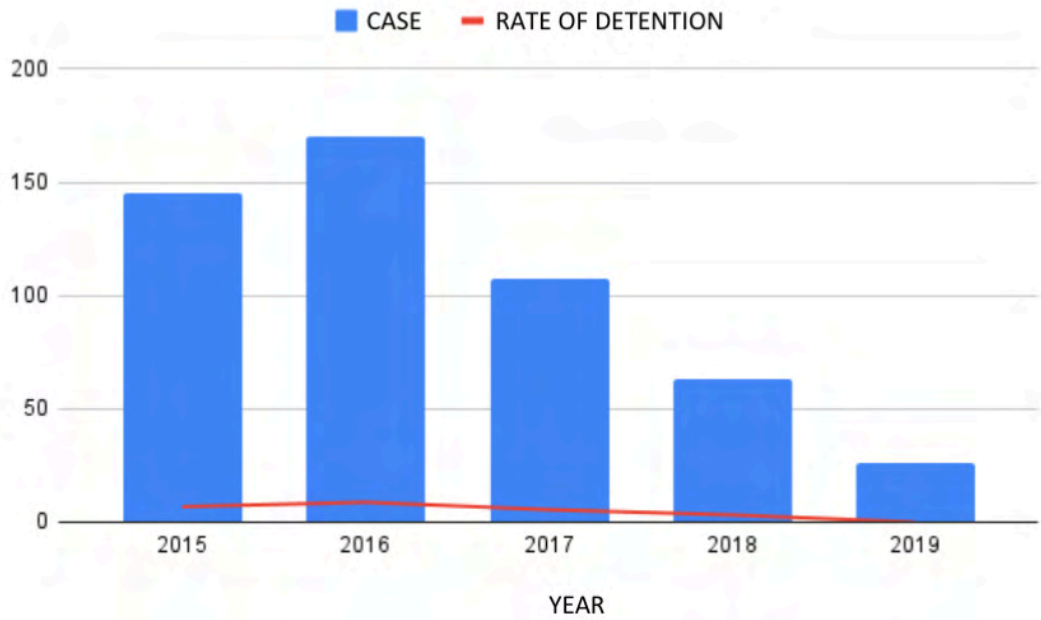
The highest infant mortality rates from congenital syphilis between 2010 and 2015 occurred in the North, Southeast and Northeast regions. The Southeast, Northeast and South regions also had higher average rates of miscarriage and stillbirths (BEZERRA et al, 2019). This data corroborates the findings of this research, which showed a progressive increase in the gross coefficient of mortality

from congenital syphilis between the years 2009 and 2015, followed by a decrease between the years 2015 and 2016 and a subsequent increase in the years 2017 and 2018.

There was an increase in deaths from congenital syphilis among children under one year of age in the period from 2014 to 2015, a subsequent reduction in 2016 and a linear increase in the years 2017 and 2018. A survey carried out among newborns at a reference maternity hospital in Piau  in 2016 showed that, of 152 cases of congenital syphilis, there were 98% of live births, 1.3% of deaths and 0.7% of stillbirths, reinforcing the research findings regarding the high mortality rate in the years 2016 and 2017 (ROCHA et al, 2019).

CONCLUSION

Despite being a historical public health problem, whose attempts to solve it created several protocols for prenatal, puerperal and neonatal management, the present study showed that congenital syphilis continues to generate social and economic losses for Brazil. The inadequate execution of such strategies, in addition to regional and structural disparities, are the reasons for the failure of certain public policies, as well as the stagnation or unsatisfactory reduction in mortality rates. These statements are corroborated by the illustrated results, which reveal the North and Northeast regions as having high rates of infant mortality from SC. Furthermore, the low costs associated with the prevention and treatment of this pathology allow us to infer the existence of deficits in the channeling and application of resources, in addition to the notorious scarcity of investments. Therefore, it is essential to train professionals who deal directly with the most vulnerable groups and whose consequences of CS are most devastating, which constitute the majority of the Brazilian population. It is also necessary to alleviate the lags present in the management and logistics of resources



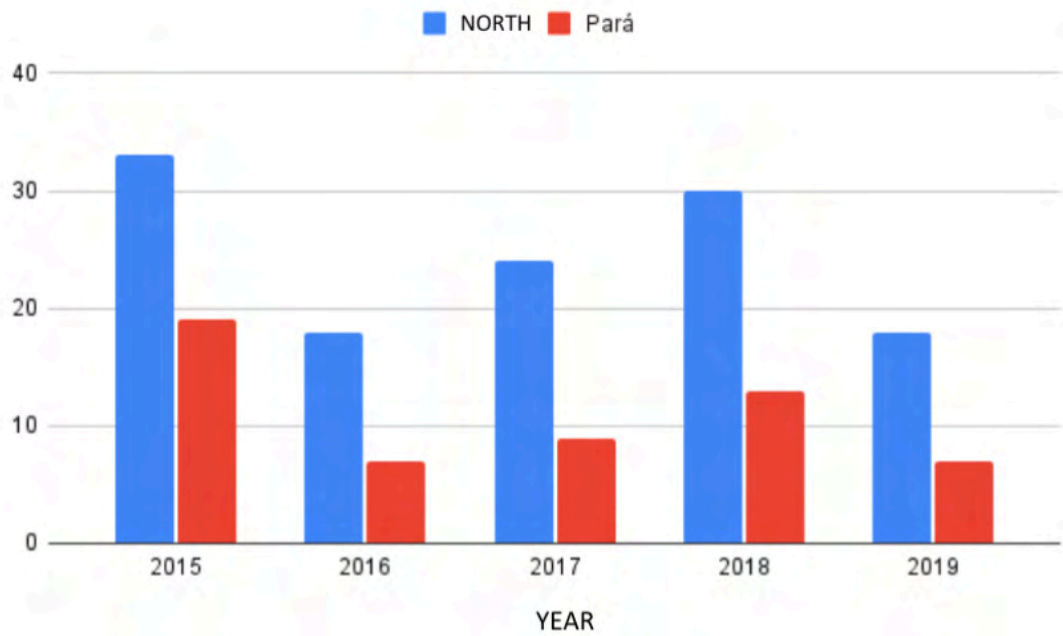
Graph 1: Historical series of cases of Congenital Syphilis in Brazil, from 2015 to 2019.

Source: Research protocol, 2020/DATASUS, 2020



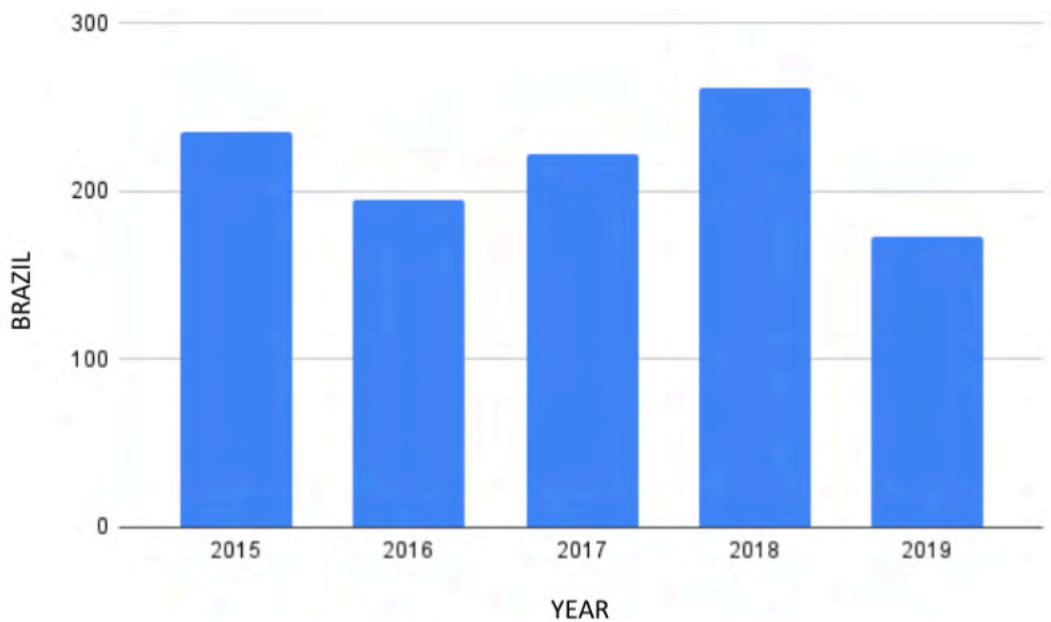
Graph 2: Historical series of deaths from Congenital Syphilis in Brazil, from 2015 to 2019.

Source: Research Protocol, 2020/DATASUS, 2020.



Graph 3: Historical series of mortality from Congenital Syphilis in the North region of the country, from 2015 to 2019.

Source: Research Protocol, 2020/DATASUS, 2020.



Graph 4: Historical series of mortality from Congenital Syphilis in Brazil, from 2009 to 2018.

Source: Research Protocol, 2020/DATASUS, 2020.

destined to reduce CS mortality rates, as well as better structuring of access to health centers. This way, it will be possible to move beyond the oscillations shown in the graphs

and achieve a more stable standard of health protection for pregnant women and children, as the way in which these are cared for reflects the quality of a country's health systems.

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