Epidemiological profile and maternal-fetal transmission of syphilis in pregnant women of Cascavel (PR)

Perfil epidemiológico e transmissão materno-fetal da sífilis em gestantes de Cascavel (PR)

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ABSTRACT

Introduction: Gestational syphilis is a serious public health problem. Diagnosis and treatment failures determine high risk of vertical transmission and may result in adverse perinatal outcomes in a large number of cases. **Objective:** To analyze the epidemiology of gestational syphilis and its maternal–fetal transmission in Cascavel (PR) to contribute to the improvement of control actions of this disease. **Methods:** This cross-sectional descriptive study was carried out at the Municipal Department of Health of Cascavel. Socio-demographic information and variables related to the diagnosis and treatment of 135 pregnant women were collected from the database of the Notifiable Diseases Information Systems (SINAN). These women resided in Cascavel and were diagnosed with syphilis, and these were notified from 2008 to 2013. Information on the clinical course of the cases came from notification records of congenital syphilis in the same period. The analysis of the adequacy of treatment received by those pregnant women was based on the recommendations of the Ministry of Health. **Results:** The incidence of syphilis in pregnant women had risen in the study period and had contributed to a vertical transmission of 23.3% and to the maintenance of the incidence rates of congenital syphilis above the targets set by the Ministry of Health. Although 95.6% of pregnant women have received prenatal care and 99.3% have undergone nontreponemal serology, the treatment prescribed for them was inappropriate in 47.9% of cases. The main reason (82.5%) for this inadequacy was the absence of treatment for the partner. A considerable percentage of missing data in the records of gestational syphilis, and the lack of notification of the mothers of 11 children with congenital syphilis recorded in SINAN in this period were found. **Conclusion:** An increase in efforts for the notification and improvements in the quality of prenatal care provided to pregnant women, especially to those related to the treatment prescribed for them and their partners, are still needed to ensure control of syphilis among pregnant women and its transmission.
Keywords: syphilis; pregnant women; epidemiology; prenatal care.

RESUMO

Introdução: A sífilis gestacional constitui um sério problema de saúde pública. A falha em seu diagnóstico e tratamento determina alto risco de transmissão vertical, podendo acarretar, em boa parte dos casos, desfechos perinatais desfavoráveis. **Objetivo:** Analisar a epidemiologia da sífilis gestacional e sua transmissão materno-fetal em Cascavel (PR), visando contribuir para a melhoria das ações de controle desse agravo. **Métodos:** Trata-se de estudo transversal e descritivo realizado na Secretaria Municipal de Saúde de Cascavel. Foram coletadas, a partir do Sistema de Informação de Agravos de Notificação (SINAN), informações sociodemográficas e variáveis relacionadas ao diagnóstico e tratamento de 135 gestantes com sífilis residentes em Cascavel, notificadas entre 2008 e 2013. Informações relativas à evolução clínica dos casos vieram de fichas de notificação de sífilis congênita do mesmo período. A análise da adequação do tratamento recebido pelas gestantes baseou-se nas recomendações do Ministério da Saúde. **Resultados:** A incidência de sífilis em gestantes esteve em ascensão no período em estudo, tendo contribuído para uma transmissão vertical de 23,3% e para a manutenção das taxas de incidência de sífilis congênita acima das metas estabelecidas pelo Ministério da Saúde. Embora 95,6% das gestantes tenham realizado pré-natal e 99,3% tenham realizado sorologia não treponêmica, o tratamento prescrito a elas foi inadequado em 47,9% dos casos, sendo o não tratamento do parceiro o principal motivo (82,5%) dessa inadequação. Constatou-se um considerável percentual de variáveis com o campo ignorado nas fichas de notificação de sífilis gestacional, além da falta de notificação das mães de 11 crianças com sífilis congênita registradas no SINAN nesse período. **Conclusão:** A ampliação dos esforços de notificação, além de melhorias na qualidade do pré-natal fornecido às gestantes, principalmente no que diz respeito ao tratamento prescrito a elas e a seus parceiros, ainda é necessária para garantir o controle da sífilis entre gestantes e de sua transmissão vertical.
Palavras-chave: sífilis; gestantes; epidemiologia; cuidado pré-natal.

INTRODUCTION

Sexually transmitted diseases (STD) represent a serious public health problem worldwide, causing social, economic, and health damages to the population[1]. According to the estimates of the World Health Organization (WHO), approximately 340 million new cases of STD occur annually in the adult population worldwide, of which 12 million are cases of syphilis[2]. In Latin America and the Caribbean, a total of 3 million cases per year in the adult population, and in Brazil, an average prevalence of syphilis among pregnant women ranging from 1.4 to 2.8%, with a vertical transmission rate of 25%, are estimated[3,4].

Gestational syphilis is universally considered one of the leading causes of maternal, fetal, and newborn morbidities[5]. Although syphilis is an ancient disease with a well-defined etiological agent and with an effective treatment at a low cost, the number of infected pregnant women who are not treated properly is still high. This condition may lead to adverse perinatal outcomes in at least 50% of cases, possibly causing neonatal death (9%), stillbirths and late fetal death (21%), premature birth and low birth weight (6%), and children showing clinical evidence of syphilis (16%)[6,7].

As a consequence of the high prevalence of syphilis among pregnant women, congenital syphilis numbers have been alarming. In Brazil, an average of 15,000 new cases of congenital syphilis are estimated to occur per year, with 2.7 deaths per 100,000 live births among children aged under 1 year[3]. Although the Ministry of Health

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has launched the elimination of congenital syphilis project, which determined a target for reducing syphilis incidence to less than or equal to one case per thousand live births, the average incidence was still 1.9 cases per thousand live births in 2005, varying according to the place of residence[6].

Despite this dimension, it is believed that such numbers are underestimated, as underreporting frequently occurs in many countries. Underreporting in Latin America is estimated in 34% in Peru, 32.2% in Argentina, 26% in Chile, and 22.2% in Venezuela[4]. In Brazil, although congenital syphilis and syphilis in pregnancy are notifiable diseases since 1986 and 2005, respectively, only 32% of cases of gestational syphilis and 17.4% of congenital syphilis are reported[8].

Syphilis epidemiological surveillance has proven to be a fundamental strategy for the elimination of the congenital form of the disease. A simple count of cases of congenital syphilis does not help to prevent this disease, as the resources are allocated only to prevent complications of the disease after the end of pregnancy. As syphilis is a vertically transmitted disease, it deserves surveillance during pregnancy, when timely interventions can still be performed.

Recent research has shown high levels of incidence of gestational syphilis in the country, especially in cities of the Northeast and Southeast regions. However, few studies are based on epidemiological surveillance data or analyze changes on syphilis incidence for a considerable period of time, especially in Southern Brazil. In this context, the present study aimed at describing the epidemiological characteristics of syphilis in pregnant women and their influence on vertical transmission rates in Cascavel (PR). Therefore, it is expected that the results could be used as tools for planning, evaluating, and improving ongoing control measures, so that it would soon be possible to reduce the maternal–fetal transmission, as it has occurred with other diseases such as human immunodeficiency virus (HIV).

METHODS

This is a cross-sectional, descriptive, and retrospective surveillance study carried out in the city of Cascavel (PR). The study sample comprised all cases of gestational syphilis in women living in the city of Cascavel which were reported in the Notifiable Diseases Information System (SINAN) from 2008 to 2013, according to the case definition from the Ministry of Health. During this period, 138 cases of gestational syphilis have been identified, 3 of which were related to cases of syphilis in nonresidents of Cascavel. These three cases were excluded from the sample; therefore, the final sample consisted of a total of 135 pregnant women.

Secondary data from the congenital syphilis notification forms for residents in Cascavel in the same period were used. The data included the total number of cases and the clinical course of the disease (recent congenital syphilis, late congenital syphilis, stillbirth, and fetal death from syphilis). Additional information was also obtained from the Brazilian Institute of Geography and Statistics (IBGE) on both total and pregnant women population, and from the Live Births Information System (SINASC) on the number of live births in the same city. The data was collected in May 2014 from the database of the Epidemiological Surveillance Department of the Municipal Health Department of the city of Cascavel, which contained the information compiled from the SINAN forms in addition to the data from SINASC.

For the characterization of the cases based on data from SINAN notification/investigation forms, the following variables were used: age, education, ethnicity, occupation, prenatal care provided, gestational age, clinical classification of the disease at diagnosis, syphilis serology, treatment prescribed to the pregnant women, concomitant treatment to the partner, reasons for the absence of treatment for the partner, occurrence of vertical transmission, and perinatal outcome on those cases of vertical transmission.

As information concerning the date of cessation of treatment and confirmation on whether the pregnant woman followed the treatment were not available on the notification forms, it was not possible to establish whether the treatment was carried out as prescribed. However, it could be determined whether the treatment was prescribed adequately or not, according to the recommendations from the Ministry of Health. Therefore, treatments that were considered prescribed adequately were those with Penicillin G Benzathine, in a dosage compatible with the clinical classification of the disease, and with concomitant treatment for the partner.

With regard to the variables on the concomitant treatment for the partner as regards the regimen prescribed, and the reasons for the absence of treatment, only the period from 2010 to 2013 was considered. Prior to its amendment in April 2010, the form for the notification of syphilis in pregnancy did not contain this information, thereby preventing the analysis of the cases which occurred in 2008 and 2009. Thus, of the 135 women with gestational syphilis, 119 were eligible for analysis of the characteristics related to the partner's treatment for the period from 2010 to 2013.

The data was collected in Excel 2013 and analyzed by means of the Statistical Package for the Social Sciences (IBM SPSS), version 20. Mean and standard deviation were calculated for continuous variables, and absolute and relative frequencies were calculated for the nominal and ordinal variables. To investigate the association between categorical variables, χ^2 test or Fisher's exact test were used, considering a level of statistical significance below 0.05. The research project was approved by the Research Ethics Committee of the *Universidade Estadual do Oeste do Paraná* (UNIOESTE), under opinion No. 640,889.

RESULTS

The age of women with gestational syphilis ranged from 15 to 42 years, with mean age of 25.17 years (±6.78 years), and higher frequencies in the age group between 15 and 23 years (46.7% – 63/135). With regard to the sociodemographic characteristics, most pregnant women had only incomplete primary education (43% – 58/135), were white (60% – 81/135) and housewives (68.9% – 93/135) (**Table 1**).

Gestational syphilis showed a progressive increase in its incidence rate from 2010. A reduction on its incidence was observed only from 2009 to 2010, which occurred concomitantly with the reduction of

the number of inhabitants in the city. Among all the years for which the analysis was carried out, 2013 showed the highest incidence of gestational syphilis with 6.41 cases per 1,000 pregnancies, which corresponded to an increase of approximately six times as compared to the same indicators in 2008.

An increased incidence of congenital syphilis from 2010 to 2012 was also observed, and the year 2012 showed the highest numbers of the period, with 2.27 cases per 1,000 live births. Moreover, it was noticed that congenital syphilis incidence remained above one case per 1,000 live births from 2011 to the end of the studied period (**Table 2**).

Table 1 – Distribution of cases of gestational syphilis, according to the sociodemographic characteristics of pregnant women – Cascavel, Paraná, 2008 to 2013 (n=135).

	Frequency	
	Absolute (n)	**Relative (%)**
Age		
15–23	63	46.7
24–33	49	36.3
34–42	23	17.0
Educational level		
PE incomplete	58	43.0
PE complete	37	27.4
High school	28	20.7
Higher education	2	1.5
Ignored	10	7.4
Ethnicity		
White	81	60.0
Black	9	6.7
Yellow	1	0.7
Brown	41	30.4
Ignored	3	2.2
Occupation		
Housewife	93	68.9
Maid	10	7.4
Other	30	22.2
Ignored	2	1.5

Source: Notifiable Diseases Information System (SINAN).
PE: Primary education.

Between 2008 and 2013, 34 cases of congenital syphilis were reported, among which only 23 had the disease notified when the mother was pregnant. The vertical transmission rate obtained was 17% (23/135), considering 23 children and 135 mothers among those reported. This same rate was 23.3% when calculated considering 34 children reported with 146 mothers (135 mothers reported + 11 mothers not reported). Vertical transmission showed increasing incidence pattern in the period, with evolution to early syphilis in 19 (82.6% – 19/23) cases, death owing to congenital syphilis in 1 (4.3% – 1/23) case and stillbirth in 3 (13% – 3/23) cases.

Most of the women held the prenatal care (95.6% – 129/135); only 3% (4/135) of them did not obtain such care, and in two cases this information was not available. However, among those who held the prenatal care, 16.3% (21/129) ended up transmitting the disease to the fetus. Of the 135 pregnant women reported, 134 (99.26% – 134/135) underwent nontreponemal serologic test (VDRL [Venereal Disease Research Laboratory]) during the prenatal care. The pregnant woman who did not undergo this examination was diagnosed by means of treponemal test. VDLR titration was equal to or above 1:8 in 54.5% (73/134) of cases, being higher in cases of progression to congenital syphilis (89.5% – 17/19) compared to those women who gave birth to healthy children (60.4% – 67/111) ($p<0.05$). Titration was also high in the only case of evolution to fetal death, with a value of 1:64.

Confirmatory treponemal test was performed in 97% (131/135) of the pregnant women. In four cases (3% – 4/135) this test was not performed, and the diagnosis was based only on the VDRL. With regard to the clinical classification of gestational syphilis, 51.1% (69/135) of the women were in the latent stage of the disease at diagnosis, 27.4% (37/135) in the primary stage, 5.2% (7/135) in the secondary stage, and 7.4% (10/135) in the tertiary stage, and this information was ignored in 12 (8.9% – 12/135) cases.

Syphilis diagnosis was carried out in the first two trimesters of pregnancy in most cases, in the following manner: in the first quarter in 37% (50/135) of women, in the second quarter in 38.5% (52/135) of them, and in the third quarter in 23% (31/135) of cases. In the subgroup of pregnant women in which the vertical transmission occurred, the diagnosis was carried out in the third trimester of pregnancy in most cases (60.9% – 14/23), whereas among those

Table 2 – Distribution of cases of gestational syphilis and congenital syphilis – Cascavel, Paraná, 2008 to 2013.

Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	
Inhabitants/year	**291,747**	**296,241**	**286,205**	**289,340**	**292,372**	**305,615**	**Total**
Live births/year	**4,169**	**4,114**	**4,406**	**4,358**	**4,447**	**4,638**	
Gestational syphilis							
Frequency	7	9	7	26	37	49	135
Incidence coefficient[1]	0.96	1.21	0.98	3.59	5.06	6.41	
Congenital syphilis							
Frequency	4	2	2	6	11	9	34
Incidence coefficient[2]	0.96	0.48	0.45	1.38	2.47	1.94	

Source: Notifiable Diseases Information System (SINAN), Live Births Information System (SINASC), and Department of the Unified Health System (DATASUS).
[1]Incidence rate calculated from the number of cases of gestational syphilis/1,000 pregnant women (the estimated number of pregnant women is 2.5% of the total population); [2]incidence rate calculated from the number of cases of congenital syphilis/1,000 live births.

who did not vertically transmit the disease, diagnosis of syphilis was made mostly in the first trimester (43.6% – 48/110).

Treatment was prescribed for the pregnant women in 131 (97% – 131/135) cases and in all of them the prescription was Penicillin G Benzathine. However, in 27 (20.6% – 27/131) cases the prescribed dose of this drug was not consistent with the clinical classification of the disease. For 12 pregnant women with primary syphilis and 2 with secondary syphilis, penicillin dosage was above the recommendation for each of these classifications, and for 13 pregnant women with syphilis in the latent stage, the prescribed dose was below the recommended. As for those who were classified as tertiary syphilis, the dosage of the drug was appropriate for the clinical stage of the disease in all these cases (**Table 3**).

Of the 119 cases notified between 2010 and 2013, the partner's treatment which was concomitant to the patient's was carried out in 66 (55.5% – 66/119) cases. In 50 (42% – 50/119) cases, the partner was not treated together with the pregnant woman, thus reaching 48.6% (18/37) of the cases in 2012. The main reason for the absence of partner's treatment was the lack of contact of the pregnant woman with her partner after the diagnosis of syphilis, occurring in 36% (18/50) of cases. Other frequent reasons were not undergoing the syphilis serology as requested by the doctor in 9 (18% – 9/50) cases, and not having attended the health unit (US), although it was requested in 7 (14% – 7/50) cases (**Table 4**).

The treatment was prescribed appropriately in 52 (43.7% – 52/119) cases; however, the prescription was improper for 57 (47.9% – 57/119) pregnant women, and in 10 (8.4% – 10/119) cases this information is unknown. In the analysis of each studied year, the percentage of inappropriately prescribed treatment remained above 14.3%. In 2012, this percentage reached its peak, accounting for 51.4% (19/37) of cases. Although not statistically significant, it was observed that maternal–fetal transmission of syphilis occurred in 11.5% (6/52) of pregnant women with correctly prescribed treatment, whereas among those whose treatment was prescribed inappropriately, a larger number of patients eventually transmitted this disease to the fetus, corresponding to 22.8% (13/57) of them. The absence of the treatment of the concomitant partner stood out as the main reason for this inadequacy, occurring in 47 (82.5% – 47/57) of these cases (**Table 5**).

DISCUSSION

The results showed syphilis as a disease which is still present among pregnant women in Cascavel, and they also show its

Table 4 – Distribution of cases of gestational syphilis, according to the reasons for the absence of partner's treatment – Cascavel, Paraná, 2010 to 2013 (n=50)[a].

Reason for the absence of partner's treatment	Frequency	
	Absolute (n)	Relative (%)
Partner had no more contact with the pregnant women	18	36
Partner was not summoned to the HU for treatment	4	8
Partner was summoned to the HU for treatment but did not attend	7	14
Partner was referred/summoned to the HU but refused treatment	2	4
Partner with nonreactive serology	4	8
Serology requested for the partner, but with results ignored	9	18
Patient had no fixed partner	4	8
Ignored	2	4

Source: Information System for Notifiable diseases (SINAN).
[a]Considering the partners who were not treated concomitantly to pregnant women; HU: health unit.

Table 5 – Distribution of cases of gestational syphilis, according to the reasons for the inadequacy of treatment prescribed to pregnant women – Cascavel, Paraná, 2010 to 2013 (n=57)[a].

Reason for inadequate treatment to pregnant women	Frequency	
	Absolute (n)	Relative (%)
Pregnant women treatment not performed	3	5.3
Dosage not consistent with clinical classification	23	40.4
Partner not concomitantly treated	47	82.5

Source: Notifiable Diseases Information System (SINAN).
[a]There were 16 pregnant women with more than one reason for inadequacy of the prescribed treatment.

Table 3 – Adequacy of dosage of the treatment prescribed to pregnant women, according to the clinical diagnosis – Cascavel, Paraná, 2008 to 2013 (n=135).

	Dosage adequacy								p-value[a]
	Adequate		Inadequate		Ignored		Not performed		
	n	%	n	%	n	%	n	%	
Clinical Classification									
Primary	25	27.2	12	44.4	0	0	0	0	
Secondary	5	5.4	2	7.4	0	0	0	0	
Tertiary	10	10.9	0	0	0	0	0	0	
Latent	52	56.5	13	48.1	1	7.7	3	100	0.005
Ignored	0	0	0	0	12	92.3	0	0	
Total	92		27		13		3		

Source: Notifiable Diseases Information System (SINAN).
[a]Statistical χ^2 test.

progressive increase from 2010. Although the number of pregnant women in the city has been estimated based on a fixed percentage of the total population each year (2.5%), the increased number of cases of gestational syphilis during the study period was higher than the increase of the pregnant women in this city in the same period. Therefore, it is possible that this increase in disease incidence is related not only to its higher transmission but also to the increase in disease's diagnosis and reporting owing to the strategies that have been offered by the health system. On the other hand, failures in diagnosis and reporting of cases are probably still occurring. For 11 mothers of children with congenital syphilis, no syphilis records during pregnancy were found in the SINAN database. Thus, the total number of cases may be even higher than the one found in this study, which already shows disturbing numbers of such disease.

In our study, vertical transmission of syphilis was equivalent to 23.3%. Although this number is lower than the Brazilian estimate, such transmission rate showed a progressive increase between 2009 and 2012. Moreover, the congenital form of the disease has not only increased but also achieved numbers increasingly distant from the target set by the Ministry of Health to eliminate its occurrence. This situation reflects a possible failure in the health care of infected pregnant women with regard to the control and prevention of maternal–fetal transmission of syphilis.

If the treatment is not carried out or is conducted improperly, pregnancies can result in miscarriage, stillbirth, or fetal death in approximately 40% of cases and may also lead to birth of child with congenital syphilis in another 40% of cases[9]. In our study, 82.6% of the children of these women identified with congenital syphilis showed favorable outcomes with good survival conditions. All cases were classified with the recent type of the disease. However, adverse outcomes were also observed, such as three cases of stillbirth and fetal death related to congenital syphilis, which corresponded to 2.9% of the pregnancies with the infection.

The sociodemographic profile of the analyzed pregnant women indicates that syphilis is mainly occurring among young women (mean age equivalent to 25 years), with a high percentage among adolescents, in addition to revealing a poor educational level. Similar results were found by other authors[10-14]. Rodrigues *et al*. [15], in a national multicenter study that researched the vulnerability characteristics for syphilis in 3,047 puerperae, indicated that the risk of positivity for this disease is three times higher in patients with low educational level, and also high in cases of early pregnancy. Moreover, our study revealed that the majority of the pregnant women are housewives, followed by maids, which probably is in alignment to the profile of pregnant women of the city. The same can be inferred to the fact that the majority of the participants had white or brown skin color.

The prenatal care is fundamental in ensuring maternal and fetal health. It aims at following up women during pregnancy, promoting health and identifying risk factors to prevent complications for both the mother and the child. Official figures show a high coverage of this service, reaching more than 85% of pregnant women[16]. However, studies show that prenatal care has not accomplished a good control of the diseases that may occur during pregnancy[17]. Similar to other studies[13,18], we observed that the majority of the women (95.6%) received the prenatal care. However, this number is still lower than the guidelines from the Ministry of Health, which recommends that such service should cover 100% of the pregnant women[19]. Receiving prenatal care is not the only determining factor to prevent vertical transmission of syphilis; the quality of this service in terms of diagnosis and treatment provided is also of utmost importance. According to our study, prenatal care was incapable of ensuring the occurrence of favorable outcomes, as 16.3% of those women who received prenatal care vertically transmitted syphilis to their children. These results corroborate the quality deficiency of prenatal care, which has been associated with the alarming occurrence of this disease among pregnant women and its transmission to the fetus[20,21].

The diagnosis of syphilis during pregnancy is based on the screening of pregnant women with nontreponemal test (VDRL) in the first and third quarters, in addition to its conduction in childbirth or curettage. Laboratory confirmation by means of treponemal tests is recommended during pregnancy, but it is not mandatory; thus, it should not lead to delays in the treatment[3]. The timing and quantity of serological tests performed could not be determined based on the data from the notifications. However, in accordance with these recommendations, most of the pregnant women studied underwent treponemal confirmatory test. For the four cases in which this test was not performed, the diagnosis was based only on VDRL, without delay in treatment. The easy access to laboratory tests facilitates the identification and coverage of those cases requiring treatment, thus contributing to the control of syphilis transmission.

Another issue highlighted in this study concerns the association of high titers of VDRL with the occurrence of adverse outcomes during pregnancy. According to the literature, high titers are associated with syphilis recent acquisition, which has been linked to higher chances of vertical transmission and consequent unfavorable situations[3,22]. Given the potential seriousness of these cases, the need to devote special attention to pregnant women with syphilis is clear, specifically to those with evidence of recent infection.

With regard to the gestational period when diagnosis was carried out, it was noted that, in general, diagnosis was performed early. The majority of pregnant women were diagnosed in the first two quarters. Although less frequent, the diagnosis performed in the third trimester of pregnancy was associated with the vertical transmission of the disease. This association is probably due to the fact that when the diagnosis is carried out late in pregnancy, less time is available for the treatment of the disease, which needs to be carried out fully and timely to be able to prevent the vertical transmission. This finding reinforces the importance of the quality of the prenatal care, with early diagnosis, treatment, and prevention practices, such as counseling on condom use and partner's serological screening, which may reduce the need for treatment in the last trimester of the pregnancy, during which the actions may be limited.

Among the pregnant women with a prescribed treatment, the chosen antibiotic was Penicillin G Benzathine in its entirety. Although this drug has been prescribed for most pregnant women in a dosage which is appropriate for the particular stage of infection, the dosage was inadequate for a considerable portion of the women.

The overdose occurred in pregnant women with primary and secondary syphilis, possibly owing to the need of restarting the treatment, which would require an increased dose, or to the secular assumption that, in case of doubt, a higher dose schedule should be prescribed. We also observed a probable misclassification of syphilis in 10 pregnant women reported with tertiary syphilis, considering that its manifestation is rare and takes a long time. These pregnant women probably had latent syphilis; however, the prescribed dose may be considered appropriate, as the treatment is similar for both stages, except for the neurosyphilis.

The Penicillin G Benzathine was prescribed in a lower than recommended dose only for a portion of women with the latent form of the disease. It is recommended that a treatment of latent syphilis be carried out with two doses in the early syphilis and three doses in the late latent syphilis[3]. As the notification information system did not allow differentiating between these sub-classifications, the prescription elaborated with three doses of penicillin was considered appropriate for the latent form of the disease. Classified as below the recommended levels, prescriptions with two doses may have been appropriate, if the pregnant woman had been diagnosed with latent recent classification. Prescriptions equivalent to one dose in some cases may be due to the positive serology in a short period of time, which were therefore considered as primary syphilis and mislabeled as latent. Although information for the determination of the causes of inadequate dosages were missing, the fragility of health care for pregnant women was evident, considering the failures on the provisions for medication in the required dosage, which are essential to prevent the occurrence of transmission of syphilis to the fetus.

Given the potential for disastrous effects of syphilis on pregnancy, failures in its treatment should not be tolerated, considering its easy application, its low cost and its high efficacy[7,9]. Compared to the criteria of adequacy used in this study, a considerable percentage of pregnant women (47.9%) were treated inappropriately, and the absence of concomitant treatment for the partner appeared as the main reason (82.5%) of this inadequacy. These findings are similar to those of other national studies that analyzed this issue[11,12,23,24]. Thus, although pregnant women receive prenatal care and are administered the treatment correctly, they remained susceptible to reinfection from their untreated partners, resulting in greater chance of fetus contamination.

The absence of contact with the pregnant women, which is the main factor associated to the lack of treatment for the partners, reveals an even worse situation. Although pregnant women are exempt from the risk of reinfection in these cases, these men remain unaware of the possibility of having the disease, which makes them potent disseminators of the disease. Also relevant is the lack of partner treatment because of the nonperformance of serological tests ordered by the doctor. In such cases, the request for an examination represents a lost opportunity to prescribe a treatment for these men. The Ministry of Health recommends the treatment of the partner as essential and not dependent on the realization of laboratory diagnostics[3]. Therefore, actions related to care for the partner in prenatal care represent an important strategy to handle this disease during pregnancy, as it is a decisive factor for the pregnant women's cure and for the epidemiological control of the disease.

It is worth mentioning that, in addition to the probable underreporting of cases, a large part of the records had variables that are important for the diagnosis and monitoring of pregnant women and children with blank or ignored fields. Underreporting of characteristics such as educational level of the pregnant women and the clinical classification of the disease in the reporting forms – tools for precisely that purpose – reinforces the prenatal care deficiency, since a public health resource that is important for the planning of actions for pregnant women and their children is underutilized.

CONCLUSION

This study showed that despite being a disease of easy diagnosis, treatment, and control, syphilis remains a serious public health problem, presenting a high occurrence among pregnant women in our midst, with consequent and worrying incidence of vertical transmission. Maternal characteristics, such as low educational level and age ranging from adolescence to early adulthood were associated with gestational syphilis and indicated the most vulnerable groups for which strategies to combat this disease should be directed.

Results showed that provision of prenatal care for pregnant women is not enough to ensure disease control. Elimination of gestational syphilis and its disadvantageous consequences will only be possible when the monitoring of women during pregnancy is broad and carried out with quality. Therefore, early identification of pregnant women, examinations in accordance with the recommendations and, most importantly, the proper and timely treatment to pregnant women and their partners are necessary for preventing maternal–fetal transmission.

Considering the importance of surveillance of syphilis in pregnancy, an increase in the reporting of cases and an improvement in the quality of information related to them are necessary to the actions aimed at eliminating congenital syphilis.

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Conflict of interest

The authors report no conflict of interests.

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