

# Epidemiological Situation Of Patients With Congenital Syphilis Correlated To Gestational Syphilis in the State of Goiás

Situação Epidemiológica dos Pacientes Com Sífilis Congênita Correlacionada à Sífilis Gestacional no Estado de Goiás

Situación Epidemiológica de los Pacientes con Sífilis Congénita Correlacionada con la Sífilis Gestacional en el Estado de Goiás

## RESUMO

Objetivou-se analisar o perfil epidemiológico de pacientes com sífilis gestacional e congênita no Estado de Goiás. Trata-se de um estudo transversal descritivo, analítico, ecológico e retrospectivo com abordagem quantitativa dos casos de sífilis gestacional e congênita com base em dados do DataSUS no período de 2018 a 2023. Utilizou-se as notificações e internações hospitalares para a causalidade do adoecimento. Encontrou-se gestantes com sífilis em que a maior faixa etária foi dos 20-39 anos representando 74,47% do total. A maioria realizou o pré-natal representando 80,69%, sendo 61,59% a porcentagem de diagnósticos de sífilis congênita durante o pré-natal. Dessas, 5,72% realizaram durante o pós-parto, em que 96,99% das crianças foram diagnosticadas com a doença antes do 6º dia de vida. Ressalta-se que 94,64% das crianças com sífilis congênita são classificadas como precoce e que 54,72% dos parceiros não receberam tratamento. Do total de parceiros, 20,48% não responderam ao questionário.

**DESCRIPTORIOS:** Atenção Primária à Saúde. Infecções Sexualmente Transmissíveis. Sexo Sem Proteção. Sífilis Congênita.

## ABSTRACT

The aim of this study was to analyze the epidemiological profile of patients with gestational and congenital syphilis in the state of Goiás. This is a descriptive, analytical, ecological, and retrospective cross-sectional study with a quantitative approach to cases of gestational and congenital syphilis based on DataSUS data from 2018 to 2023. Hospital notifications and admissions were used to determine the causality of the disease. Pregnant women with syphilis were found in the largest age group, 20-39 years old, representing 74.47% of the total. The majority received prenatal care, representing 80.69%, with 61.59% of congenital syphilis diagnosed during prenatal care. Of these, 5.72% were performed during the postpartum period, in which 96.99% of the children were diagnosed with the disease before the 6th day of life. It is worth noting that 94.64% of the children with congenital syphilis are classified as early and that 54.72% of the partners did not receive treatment. Of the total number of partners, 20.48% did not respond to the questionnaire.

**DESCRIPTORS:** Primary Health Care. Sexually Transmitted Infections. Unprotected Sex. Congenital Syphilis.

## RESUMEN

El objetivo fue analizar el perfil epidemiológico de los pacientes con sífilis gestacional y congénita en el Estado de Goiás. Se trata de un estudio transversal descriptivo, analítico, ecológico y retrospectivo con enfoque cuantitativo de los casos de sífilis gestacional y congénita basado en datos de DataSUS en el período de 2018 a 2023. Se utilizaron las notificaciones e internaciones hospitalarias para la causalidad de la enfermedad. Se encontró que las gestantes con sífilis tenían una edad más frecuente de 20 a 39 años, representando el 74,47% del total. La mayoría realizó el control prenatal, representando el 80,69%, siendo el 61,59% la proporción de diagnósticos de sífilis congénita durante el prenatal. De estas, el 5,72% realizaron el diagnóstico durante el posparto, y el 96,99% de los niños fueron diagnosticados con la enfermedad antes del sexto día de vida. Se destaca que el 94,64% de los niños con sífilis congénita son clasificados como precoz y que el 54,72% de los compañeros no recibieron tratamiento. Del total de compañeros, el 20,48% no respondieron al cuestionario.

**DESCRIPTORIOS:** Atención Primaria a la Salud. Infecciones de Transmisión Sexual. Sexo Sin Protección. Sífilis Congénita.

RECEIVED: 01/26/2025 APPROVED: 02/07/2025

**Como citar este artigo:** Sena ALM, Barreto PA, Oliveira FNM, Monteiro SNC. Epidemiological Situation Of Patients With Congenital Syphilis Correlated To Gestational Syphilis in the State of Goiás. Saúde Coletiva (Edição Brasileira) [Internet]. 2025 [acesso ano mês dia];15(93):14529-14535. Disponível em: DOI: 10.36489/saudecoletiva.2025v15i93p14529-14535



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## INTRODUCTION

According to the World Health Organization (WHO), more than one million sexually transmitted infections (STIs) are acquired every day, most of which are asymptomatic. These conditions are highly heterogeneous in terms of both etiological agents and clinical manifestations: discharge, ulceration, immunosuppression, but the factor that reflects the intersection of these sets is the sexual route (oral/vaginal/anal) as a means of transmission.<sup>1</sup>

Syphilis is an STI caused by the bacterium *Treponema pallidum*, in which clinical manifestations can range from skin lesions to systemic involvement. It can be classified according to the symptoms and mode of transmission as: acquired, gestational and congenital.<sup>2</sup>

In the acquired stage, painless skin ulceration or “hard chancre” is observed at the site of penetration of the bacteria in its primary phase, which disappears spontaneously after a few weeks. This is followed by the secondary stage, with mucocutaneous lesions, palmoplantar rash, alopecia and other general symptoms. Subsequently, there is the latent asymptomatic state, which can last for years, and the tertiary stage, which can affect any organ, especially the bones/joints, the nervous system and the heart. The gestational stage can cause miscarriage, neonatal death and fetal malformation.<sup>3</sup>

Congenital syphilis manifests it-

self with early and late symptoms, in which the fetus may present low birth weight, respiratory difficulties, osteochondritis, hematological alterations, hepatosplenic alterations, Parrot's pseudoparalysis, “saber blade” tibia, perioral fissures, short jaw, Hutchinson's Triad, learning difficulties, among others.<sup>3</sup>

In view of the above, it is extremely important to know the epidemiological profile of individuals affected by syphilis in order to direct and/or reinforce public strategies for managing and combating STIs as a whole, since these infections tend to manifest together, especially HIV infection. Gestational and congenital syphilis stand out because, in addition to the great impact on the quality of life of women and newborns, their detection is related to tests performed during prenatal care in primary health care (PHC). This is because epidemiological indices can be used as a reflection of the quality of public health. Furthermore, it is in the interest of the State to enact preventive actions, since curative measures are more costly to the public entity. Therefore, the objective is to analyze the epidemiological profile of gestational syphilis correlated with congenital syphilis in the State of Goiás.

## METHODS

This is a descriptive, analytical, ecological and retrospective cross-sectional study with a quantitative approach on cases of gestational

syphilis and congenital syphilis in the State of Goiás using secondary data obtained through Tabnet, developed by the Department of Information Technology of the Unified Health System (DataSUS).<sup>4</sup>

The sample comprised women and children who lived in Goiás and in Brazil and who were hospitalized or had their cases reported due to gestational and/or congenital syphilis registered in the Notifiable Diseases and Injuries System (SINAN) and Hospital Morbidity System of the SUS (SIH/SUS), from 2018 to 2023.

Regarding the study variables, the following were selected: child age group, prenatal care, partner treatment, time of diagnosis, classification of the clinical stage of syphilis, maternal age group, and hospital admissions.

The data were collected and entered into the Microsoft Excel 2010® program. They were then analyzed using descriptive statistics with presentation of frequencies, percentages and averages, represented by tables and graphs. Since this is a study involving secondary data, in the public domain, without identification of the participants, the study is exempt from assessment by the Research Ethics Committee (Resolution 510/2016).<sup>5</sup>

## RESULTS

Table 1 – Clinical characteristics of congenital syphilis in the state of Goiás 2018-2023, n=3916. Brazil, 2025

Variables	N	%
<b>Children's Age Group</b>		
Up to 6 days	3798	96,99
7 to 27 days	43	1,10
28 days to 1 year	63	1,61
1 year	6	0,15
2 to 4 year	4	0,10
5 to 12 year	2	0,05
<b>Prenatal care</b>		
Yes	3160	80,69
No	579	14,79
Ign/Blank	177	4,52
<b>Partner Treatment</b>		
Yes	971	24,80
No	2143	54,72
Ign/Blank	802	20,48
<b>Moment of Diagnosis</b>		
Prenatal	2412	61,59
Childbirth/Curettage	1117	28,52
Postpartum	224	5,72
Not performed	23	0,59
Ign/Blank	140	3,58
<b>Final Classification</b>		
Early	3706	94,64
Late	6	0,15
<b>Stillbirths/Miscarriages</b>		
Discarded	140	3,58
<b>Sex</b>		
Female	1930	49,28
Male	1840	46,99
Ign/Blank	146	3,73
<b>Mother's age group</b>		
10 - 14 y/o	28	0,72
15 - 19 y/o	824	21,04
20 - 24 y/o	1387	35,42
25 - 29 y/o	828	21,14
30 - 34 y/o	432	11,03
35 - 39 y/o	224	5,72
40 - 44 y/o	78	1,99
45 - 49 y/o	4	0,10
50 - 54 y/o	1	0,03
Ign/Blank	110	2,81

Source: Own authorship. DataSUS, 2025.

Table 1 shows the age ranges of diagnosis of the children, 3798 cases (96.99%) are up to 6 days of life; 43 (1.10%) are from 7 to 27 days; 63 (1.61%) are from 28 days to 1 year; 6

(0.15%) are at 1 year; 4 (0.10%) are from 2 to 4 years; and 2 (0.05%) are from 5 to 12 years.

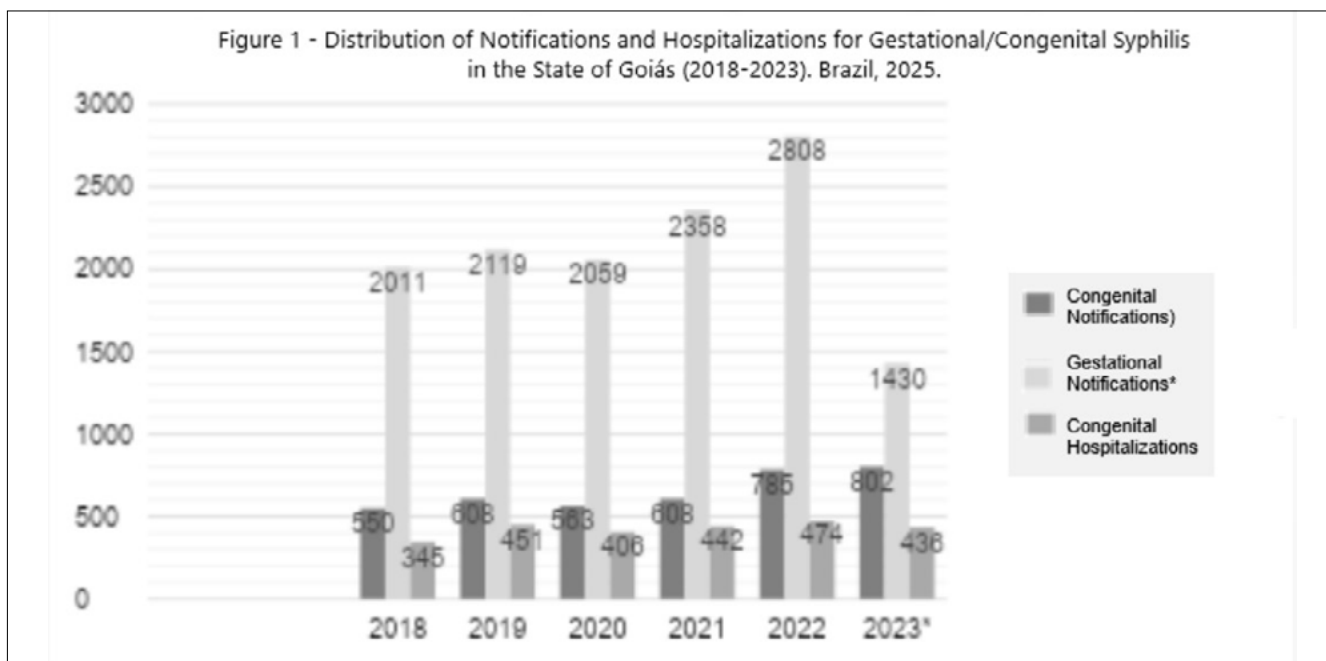
As for the sex of the children, of the total of 3916 cases, 1840 (46.99%) are male, 1930 (49.28%) are female

and 146 (3.87%) were unknown or left blank. 3160 (80.69%) received prenatal care, and 2143 (54.72%) of the partners did not undergo treatment. Regarding the diagnostic moment, 2,412 were performed during

prenatal care (61.59%); 1,117 were performed during delivery/curettage (28.52%); 224 were performed postpartum (5.72%); 23 were not performed (0.59%); and 140 were left blank or ignored (3.58%).

Regarding the final classification of syphilis, 3,706 were classified as early (94.64%); 6 as late (0.15%); 64 were stillbirths or miscarriages due to syphilis (1.63%) and 140 were discarded (3.58%). The predominant

maternal age range, relative to congenital syphilis, was 20-24 years with 1387 cases totaling 35.42%, however the most affected range was 20 to 39 years (73.31% of the total).



Source: Own authorship.

Figure 1 shows the Notifications and Hospitalizations of Gestational and Congenital Syphilis cases in the State of Goiás from 2018 to 2023.

Data from DataSUS (2025) referring to notifications of confirmed cases registered in SINAN of gestational syphilis in the State of Goiás indicate a total of 12,785 cases (3.29% of the national total) from January 2018 to December 2023. The year 2023 stands out, in which both the national (-56.95%) and Goiás (-49.07%) values suffered a deep decline compared to previous values, which presented a positive ascending average pattern, as observed in Figure 1. This underreporting diverges from the current literature and can be explained by a delay in tabulating the information, since the data were updated in the system in January

2024, however subject to review. Another significant decline in detection rates occurred in 2020, caused by the Covid-19 pandemic and its overload on the healthcare system<sup>4,6</sup>.

Regarding hospital admissions, cases remained stable and below the number of notifications. Between 2018 and 2021, the difference be-

tween the number of notifications and hospitalizations was an average of 171.25. In 2022 and 2023, this average rose to 338.50. Therefore, it can be inferred that there was a significant increase in notifications of the disease, although these are cases that do not require highly complex assistance.

**Table 2 - Notifications of Gestational Syphilis in the State of Goiás by Age Group (2018-2023) Brazil, 2025**

	2018	2029	2020	2021	2022	2022	2022
10 a 14	19	19	23	26	19	19	19
15 a 19	504	492	511	543	572	572	572
20 a 39	1454	1557	1483	1753	2171	2171	2171
40 a 59	34	51	42	36	46	46	46
Total	2011	2119	2059	2358	2808	2808	2808

Source: Own authorship. Datasus, 2025.

Regarding the age groups in the period analyzed in which the diagnoses were made in pregnant women with syphilis, in Goiás, 115 of the cases (0.89%) were between 10 and

14 years old; 2,910 (22.76%) were between 15 and 19 years old; 9,522 (74.47%) were between 20 and 39 years old; and 238 (1.86%) were between 40 and 59 years old (Table 2).

by delivery/curettage and postpartum, represented 34.24% of the total diagnostic moments. Associated with this, an average of 19.31% of pregnant women did not undergo follow-up.<sup>8</sup>

Therefore, serological tests for *Treponema pallidum* infection include non-treponemal tests, of a quantitative nature (Ex: VDRL, RPR), which are indicated for monitoring, and treponemal tests (Ex: FTA-Abs, ELISA, Rapid Test) of a qualitative nature to aid in diagnostic confirmation.<sup>3</sup>

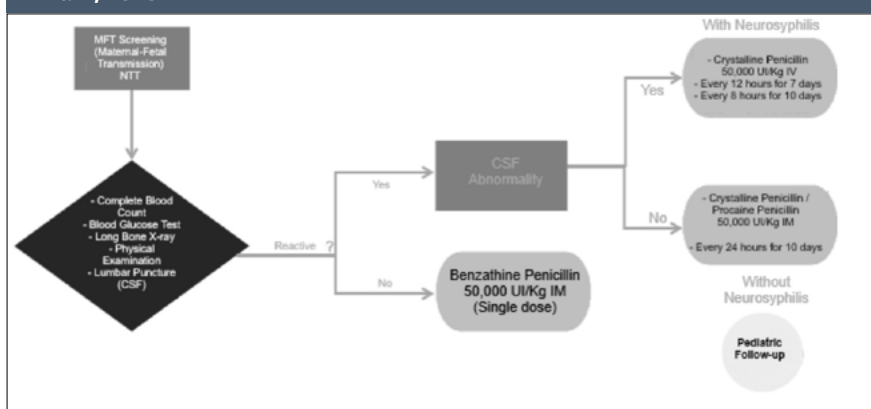
After confirmation of positivity for treponemal and non-treponemal tests, syphilitic infection is confirmed in the pregnant woman, who is then referred for appropriate treatment with penicillin and outpatient follow-up in order to avoid vertical transmission. Inadequate treatment, which consists of incomplete doses of penicillin or inappropriate doses for the clinical phase of the disease, use of other antibiotics for treatment, initiation of treatment after 30 days before delivery and inadequate or untreated partner, will influence the conduct to be taken with the newborn, since the clinical and laboratory situation will indicate the need or not for hospitalization (Figure 2).<sup>3,8</sup>

Neonatal screening and mandatory Venereal Disease Research Laboratory (VDRL) testing on newborns guarantee diagnostic identification in the State of Goiás, of 96.99% before 6 days of life with 94.64% of the total presenting early syphilis classification.<sup>3,8</sup>

In a study using a similar methodology, conducted in Brazil, it was observed that the treatment of pregnant women was inadequate in a large part of the study population. By extrapolating the data, it is possible to intuit that the ineffectiveness of adequate treatment increases the need for more complex procedures with the newborn (Figure 2).<sup>9</sup>

Follow-up of children with congenital syphilis or those who have been exposed to syphilis occurs through well-child visits in the first week of life and in the subsequent months (1, 2, 4, 6, 9, 12 and 18). Se-

**Figure 2 – Flowchart of Conduct in Newborns with Inadequately Treated Mothers. Brazil, 2025**



Source: Own authorship.. (Brasil, 2022).

Caption: Non-treponemal test (NTT), X-ray (RX), Cerebrospinal fluid (CSF), Intravenous (IV), Intramuscular (IM), Units (IU).

The appropriate treatment for pregnant women with syphilis consists of administering benzathine penicillin, according to the stage of the disease. The standard dose of 2.4 million IU (1.2 million IU in each buttock), IM, in a single dose is used for recent primary, secondary and latent syphilis. It is recommended to repeat the dose after one week. For tertiary or late latent syphilis, a third dose is added the following week. In the case of neurosyphilis, potassium/crystalline penicillin 18-24 million IU is used, 1x/day, IV, administered in doses of 3-4 million IU, every 4 hours or by continuous infusion, for 14 days.<sup>3</sup>

In case of treatment ineffectiveness, it is necessary to follow the flowchart description (Figure 2).

## DISCUSSION

From 2018 to 2023, 3,916 cases of congenital syphilis and 12,785 cases of gestational syphilis were reported in the state of Goiás. Given the findings,

it was important to correlate the notification information for both modes of transmission of the bacteria and the need for hospitalization. It is worth remembering that notification for cases of congenital syphilis is compulsory and mandatory by law, established through Ordinance No. 542, of December 22nd, 1986.<sup>7</sup>

That said, PHC stands out as the main gateway to other health services in Brazil. Among its many responsibilities, it is worth highlighting the monitoring and assistance of pregnant women with prenatal care, whose set of actions aims both at maintaining maternal health and at early identification and appropriate management of any problems. The Ministry of Health (MS) recommends a minimum of 6 prenatal consultations for pregnant women, with evaluation of several parameters, including the performance of a non-treponemal test, which has a strong correlation with infection by *Treponema pallidum*.<sup>8</sup> If the test is positive, a treponemal test will provide diagnostic certainty. Even so, the data in Table 1 show that 61.59% of congenital syphilis cases were diagnosed prenatally, while failure in this process, portrayed

rological evaluation is performed using a non-treponemal test in months 1, 3, 6, 12 and 18, with the need to discontinue the test if there are two consecutive negative results. The treponemal test is not applied, since its qualitative characteristic allows the phenomenon of serological scarring. Another important parameter in the follow-up evaluation is monitoring the VDRL titration, which should decrease by at least two to three months or four to six months after completion of treatment. If these parameters are not achieved, it becomes necessary to evaluate therapeutic failure.<sup>3</sup>

In this study, regarding the variable of child sex, there is no evidence in either the literature or the data that the gender of the child infected with *Treponema pallidum* influences the incidence of congenital syphilis cases. However, in this study, there was a slight tendency towards females (Table 1).

When investigating the causal multifactorial nature of syphilitic infections, the influence that the patriarchal sociocultural values of Brazilian society exert on aspects of everyday social life, especially in the sexual act, is verified. The feeling of invulnerability that permeates male individuals is used as an ideological justification for the intangibility of the disease process. According to DataSUS (2025)<sup>4</sup>, 54.72% of partners choose not to undergo treatment, in addition to 20.48% who did not answer this question. At the same time, men, in general, practice unprotected intercourse with a greater number of partners.<sup>10</sup> Therefore, the responsibility for using contraceptive methods to prevent births falls on the woman, without considering prophylaxis against infections.<sup>11</sup>

In view of the above, the responsibility for detecting syphilis is attributed to prenatal care. Thus, cases of pregnant women and newborns with the disease have the potential to determine an evaluation parameter for the quality of health services, which may also be related to diagnostic failure or inadequate treatment of syphilis, which highlights a weakness in the health management of Brazilian PHC.<sup>12</sup>

At the same time, there are gaps in health promotion focused on prevention methods and sexual education.<sup>12</sup> This information is corroborated by the data in Table 2, in which 23.65% of pregnant women with syphilis are in the age group of 10-19 years, added to the high rate of untreated partners, demonstrating a problem in the sexual education provided by the education system. Similarly, regarding the age group of the postpartum mother (Table 1), the data indicate that 10-19 years is the second most prevalent age group with 21.76% of cases, in which the first is 20-29 years representing almost half of the total with 2215 (56.56%), data also seen in other studies.<sup>9,13-14</sup>

In association, it is observed in the national territory, in the year 2022, that the ratio of cases of acquired syphilis in adolescents (13-19 years old) was a ratio of 0.7 - seven men for every ten women, in addition to the increase of 2.6 times when compared to the number of cases in 2015; concomitantly, the following age groups, from 20 to 29 years old, presented a ratio of 1.8 - 18 men for every 10 women.<sup>6</sup>

Furthermore, with regard to interference in the data, it is important to consider the potential underreporting of the Unified Health System (SUS); false reagents, such as in serological scars or in patients with Systemic Lupus Erythematosus (SLE); therapeutic failures; and the availability of rapid tests in Brazil, which increased almost 1,000 times from 2011 to 2014, however with different and inferior distributions in relation to the number and estimate of pregnant women in the States, thus resulting in an increase in the capacity to identify asymptomatic people and, consequently, an increase in cases of acquired and gestational syphilis.<sup>15</sup>

It is clear that, despite the high efficiency of condoms and effective treatment with antibiotics, data suggest that the incidence and prevalence of syphilis infection remain high. For example, epidemiological data for 2022 showed a rate of approximately 32.4 cases/1,000 live births. In addition, the detection rate of pregnant women with syphilis has maintained an

increasing trend in recent years, while the incidence rate of congenital syphilis has remained stable.<sup>6,17,16</sup>

Finally, it is clear that the causality of illness due to sexually transmitted infection is multifactorial and encompasses sociocultural, biological, economic and governmental factors, which influence parameters such as the incidence and prevalence of cases of gestational and congenital syphilis. That said, efforts to screen and manage the disease in the community are essential, especially in pregnant women and their children, since *Treponema pallidum* has a significant impact on quality of life. The performance of the most affected groups may demonstrate the failure of interventionist measures by both the public entity and society, but it offers the opportunity to focus on and mitigate the problem.

## CONCLUSION

In conclusion, an epidemiological profile of pregnant women with syphilis was established in the state of Goiás, in which the largest age group was 20-39 years, representing 74.47% of the total cases, followed by 15-19 years with 22.76%. These age groups coincide with women with children already diagnosed with congenital syphilis, in which 20-39 years represents 56.56% and 15-19 years 21.04%. The majority of these mothers received prenatal care, representing 80.69%, with 61.59% of congenital syphilis diagnosed during prenatal care. A total of 19.31% of women with gestational syphilis did not receive prenatal care, ignored it or left it blank. This information is combined with 28.52% of diagnoses during curettage/delivery and 5.72% during the postpartum period, in which 96.99% of children were diagnosed before 6 days of life. Finally, it is worth noting that 94.64% of children with congenital syphilis are classified as early, according to clinical manifestations, and that 54.72% of the women's partners choose not to undergo penicillin treatment.

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