REVISTA ONLINE DE PESQUISA

CUIDADO É FUNDAMENTAL

Universidade Federal do Estado do Rio de Janeiro • Escola de Enfermagem Alfredo Pinto

RESEARCH

DOI: 10.9789/2175-5361.rpcfo.v13.9596

EPIDEMIOLOGICAL AND FINANCIAL PROFILE OF CONGENITAL SYPHILIS IN NORTHEAST BRAZIL

Perfil epidemiológico e financeiro da sífilis congênita no nordeste brasileiro

Perfil epidemiológico y financiero del sífilis congénito en el noreste de Brasil

Edison Vitório de Souza Júnior[1], Cristiane dos Santos Silva[2], Laís Emily Souza Trindade[3], Raissa Brito Teixeira[4], Sílvio Nascimento Santos[5], Júlia Maria Nascimento Penha[6].

How to cite this article:

Júnior EVS, Silva CS, Trindade LES, Teixeira RB, Santos SN, Penha JMN. Epidemiological and financial profile of congenital syphilis in northeast Brazil. 2021 jan/dez; 13:874-879. DOI: http://dx.doi.org/0.9789/2175-5361.rpcfo.v13.9596.

ABSTRACT

Objective: to describe the epidemiological and financial profile of congenital syphilis in the Brazilian northeast, between 2013 and 2017. **Methods:** descriptive and cross-sectional study built with secondary data from Hospital Information Systems. It were selected the variables admissions, deaths, sex, color/race, and the values of the hospital services. It was adopted simples, descriptive statistical analysis, and the results were expressed by absolute and relative frequencies. **Results:** there were 19.539 hospitalizations and 62 deaths due congenital syphilis in the Brazilian northeast. Notwithstanding, the disease generated a financial impact superior to R$ 9,1 million of reais to the public safes. **Conclusion:** the congenital syphilis presented a growing behavior on hospitalizations, favoring higher encumbrance to the health services. Furthermore, stands out the need of strengthening the precocious diagnostic and therapeutic in the prenatal cares, especially in Pernambuco, for highlighting greater prevalence in all variables studied.

DESCRIPTORS: Public health; Epidemiology; Sexually transmitted diseases; Prenatal care; Health care costs.

1 Nurse. Graduated in Nursing from the State University of Southwest Bahia. Jequié - Bahia - Brazil. Email: edison.vitorio@gmail.com

2 Physical Education Professional. Graduated in Physical Education from Universidade Norte do Pará. Jequié - Bahia - Brazil. Email: cristianeimic@gmail.com

3 Nurse. Graduated in Nursing from the State University of Southwest Bahia. Jequié - Bahia - Brazil. Email: laisemily10@hotmail.com

4 Nurse. Graduated in Nursing from the State University of Southwest Bahia. Jequié - Bahia - Brazil. Email: rayssa-britto-2013@hotmail.com

5 Odontologist. Graduated in Dentistry from Faculdade Independente do Nordeste. Victory of the Conquest - Bahia - Brazil. Email: snsanthoss@gmail.com

6 Nurse. Graduated in Nursing from the State University of Southwest Bahia. Jequié - Bahia - Brazil. Email: juliapenha1@hotmail.com

RESUMO

Objetivo: descrever o perfil epidemiológico e econômico da sífilis congênita no nordeste brasileiro, entre 2013 e 2017. **Métodos:** estudo quantitativo, descritivo e ecológico construído com dados secundários indexados no Sistema de Informações Hospitalares. Selecionou-se as variáveis internações, óbitos, sexo, cor/raça, e os valores dos serviços hospitalares. Adotou-se análise estatística descritiva simples e os resultados foram expressos por meio de frequências absolutas e relativas. **Resultados:** houve 19.539 internações e 62 óbitos por sífilis congênita no nordeste brasileiro. Não obstante, a doença gerou um impacto financeiro superior a R$ 9,1 milhões de reais aos cofres públicos. **Conclusão:** a sífilis congênita apresentou comportamento crescente nas internações, favorecendo maior oneração aos serviços de saúde. Destaca-se, ainda, a imprescindibilidade de fortalecimento da precocidade diagnóstica e terapêutica nos programas de pré-natal, especialmente em Pernambuco, por evidenciar maior prevalência em todas as variáveis estudadas.

DESCRITORES: Saúde pública; Epidemiologia; Doenças sexualmente transmissíveis; Cuidado pré-natal; Custos de cuidados de saúde.

RESUMEN

Objetivo: describir lo perfil epidemiológico y financiero de la sífilis congénita en el noreste de Brasil, entre 2013 y 2017. **Métodos:** estudio descriptivo y transversal construido con datos secundarios del Sistema de Información Hospitalaria. Si ha seleccionado las variables internamientos, muertes, sexo, color/raza y los valores de los servicios hospitalarios. Fueron utilizadas análisis estadístico descriptiva simple y los resultados fueran expresados a través de frecuencias absolutas y relativas. **Resultados:** hubo 19.539 internaciones y 62 muertes por sífilis congénita en el nordeste brasileño. No obstante, la enfermedad ha generado un impacto financiero superior a R$ 9,1 millones de reales para los cofres públicos. **Conclusión:** la sífilis congénita presentó comportamiento creciente en las internaciones, lo que favorece mayores gastos para los servicios de salud. También, es destacable la imprescindibilidad de fortalecimiento de la precocidad diagnóstica y terapéutica en los programas de prenatal, especialmente en Pernambuco, por evidenciar mayor prevalencia en todas las variables estudiadas.

DESCRIPTORES: Salud pública; Epidemiología; Enfermedades de transmisión sexual; Atención prenatal; Costos de la atención en salud.

INTRODUCTION

Sexually Transmitted Infections (STIs) are considered an important public health problem that promotes health and socioeconomic repercussions of great magnitude, having repercussions mainly among the female and child population. Among STIs, syphilis is defined as an infectious and systemic pathology, whose etiological agent is the bacterium Treponema pallidum, and can be transmitted by unprotected sexual contact or by the vertical form.[1]

When syphilitic infection occurs during pregnancy, it can cause congenital syphilis (CS), defined as fetal infection by Treponema pallidum through the transplacental route regardless of the gestational period and/or clinical phase of the disease in the pregnant woman. CS is classified as early or late2 and, in Brazil, it is considered the pathology with the highest transmissibility during the pregnant-puperperal cycle. It is defined as early, when signs and symptoms appear in the first two years of life, while in the late, clinical manifestations appear after the second year.[2]

CS expresses a worst-case scenario of vertical transmission compared to the human immunodeficiency virus (HIV), and is a determining factor in the increase of maternal and perinatal morbidity and mortality rates.[3] It represents approximately 40% of perinatal mortality, 25% of natimortality, 14% of deaths among neonates, in addition to promoting several severe implications for infected concepts in the cognitive, motor, neurological, visual and auditory areas, abortion and fetal death.[2]

It is estimated that, worldwide, more than 2 million syphilitic infections occur during pregnancy, and that 70 to 100% of the concepts are contaminated by the etiologic agent.[4]

From this perspective, CS has become a cause of concern among health authorities due to the aggravation to the population's health. In addition, the costs of treatment for complications are more costly compared to preventive measures, and these investments ncould be transferred to other health sectors. Nevertheless, some professionals working in health services have been concerned with their training in order to seek training and participate in syphilis intervention programs to achieve better quality care.[5]

This is because Atenção Básica à Saúde (ABS)) plays a very important role in combating the various forms of syphilis, and the lack of control in its epidemiological framework reflects the low quality and resolutiveness of the basic network.6 In view of this, the development of epidemiological studies of the CS becomes relevant, since, in addition to promoting epidemiological knowledge of the disease, it allows subsidizing ABS evaluation tools. Thus, the objective of this study is to describe the epidemiological and economic profile of congenital syphilis in northeastern Brazil.

METHODS

Quantitative, descriptive and ecological study conducted with secondary data indexed in the Sistema de Informações Hospitalares (SIH), belonging to the Department of Informatics of the Unified Health System (DATASUS). It is an administrative tool that contains information regarding all hospital admissions in Brazil through the USistema Único de Saúde (SUS), representing approximately 70 to 80% of admissions. All data are filled out through the Autorizações de Internações Hospitalares (AIH), a legal document that is mandatory for all admissions in order to obtain financial reimbursement for the institution for services rendered.[7]

The Northeast of Brazil was adopted as the study scenario. The access to the platform occurred in October 2018 by electronic means in the hospital morbidity section of SUS. The variables of hospitalizations and deaths were selected according to the time limit adopted for the study (2013 to 2017), gender (male and female), color/race (white, black, brown, yellow, and indigenous), and the amounts of hospital services spent with the CS.

For the data analysis, simple descriptive statistics were adopted and the results were expressed by means of absolute and relative frequencies. Due to the data collection source being an information system of public domain without identification of the participants, the study did not need the approval of the Committee of Ethics in Research, according to the Resolution nº 510/2016 of the National Health Council. Thus, it is emphasized that the research was conducted in accordance with the required ethical standards.

RESULTS

According to Table 1, it can be noted that in the study period there were 19,539 hospitalizations and 62 deaths per CS in Northeastern Brazil. The highest prevalence of hospitalizations and deaths was registered, respectively, in the state of Pernambuco with 5,659 (29%) and 25 (40.3%). Nevertheless, it is noted that the admissions presented an increasing behavior during the study period.

Table 1 - Hospitalizations and deaths per CS in the Northeast of Brazil stratified by year of care. Jequié, BA, 2019

Federation Unit	2013	2014	2015	2016	2017	Total	%
HOSPITALIZATIONS							
Maranhão	94	100	115	186	276	771	3,9
Piauí	45	57	76	153	314	645	3,3
Ceará	524	605	606	790	886	3.411	17,5
Rio Grande do Norte	158	236	288	220	274	1.176	6
Paraíba	61	99	134	189	205	688	3,5
Pernambuco	838	900	1.163	1.212	1.546	5.659	29
Alagoas	359	369	365	389	349	1.831	9,4
Sergipe	152	226	339	255	288	1.260	6,4
Bahia	594	701	831	948	1.024	4.098	21
Total	2.825	3.293	3.917	4.342	5.162	19.539	100
ÓBITOS							
Maranhão	-	-	3	-	3	6	9,7
Piauí	1	-	-	-	7	8	12,9
Ceará	-	-	3	-	1	4	6,5
Rio Grande do Norte	1	-	-	-	-	1	1,6
Paraíba	-	-	1	-	-	1	1,6
Pernambuco	17	3	2	1	2	25	40,3
Alagoas	2	1	-	1	-	4	6,5
Sergipe	-	-	2	1	-	3	4,8
Bahia	2	1	1	2	4	10	16,1
Total	23	5	12	5	17	62	100

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS) - Numerical data equal to 0 not resulting from rounding

In relation to sex, Table 2 shows that the female population had a higher prevalence in hospitalizations, with 10,302 (52.7%). The male sex stood out in deaths with 42 (67.7%). Regarding color/race, it can be observed that the brown population had a higher prevalence in hospitalizations, with 9,145 (46.8%) and in deaths, with 32 (51.6%). Besides that, it calls the attention to the expressive values of the registers without color/race information, totaling 9,153 (46.8%) for hospitalizations and 29 (46.8%) for deaths.

Table 2 - Hospitalizations and deaths per CS in Northeastern Brazil according to sex and color/race. Jequié, BA, 2019

VARIABLES	HOSPITALIZATIONS	%	DEATH	%
SEX				
Male	9.237	47,3	42	67,7
Female	10.302	52,7	20	32,3
Total	19.539	100	62	100
COLOR/RACE				
White	1.014	5,2	1	1,6
Black	77	0,4	-	-
Brown	9.145	46,8	32	51,6
Yellow	146	0,7	-	-
Indigenous	4	0,0	-	-
No information	9.153	46,8	29	46,8
Total	19.539	100	62	100

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS) - Numerical data equal to 0 not resulting from rounding

In relation to public spending, Table 3 shows that CS generated a financial impact of more than R$ 9.1 million to the public coffers. Pernambuco burdened more than R$ 2,228,745.41 (24.3%) among the Northeastern states. Moreover, there is an increasing behavior in the values during the study period.

Table 3- Values of hospital services spent with CS in Northeastern Brazil. Jequié, BA, 2019

Federation Unit	2013	2014	2015	2016	2017	Total	%
Maranhão	35.942,59	32.835,29	75.174,70	80.662,60	103.616,50	328.231,68	3,6
Piauí	11.787,47	15.416,20	34.672,78	65.837,80	155.177,40	282.891,65	3,1
Ceará	212.016,76	238.316,28	213.206,64	296.379,31	321.491,29	1.281.410,28	14,0
Rio Grande do Norte	53.502,46	73.208,12	123.872,38	95.593,77	91.737,78	437.914,51	4,8
Paraíba	22.528,06	31.007,41	68.854,70	72.256,48	89.084,64	283.731,29	3,1
Pernambuco	449.445,40	334.855,72	357.962,94	431.144,57	655.336,78	2.228.745,41	24,3
Alagoas	411.747,90	477.393,43	360.622,50	390.692,35	342.728,82	1.983.185,00	21,6
Sergipe	87.110,76	91.914,97	167.738,46	192.529,93	245.388,64	784.682,76	8,6
Bahia	225.383,15	247.741,53	315.626,37	353.897,33	411.910,04	1.554.558,42	17,0
Total	1.509.464,55	1.542.688,95	1.717.731,47	1.978.994,14	2.416.471,89	9.165.351,00	100

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS)

DISCUSSION

It is widely reported in scientific circles that vertical transmission through CS can be avoided, as long as there is adequate diagnostic and therapeutic precocity.[2] It is estimated that about 40% of untreated infections evolve into spontaneous abortion and perinatal death. The mainstays for the diagnosis of CS are serological screening of pregnant women by means of non-tremponemic tests, such as the Venereal Disease Research Laboratory (VDRL) and appropriate treatment for pregnant women and their sexual partners.[3]

Important data reveal that a significant proportion of sexual partners do not receive treatment for syphilis, and among those who do, they are treated incorrectly. This is corroborated by studies in Rondônia,[8] and Rio Grande do Norte.[9] It is clear that to significantly reduce the incidence of maternal syphilis, it is necessary to promote concomitant treatment of partners in order to reduce re-infections.[8] Thus, it is important to create strategies that facilitate male attendance at health services, especially prenatal care, such as greater flexibility in hours of care and/or referral to services closer to the workplace.[10]

Some obstacles are present and need to be faced in order to achieve CS control. Among them, the difficulties faced by the population to have full access to health services, failure to conduct the exams on pregnant women as recommended, long waiting period for the results, failure to address the inclusion of sexual partners in treatment and follow-up, among other obstacles of a social nature,[5] such as low schooling and socioeconomic conditions,[10-11] drug use and multiple partners without sexual protection. Another significant factor that deserves highlighting is the absence of 100% coverage of the population by the Equipes de Estratégia da Família (ESF).[12]

It should be noted that the reduction in years of study is closely associated with reduced access to information, limited knowledge and understanding of the importance of self-care in health and, especially, the preventive means of infection.[10] The expectation is that the higher level of education promotes a process of self-reflection, which in turn awakens the individual to adopt healthier and safer practices.[8] From this perspective, it is noted that mothers of studies conducted in Bahia[13-14] shared the same characteristics of vulnerability, among which are cited a few years of study, single and with socioeconomic limitations.[15]

The World Health Organization (WHO) has defined the elimination of CS as a priority strategy, adopting as a goal the reduction of ≤0.5 cases per thousand live births by 2015. On the contrary, Brazil failed in reaching such goal, and as a consequence, there was an increase in fetal and neonatal deaths,4 corroborating the results of the present study, in which it observed an increasing behavior in hospitalizations (Table 1), favoring greater burden to health services, Table 3.

Nevertheless, the state of Pernambuco presented a higher prevalence of hospitalizations (29%) and deaths (40.3%) by the CS, as shown in Table 1. Furthermore, this state is characterized by an increasing behavior in the incidence rates of syphilis in pregnant women, especially in adolescents between 15 and 19 years of age, of brown race, low level of education, and residents of the capital.[16]

Nevertheless, a study[17] highlighted some barriers that hinder full and universal access to health actions and services in the capital of Pernambuco. Among them, underfunding of services and insufficient coverage of ESF and professionals in primary care.[17] Such data may justify the higher prevalence of hospitalizations and deaths in the state, including in relation to amounts spent during hospitalizations, in which the state charged 24.3% of the value, according to Table 3. It is worth noting that the assistance offered to newborns with CS costs three times more than the assistance procedures provided to a child without infection.[18]

This is a compulsory notification disease since 1986 and prenatal care is a public health action that has greater effectiveness for its control. The Brazilian population has free access to rapid tests and treatment in the context of the SUS, and even in the face of this universality, the incidence of the disease remains high in the country,[19] showing that access to diagnosis alone is not enough.[20] Even so, even in the face of campaigns and intensified efforts to guarantee prenatal effectiveness, there is insufficient control of the disease in all Brazilian regions.[19]

The high incidence rate of CS among pregnant women is a challenge for health services. The performance of the primary network is essential to combat the disease, due to its nature and existential basis in being characterized as the user's gateway to SUS. It is affirmed that the ESF have a strong link with the community and constitute the closest link between professionals and users. Thus, there is the possibility of generating significant changes in the epidemiological framework of the disease, provided that there is also technical qualification and interdisciplinary behaviors in health care.[3] Some attributions of the teams can be mentioned, such as active search for pregnant women, consultations and educational activities; identification of risk and vulnerability conditions, among other actions.[9]

In relation to race/skin color, the results of this study showed a higher prevalence of hospitalizations (46.8%) and deaths (51.6%) in children considered brown. This result follows the national pattern resulting from the miscegenation that predominates over the population.[8] There is scientific evidence that social inequalities have an influence on the involvement of the CS and, generally, it is observed involvement in pregnant women of black or brown color.[10-11] In the capital of the state of Maranhão it was observed that 78.8% of newborns infected by the CS were brown,[21] corroborating also, with a study conducted in Rondônia,8 in which 68.0% of children belonged to the same racial classification. In addition, the option without information on race/color registered a significant value of 46.8% in hospitalizations and deaths, according to Table 2. It is reported that the significant amount of data without information may suggest underreporting or even filling errors.[15]

It is known that, worldwide, there is a higher prevalence of male births compared to female births.[22] However, due to overmortality being higher in men at all ages, the tendency is that there is a reduction in the male population over the years,[22] which may explain the higher number of deaths among male newborns with 67.7% in the present study, according to Table 2.

It is worth noting that the states of Alagoas, Ceará, Pernambuco, Piauí, Rio Grande do Norte, Sergipe, and Tocantins presented an incidence of CS higher than the number of gestational syphilis detection in a study, which may show failures in prenatal care and epidemiological surveillance of the respective sites. For example, Ceará, which between 2007 and 2015, recorded an incidence of CS 116.9% higher than the number of cases of syphilis during pregnancy.[23]

CONCLUSION

The present study allowed to describe the epidemiological and economic profile of CS in the Northeast of Brazil. In addition, a growing behavior was observed in hospitalizations for the disease favoring a greater burden on health services. Thus, it is important to emphasize the need to strengthen the diagnostic and therapeutic precocity in prenatal programs, especially in Pernambuco, because it shows greater prevalence in all variables studied.

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Received in: 10/12/2019
Required revisions: 10/12/2020
Approved in: 28/01/2021
Published in: 01/07/2021

Corresponding author
Edison Vitório de Souza Júnior
Address: Av. José Moreira Sobrinho, s/n, Jequiezinho
Jequié/BH, Brazil
Zip code: 45.206-190
Email address: edison.vitorio@gmail.com

Disclaimer: The authors claim to have no conflict of interest.