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Prevalence of Gestational and Congenital Syphilis in Brazil in the Last 15 Years

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Abstract

Introduction: Syphilis is a sexually transmitted disease with a great impact in public health which can also occur in maternal and congenital forms. The vertical transmission of syphilis, when not early prevented, can bring repercussions to the fetus, with transmission rates reflecting the quality of prenatal care.

Objective: Demonstrate maternal and congenital syphilis prevalence and/or incidence in Brazil in the last 15 years.

Methods: A Systematic Review Study, for which were searched cross-sectional and cohort complete scientific articles about maternal and congenital syphilis prevalence in Brazil in the last 15 years, using the descriptors: "prevalence", "syphilis in pregnant women", "congenital syphilis", "Brazil" in Portuguese and its English correspondents in virtual databases: LILACS, MEDLINE, Pubmed and Scielo in Portuguese, English and Spanish languages.

Results: The prevalence of maternal syphilis ranged between 1.02% and 1.9% in the women evaluated. Most of studies showed higher prevalence among the ones who performed adequate prenatal care (65.2%), related to the vertical transmission progress rate (58.06%). National vertical transmission rate was high, an average of 34.3%. Besides, asymptomatic newborn with congenital syphilis had a high incidence (88.9%).

Conclusion: Although the discrete decrease in the last few years, maternal and congenital Syphilis are still prevalent in Brazil and there are estimated values above the goals that Ministry of Health has established. Due to the presence of a social component, it turns to be necessary to implement health and education public policies, to achieve the established goals for this pathology. The referral of infected concept to be treated in adequate services was infrequent, perhaps due to the absence of symptoms in neonatal period or the lack of registration of the symptoms. These data point to failures in health care of pregnant women and in prenatal care.

Keywords: Systematic review; Prevalence; Syphilis; Congenital syphilis; Brazil

Introduction

Sexually Transmitted Diseases (STDs) represent a serious public health problem in several countries of the world [1], causing social, economic and health damage [2]. Syphilis is an infectious disease that has a major impact on public health [3] and can be transmitted sexually, bloodily and vertically [4], the latter can occur at any time during pregnancy through the placenta [1]. It is caused by a spirochete known as *Treponema pallidum*, which has high invasive capacity, thanks to its surface adhesins TP0155, TP0480, TP0751, TP0136 [5].

Gestational syphilis, in particular, is related to failure in prenatal care, delayed diagnosis (which leads to failure to treat for a limited period of gestation), low socioeconomic conditions, difficulty in accessing health services [6], in addition, activity sexual risk and teenage pregnancy are also associated with this condition [2]. In congenital syphilis, in addition to the aforementioned factors, low levels of schooling, HIV infection, drug abuse, history of STDs and history of syphilis in previous gestation are highlighted [7].

The World Health Organization (WHO) in 2010 estimated an occurrence of 11 million new syphilis cases per year worldwide [4]. About two million cases are in pregnant women, who present the disease in the active phase, but only less than 10% of these are diagnosed and treated [8,9]. Half of these pregnant women will have children with congenital syphilis [10]. Although this amount occurs, for the most part (approximately 90%), in developing countries, it has also been observed that this disease has reappeared in developed nations [9,10].

Acquired syphilis can be classified in two ways: the first refers to the time of infection and the second to the clinical manifestations [11]. With regard to time, syphilis can be acquired recently, when it presents less than one year of evolution, or acquired late, with more than one year of evolution [11]. With regard to clinical manifestations, syphilis can be classified as primary, secondary, recent latent, late latent and tertiary [11].

The diagnosis of this pathology in both acquired form and gestational form can be done through direct examination, research of *Treponema pallidum*, or immunological, treponemic or non-treponemic tests [11]. Among the latter, we have the VDRL (Venereal Disease Research Laboratory), the Brazilian choice exam for screening, therapeutic follow-up and cure control of gestational syphilis [2]. Laboratory confirmation with Treponemal test, the most used being FTA-Abs (Fluorescent Treponemal Antibody-Absorption), is recommended, but not mandatory [2].

For the diagnosis of congenital syphilis, it is necessary that children undergo physical examination, complete blood count, radiographic study of long bones, lumbar puncture for CSF study and VDRL [2], the latter being for comparison with maternal VDRL, transplacental route, since the cultivation of *T. pallidum* in children at this age is still difficult [10]. The treatment in the pregnant woman will follow the guidelines drawn for the general population, being the medication of choice penicillin G benzathine, being low cost, easy access and great effectiveness [10]. For women who are allergic, desensitization should be considered, since only then will they be considered and appropriately treated [10], since penicillin is the only treponemicidal drug that crosses the placental barrier [12]. It is considered a satisfactory treatment of the pregnant woman when the woman is medicated with penicillin in the doses appropriate for the stage of infection, the treatment is finished at least 30 D before delivery and her partner is treated concomitantly, with the same therapeutic scheme used in the pregnant woman [2]. Despite decades of epidemiological and clinical experience, with studies to substantiate the necessary interventions, maternal and congenital syphilis continue to be part of the reality of Brazil and the world [10]. Thus, this study aims to analyze the prevalence of gestational and congenital syphilis in Brazil over the last 15 year, so that there is a diagnosis of the problem and subsequent measure.

Methodology

A Systematic Review Study for which cross-sectional or cohort scientific articles were investigated on the prevalence and/or incidence of gestational and congenital syphilis in Brazil in the last 15 years, using the descriptors: "prevalence", "gestational syphilis", "Congenital syphilis", "Brazil" in Portuguese and their correspondents in English, in the Virtual Databases: LILACS, MEDLINE, Pubmed and Scielo in the Portuguese, English and Spanish languages.

Cross-sectional or cohort articles with Brazilian data, performed in the last 15 years, that present the prevalence and/or incidence of gestational and/or congenital syphilis in Portuguese, English or Spanish. Those that were not included in any of the inclusion criteria were excluded. As a result of the research, 67 articles were found, of which 42 had no title pertinent to the purpose of this systematic review. Of the 25 remaining articles, abstracts were read. Once the duplicates were eliminated, 15 studies remained, which were read in full. After this stage, five articles were excluded because they did not fit within the time range determined by this study, and two other articles, because they did not present prevalence data. Thus, 8 articles were read independently by the researchers, and then the results were compared between them (Figure 1).

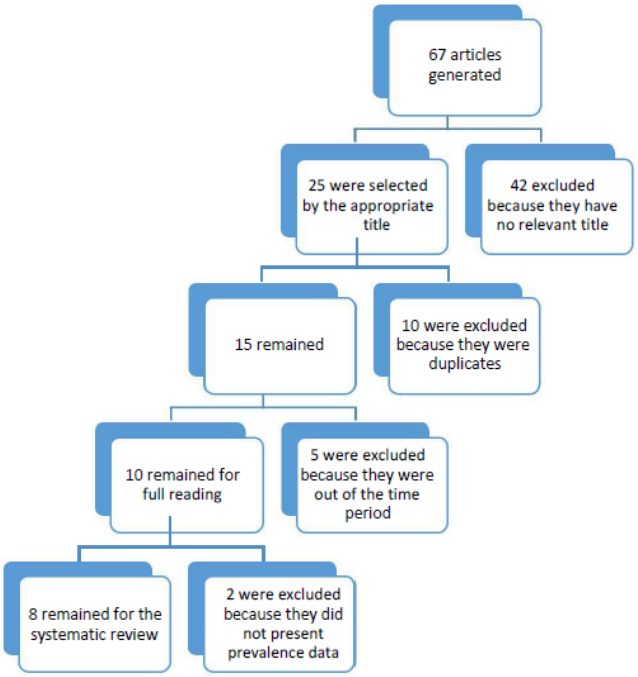

Figure 1: Flowchart of article selection.

Results

For this systematic review, 8 articles were selected, of which three presented data on both gestational syphilis and congenital syphilis; two other papers had a greater focus on gestational syphilis; while the last three presented data with greater relevance on congenital syphilis.

A total of 68,036 women were studied in 8 studies, of which 3 were of the cohort type and 5 were of the cross-sectional type. 3 of them were multicentric and 5 were regional. Among the regional ones, 3 were carried out in the Southeast and 2 in the Midwest. As for the period in which the research was conducted, 2 were carried out in 2006, 1 starting in 2007, 2 in 2010 and 3 in 2011.

Congenital syphilis has an estimated incidence of one thousand live births, being 3.51/1000 in the Nascer study, conducted in the five regions of Brazil, reported by Domingues and Leal [13]. Domingues et al.[14] conducted a study in Rio de Janeiro and found incidence of 6 cases for 1000 live births. Already Muricy and Pinto Junior [15] found an incidence of 2/1000 in a population of the Federal District. Figueiró-Filho et al. and Fonseca et al. [16,17] found some discrepancy in the incidence values of their studies, being 23.4/1000 in the first, in Campo Grande, and 39.4/1000 in the last, in Niterói. This incidence rate evolved with a tendency to fall over the years, as shown in the cited studies; however, it showed an increase in its last measurement, recorded by Domingues and Leal [13]. Table 1 shows data from all the studies included in this review, the prevalence of gestational syphilis and the incidence of congenital syphilis.

Author	Study	Year of Publication	Local	Period of Achievement	No. of People	Prevalence of Management syphilis	Incidence of Congenital Syphili S*
Szwarcwal et al. [1]	Sentinela-Parturiente	2007	Brazil	2006	16158	1.10%	-
Figueiró-Filho et al. [16]	-	2007	Campo Grande/MS	2006	512	-	23.4
Domingues et al. [14]	-	2013	Rio de Janeiro/RJ	2007-2008	2422	1.90%	6
Nonato et al. [7]	-	2015	Belo Horizonte/MG	2010-2013	353	1.60%	-
Muricy and Pinto Junior [15]	-	2015	Distrito Federal	2010	137	-	2
Domingues et al. [8]	NASCER	2014	Brazil	2011-2012	23894	1.02%	-
Fonseca et al. [17]	-	2013	Niterói/RJ	2011	666	-	39.4
Domingues and Leal [13]	NASCER	2016	Brazil	2011-2012	23894	-	3.51

Table 1: Description of the studies, prevalence of gestational syphilis and incidences of congenital syphilis.

The survey by Nonato et al. [7] was conducted in the state of Minas Gerais, in the capital Belo Horizonte, between 2010 and 2013. It showed that 65.2% of the pregnant women performed more than 6 prenatal visits, presenting an average of 7.1 consultations. Of the women who started prenatal late, 48.6% performed less than 6 visits, totaling 34.8% of the 348 women included in the study (Table 2).

	Study
Number of prenatal Consultations	Nonato, melo e guimarães (2015)
<6	34.8%
≥ 6	65.2%
Not held/informed	-
P-value	<0.036

Table 2: Prevalence of gestational syphilis by number of visits in the prenatal period.

Regarding congenital syphilis, regarding the vertical transmission rate, a certain equivalence was observed in the studies that carry this data. The Domingues and Leal study [13] shows a rate of 34.3%; Domingues et al. shows 34.8%; Nonato et al. shows 33.4% (Table 3).

Study	Rate (%)
Domingues et al. [14]	34.8%
Nonato et al. [7]	33.4%
Domingues and Leal [13]	34.3%

Table 3: Vertical transmission rate in the studies.

As for prenatal care, it was divided into adequate follow-up (≥ 6 consultations) and inadequate (<6 consultations). Domingues and Leal show that among the pregnant women who had children with congenital syphilis, 53.8% had inadequate follow-up and 46.2% adequate, without the p-value being calculated for this variable (Figure 2).

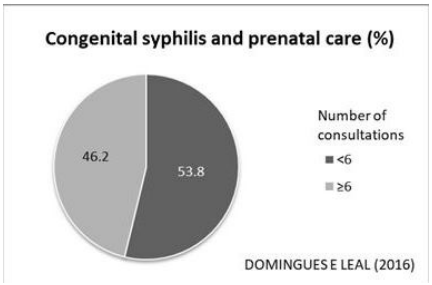

Figure 2: Congenital Syphilis and prenatal care.

Newborns may also be considered symptomatic at birth or not. Domingues and Leal showed that only 16.7% were symptomatic and 83.3% were not.

Domingues et al. [14] found 15.4% of the symptomatic newborns, but 30.76% were non-symptomatic and the rest (53.84%) had this record ignored in their reports. According to the aforementioned studies, the majority of newborns of infected mothersare asymptomatic, presenting percentages ranging from 30.76% to 83.3% by Domingues and Leal (Table 4).

		Symptomatic	
Study	Yes	No	Ignored
Domingues et al. [14]	15.4%	30.76%	53.84%
Domingues and Leal [13]	16.7%	83.3%	-

Table 4: Symptomatic newborn with congenital syphilis.

Discussion

Syphilis is a disease still prevalent in Brazil and the world, constituting itself as an important public health problem [1]. Globally, in 2008, 1,085,637 pregnant women with active syphilis infection were estimated to be 39.3% in Africa, 7.8% in America, 44.3% in Asia, 1.6% in Europe, 3% in the Mediterranean and 4% in the Pacific [13].

The national prevalence of gestational syphilis was presented both by the Szwarcwald et al. [1] study conducted in 2006 and Domingues et al. [8] study conducted between 2011 and 2012. Szwarcwald et al. [1] have a prevalence of gestational syphilis estimated at 1.1%, based on the results of routine maternity tests. In the study by Domingues et al. [14] there was a slight decrease in this percentage, which was estimated at 1.02%, being the most recent national prevalence available at the time. As shown in the cited studies, the decrease in the prevalence of gestational syphilis in Brazil was subtle, showing that the control policies for this pathology are not working as they should, despite their obligatory screening in pregnancy and simple and inexpensive treatment with penicillin [12].

Thus, we see, in the analyzed studies, the evolution of the prevalence of gestational syphilis in Brazil, which had 1.1% rate in Szwarcwald et al. [1] reached 1.9% in Domingues et al. [14], reducing to 1.6% by Nonato et al. [7] to reach the lowest available value today, of 1.02% by Domingues et al. [8]

Like gestational syphilis, the congenital form of this disease still persists as a current issue of public health [14]. When analyzing the incidence of congenital syphilis, most studies showed similar numbers. Muricy and Pinto Junior, Domingues and Leal and Domingues et al. [13-15] presented incidences, respectively, of 2, 3.51 and 6 for every 1000 live births. Figueiró-Filho et al. and Fonseca et al. [16,17] obtained an incidence of 23/1000 live births and 39.4/1000 live births, respectively, higher than the national average. These values, even the lowest, are still considered high for the Brazilian Ministry of Health, which adopted the goal of the WHO, which aimed to reduce the incidence of congenital syphilis to ≤ 0.5 cases per 1000 live births, until 2015 [10].

When comparing the number of prenatal consultations performed by the pregnant women, Nonato et al. [7] had a higher incidence of gestational syphilis in women who had performed more than 6 prenatal visits. This study showed $p < 0.036$ and, therefore, had statistical relevance. As in the case of Nonato, Cunha and Merchan-Hamann [7,18] demonstrate a higher prevalence of women who performed 6 or more prenatal consultations (50.7%), having a thin line with women who had 5 or fewer appointments, including none (49.3%).

The studies by Magalhães et al. [2] conducted in the Federal District between 2009 and 2010, and Lafetá et al. [19] showed results that were contrary to those previously reported, in which the majority of the pregnant women had performed less than 6 visits or had not performed prenatal. Although Magalhães et al. [2] presented fairly similar values among pregnant women who did not perform or performed less than six visits and those who performed more than six visits, with an incidence of 50.8% and 49.3% respectively, still prevailed in this study a higher number of women with inadequate prenatal care presenting gestational syphilis.

Regarding the vertical transmission rate, the studies evaluated showed equivalent rates. The study by Nonato et al. [7]showed a lower rate, with 33.4%, although Domingues et al. [14] with 34.8% and Domingues and Leal [8] with 34.3% have no significant difference in relation to the transmission. The research by Lafetá et al. [19] presents a value for this rate well above what is reported in the aforementioned studies, with a 58% transmission to the concepts, which means an unfavorable outcome in more than half of the pregnancies.

In Nonato et al. [7] it is seen that women who have an adequate number of prenatal consultations represent the highest percentage of those who have children with congenital syphilis ($p<0.036$). Among the studies analyzed, only Domingues and Leal [13] are in agreement with this data, and a correct prenatal coverage was not performed for 53.8% of the women with unfavorable outcome of gestation, and in the latter case, p-value calculation for this variable.

The persistence of high incidence of the disease and high rates of vertical transmission, even with the adequate number of prenatal consultations, points to the quality of prenatal care, which apparently is unsatisfactory [15], leading to the occurrence of unwanted outcomes in pregnancy [2].

Magalhães et al. [2] had in their study the largest number of asymptomatic newborns, corresponding to 90%. In this research, only 6% had symptoms and 4% had their status ignored. Likewise, Lafetá et al. [19] presented results of 7.4% of symptomatic and 88.9% of asymptomatic patients, and 3.7% with non-referred status. As in the reported studies, Lago, Vaccari and Fiori had few symptomatic newborns, corresponding to 5.5% of children who had congenital syphilis.

Added to this, there is the fact that many of these children are children of infected mothers do not receive follow-up in specialized clinics, as shown by Lafetá et al. [19] in 79.6% of cases. Failure to inpatient and outpatient system with the mothers and their newborns can cause damage to individual, family and additional costs to the health system [2].

Conclusion

It can be observed from this study that gestational and congenital syphilis continue to be prevalent in our country, despite the slight percentage variation in recent years, which may not represent a statistical difference. In all regions of the country, prevalence remains above the target established by Brazil with the WHO for the year 2015.

With regard to congenital syphilis, there is a high vertical transmission rate and a significant incidence. Such a situation may be associated with failures in the search for prenatal care, prenatal failures, and absence or delay at the beginning of the treatment of the infected concept, perhaps due to the absence of symptoms in the neonatal period or the lack of registration of these symptoms. Compared with international studies, national incidence figures for congenital syphilis are significantly higher than those reported in other countries.

There is still a need to rethink the care network for pregnant women and newborns. This involves improvement and better qualification of the teams that serve these users, so that the vertical transmission rate, due to the lack or absence of prenatal care or inadequate maternal treatment during pregnancy, is no longer so prevalent.

It is also worth remembering that syphilis combat therapy is well-founded and easily accessible, often lacking only information, as well as good follow-up of these patients. Therefore, the importance of an

early diagnosis through the promotion of health, together with health education projects, is highlighted.

More studies are needed to corroborate these data, which may favor an improvement of the scenario described here.

References

1. Szwarcwald Cl, Barbosa Junior A, Miranda Ae, Paz Lc (2007) Resultados Do Estudo Sentinela-Parturiente, 2006: Desafios Para O Controle Da Sífilis Congênita No Brasil. J Bras Doenças Sex Transm 19: 128-133.
2. Magalhães DMS, Kawaguchi IAL, Dias A, Calderon IMP (2013) Sífilis Materna E Congênita: Ainda Um Desafio. Caderno De Saúde Pública 29: 1109-1120.
3. Pires MCG, Oliveira CNT, Souza Cl, Oliveira MV (2013) Prevalence of Syphilis, Diagnostic Methods and Associated Factors In Patients Treated In The Laboratory of Health Foundation of Vitória Da Conquista (Ba). J Bras Doenças Sex Transm 25: 171-176.
4. Pinto VM, Tancredi MV, Alencar HDR, Camolesi E, Holcman MM, et al. (2014) Prevalência De Sífilis E Fatores Associados A População Em Situação De Rua De São Paulo, Brasil, Com Utilização De Teste Rápido. Rev Bras Epidemiol 17: 341-354.
5. Ribeiro ATB, Jacociunas LV (2016) A Coinfecção Sífilis/Hiv E Sua Importância Rastreamento Sorológico Em Bancos De Sangue. Clin Biomed Res 36: 101-109.
6. Teixeira GA, Santos FAPS, Carvalho JBL, Vitor AF, Lira ALBC, et al. (2017) Predisposing Factors for Incidence of Congenital Syphilis. Int Arch Med 10: 219.
7. Nonato SM, Melo APS, Guimarães MDC (2015) Sífilis Na Gestação E Fatores Associados À Sífilis Congênita Em Belo Horizonte-Mg, 2010-2013. Epidemiol Serv Saúde 24: 681-694.
8. Domingues RMSM, Szwarcwald Cl, Souza Junior PRB, Leal MC (2014) Prevalência De Sífilis Na Gestação E Testagem Pré-Natal: Estudo Nascer no Brasil. Rev Saúde Pública 48: 766-774.
9. Macedo VV, Lira PIC, Frias PG, Romaguera LMD, Caires SFF, et al. (2017) Fatores de Risco Para Sífilis em Mulheres: Estudo Caso-Controle. Rev Saúde Pública 51.
10. Cooper JM, Michelow IC, Wozniak OS, Sánchez PJ (2016) Em Tempo: A Persistência da Sífilis Congênita no Brasil-Mais Avanços São Necessários. Revista Paulista De Pediatria 34: 251-253.
11. Ministério Da Saúde Do Brasil (2015) Protocolo Clínico e Diretrizes Terapêuticas Para Prevenção Da Transmissão Vertical De Hiv, Sífilis E Hepatites Virais. Ministério Da Saúde.
12. Ministério Da Saúde Do Brasil (2012) Cadernos De Atenção Básica: Atenção Ao Pré-Natal De Baixo Risco. Brasília: 32: 200-204.
13. Domingues RMSM, Leal MC (2016) Incidência de Sífilis Congênita E Fatores associados À Transmissão Vertical da Sífilis: Dados do Estudo Nascer no Brasil. Cad Saúde Pública 32: e00082415.
14. Domingues RMSM, Saraceni V, Hartz Zma, Leal Mc (2013) Sífilis Congênita: Evento Sentinela da Qualidade da Assistência Pré-Natal. Revista de Saúde Pública 47: 147-157.
15. Muricy Cl, Pinto Junior Vl (2015) Congenital and Maternal Syphilis In the Capital of Brazil. Revista da Sociedade Brasileira. Revista da Sociedade Brasileira de Med Trop 48: 216-219.
16. Figueiró Filho EA, Senefonte FRA, Lopes AHA, Morais OO, Souza Junior VG, et al. (2007) Frequência Das Infecções Pelo Hiv-1, Rubéola, Sífilis, Toxoplasmose, Citomegalovírus, Herpes Simples, Hepatite B, Hepatite C, Doença De Chagas E Htlv I/Ii Em Gestantes, Do Estado De Mato 40: 181-187.
17. Fonseca SC, Oliveira LM, Almeida NMR, Silva KS, Kale Pl (2013) Incidence of Congenital Syphilis in a Metropolitan Region of Rio de Janeiro State: Social Inequalities. J Bras Doenças Sex Transm 25: 21-25.
18. Cunha ARC, Merchan Hamann E (2015) Sífilis em Parturientes no Brasil: Prevalência E Fatores Associados, 2010 to 2011. Rev Panam Salud Publica 38: 479-480.
19. Lafetá KRG, Martelli Júnior H, Silveira MF, Paranaíba LMR (2016) Sífilis Materna E Congênita, Subnotificação E Difícil Controle. Rev Bras Epidemiol 19: 63-74.