

# Factors related to the loss of follow-up in pregnant women with syphilis: an integrative review

Fatores relacionados à perda do seguimento de gestantes com sífilis: revisão integrativa

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-  Paula Lima da Silva<sup>1</sup>
-  Marli Teresinha Gimenez Galvão<sup>2</sup>
-  Emanuelle Fernandes Silva<sup>1</sup>
-  Bráulio Vieira de Sousa Borges<sup>1</sup>
-  Jefferson Abraão Caetano Lira<sup>1</sup>
-  Rosilane de Lima Brito Magalhães<sup>1</sup>

<sup>1</sup>Universidade Federal do Piauí.  
Teresina, PI, Brazil.

<sup>2</sup>Universidade Federal do Ceará.  
Fortaleza, CE, Brazil.

## Corresponding author:

Paula Lima da Silva  
Campus Universitário Ministro Petrônio Portela,  
Bloco SG 12, Ininga, CEP: 64.049-550.  
Teresina, PI, Brazil.  
E-mail: paulallima00@gmail.com

EDITOR IN CHIEF: Ana Fatima Carvalho Fernandes  
ASSOCIATE EDITOR: Francisca Diana da Silva Negreiros

## ABSTRACT

**Objective:** to analyze factors related to the loss of follow-up in pregnant women with syphilis. **Methods:** Integrative review developed in six databases. The PICo strategy was used to elaborate the guiding question and select the descriptors and keywords through Boolean operators. 20 articles were included in the final sample. **Results:** the factors related to the loss of follow-up in pregnant women with syphilis were: age; schooling; diagnosis and late onset of treatment; prenatal failure and low adherence of the partner to treatment. In addition, the lack of knowledge of professionals about the management of syphilis and the failures in counseling were found to be factors inherent to the loss of follow-up. **Conclusion:** pregnant women under 20, low schooling, stigma, fear, non-treatment of partnership, inadequate treatment and lack of professional training and guidance to pregnant women were associated with the loss of follow-up of pregnant women with syphilis.

**Descriptors:** Syphilis; Lost to Follow-Up; Pregnant Women; Prenatal Care; Review.

## RESUMO

**Objetivo:** analisar os fatores relacionados à perda do seguimento de gestantes com sífilis. **Métodos:** revisão integrativa desenvolvida em seis bases de dados. A estratégia PICo foi utilizada para elaborar a questão norteadora e selecionar os descritores e as palavras-chave por meio de operadores *booleanos*. Foram incluídos 20 artigos na amostragem final. **Resultados:** os fatores relacionados à perda do seguimento de gestantes com sífilis constatados foram: idade; escolaridade; diagnóstico e início tardio do tratamento; falhas no pré-natal e a baixa adesão do parceiro ao tratamento. Além disso, o déficit de conhecimento dos profissionais acerca do manejo da sífilis e as falhas no aconselhamento revelaram-se fatores inerentes à perda do seguimento. **Conclusão:** gestantes menores de 20 anos, a baixa escolaridade, o estigma, o medo, o não tratamento da parceria, o tratamento inadequado e a falta de capacitação profissional e de orientações às gestantes estiveram associados à perda de seguimento de gestantes com sífilis.

**Descritores:** Sífilis; Perda de Seguimento; Gestantes; Cuidado Pré-Natal; Revisão.

## Introduction

Syphilis, a Sexually Transmitted Infection (STI), of bacterial etiology, caused by *Treponema pallidum*, can also be transmitted vertically, by blood transfusion and also by direct contact with contaminated blood, which contributes to high prevalence and difficult control in several populations in the world<sup>(1)</sup>.

On the international scene, the prevalence of syphilis in pregnant women of up to 2.9% in sub-Saharan Africa has been identified<sup>(2)</sup>. In Brazil, the detection rate for every thousand live births has increased from 3.5 to 21.4, a situation that can cause serious consequences for the newborn, such as congenital malformations, natimortality, prematurity and death<sup>(1)</sup>.

Thus, the problem of syphilis is a cause of concern in the world due to the high vertical transmission and mortality. A North American study with 6,383 cases of congenital syphilis identified the morbidity of 33.6% and the mortality in 6.5% of the cases. And, of this total, 89.0% of the mothers were untreated or were inadequately treated<sup>(3)</sup>. In Brazil, from 2008 to 2018, there was an increase in infant mortality by congenital syphilis from 1.9 to 8.2/100 thousand live births<sup>(1)</sup>, which suggests the need for strategic and effective actions to tackle the problem.

Low schooling of the mother and her ethnicity, late arrival of the pregnant woman at the beginning of prenatal care, insufficient number of appointments, and failure to perform diagnostic tests are factors associated with congenital syphilis<sup>(4)</sup>. Add to this the late diagnosis and the non-treatment or inadequate treatment of the pregnant woman<sup>(5)</sup>, which can influence the loss of follow-up in pregnant women with syphilis and contribute to high rates of vertical transmission.

In this sense, identifying studies that address factors related to the loss of syphilis follow-up in pregnant women is fundamental, since evidence-based practice increases the visibility of the problem in order to favor the implementation of public policies, with effective protocols to assist pregnant women

with syphilis, aiming at the reduction of syphilis in pregnant women and congenital syphilis, in addition to noting possible gaps in knowledge on the subject, making it possible to detect, understand and draw up action plans aimed at generating new knowledge and a maternal-infant care practice based on an effective and efficient scope of knowledge.

The objective of this study, considering the above mentioned problem, was to analyze the factors related to the loss of follow-up of pregnant women with syphilis.

## Methods

Integrative review structured in six phases<sup>(6)</sup>. In the first one, the topic was defined (loss of follow-up of pregnant women with syphilis) and the research question was constructed using the acronym PICO<sup>(7)</sup>, P being the population (pregnant women), I the phenomenon of interest (factors related to loss of follow-up) and Co the context (syphilis). Thus, we have: "What factors are related to the loss of follow-up in pregnant women with syphilis?".

The second phase consisted of sampling or literature search, the third was the selection of studies, the fourth, extraction of data, the fifth, the evaluation and analysis of results, and in the sixth phase consisted of the synthesis of findings<sup>(6)</sup>.

Indexed primary studies, in English, Portuguese or Spanish, were included for the period 2011 to 2019 and that answered the guiding question. The time clipping was based on the establishment of the Stork Network, a political framework that guaranteed integral and humanized assistance to women in the gravity-purple period<sup>(8)</sup>.

The database searches were performed in September 2020 using the Nursing Database (BDENF), the Latin American and Caribbean Health Sciences Literature Bibliographic Index (LILACS), via Virtual Health Library, the Medical Literature Analysis and Retrieval System online (MEDLINE via PubMed), Web of Science, Scopus and Cumulative Index to Nursing and Allied Health Literature (CINAHL-Ebsco).

The descriptors and keywords were selected through research in the Health Science Descriptors (DeCS), Medical Subject Headings (MeSH) and List of Headings of CINAHL Information Systems. The search

expressions were combined with “OR” and “AND”. Different search expressions were performed due to the peculiarities of the bases and the index. The syntax of the searches is described in Figure 1.

Descriptors in Health Sciences		
P	D	Pregnant women
	KW	Pregnant women; Pregnant woman; Pregnant ; Parturient women; Parturients
I	D	Loss of Follow-up; Prenatal Care
	KW	Loss of Follow-up; Prenatal Care
Co	D	Syphilis
	KW	Syphilis
LILACS and BDENF		(tw:((mh:(Pregnant women)) OR (tw:(Pregnant women)) OR (tw:(“Pregnant women ”)) OR (tw:(Pregnant woman)) OR (tw:(Pregnant)) OR (tw:(“Pregnant woman ”)) OR (tw:(Parturient)) OR (tw:(Parturients)))) AND (tw:((mh:(“Loss of Follow-up”)) OR (tw:(“Loss of Follow-up”)) OR (mh:(“Prenatal Care”)) OR (tw:(“Prenatal Care”)))) AND (tw:((mh:(Syphilis)) OR (tw:(Syphilis))))
Medical Subject Headings		
P	D	Pregnant woman
	KW	Women, pregnant; pregnant woman; woman, pregnant
I	D	Lost to Follow-Up; Prenatal Care
	KW	Lost to Follow-Up; Prenatal Care
Co	D	Syphilis
	KW	Syphilis
MEDLINE		(((((“pregnant women”[MeSH Terms]) OR (pregnant women[Text Word])) OR (“women, pregnant”[Text Word])) OR (“pregnant woman”[Text Word])) OR (“woman, pregnant”[Text Word])) AND (((“lost to follow up”[MeSH Terms]) OR (“lost to follow up”[Text Word])) OR (“prenatal care”[MeSH Terms]) OR (“prenatal care”[Text Word])) AND ((“syphilis”[MeSH Terms]) OR (“syphilis”[Text Word]))
CINAHL		(“pregnant woman” OR “women, pregnant” OR “pregnant woman”) AND (“Lost to Follow-Up” OR (MH “Prenatal Care”) OR “Prenatal Care”) AND ( (MH “Syphilis”) OR “Syphilis” )
Web of Science		(TS=(“pregnant woman”) OR TS=(“women, pregnant”) OR TS=(“pregnant woman”) OR TS=(“woman, pregnant”)) AND (TS=(“Lost to Follow-Up”) OR TS=(“Prenatal Care”)) AND (TS=(Syphilis))
SCOPUS		((TITLE-ABS-KEY (“pregnant woman”) OR TITLE-ABS-KEY (“women, pregnant”)) AND ((TITLE-ABS-KEY (“Lost to Follow-Up”) OR TITLE-ABS-KEY (“Prenatal Care”))) AND (( TITLE-ABS-KEY ( syphilis)))

D: descriptor; KW: keyword

**Figure 1** – Descriptors, keywords and search expressions used to retrieve the articles. Teresina, PI, Brazil, 2020

The productions were accessed from the Periodical Portal of the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES). In order to reduce likely errors or biases in the assessment of studies, the selection was developed by two independent reviewers in two stages. In the first, the title and abstract were read, and in the second, the articles were read in their entirety. In cases of disagreement between the two reviewers, there was discussion to reach a consensus.

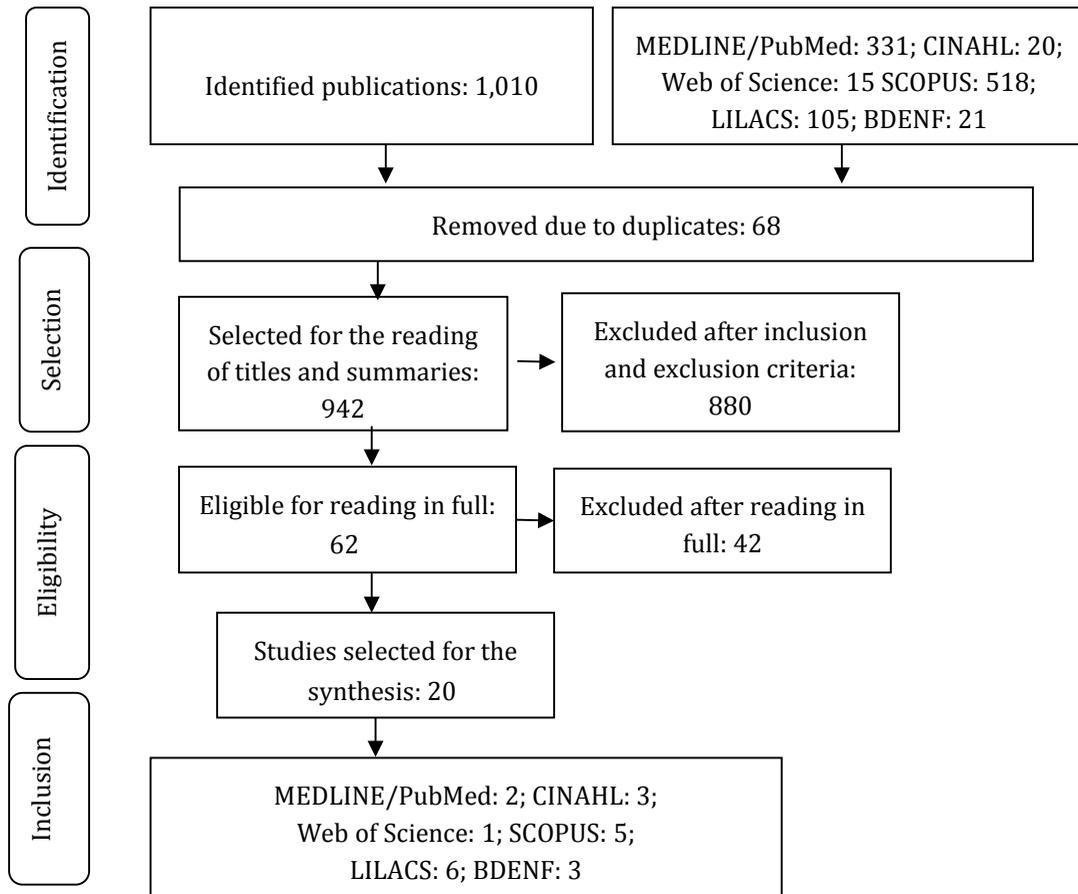
The search resulted in 1,010 productions. Duplicate studies were counted only once, 68 of which were removed by duplicates. First, 942 articles were selected for title and abstract reading. Using the in-

clusion criteria, 880 studies were discarded (59 were literature reviews, 580 did not answer the guiding question and 242 were not within the time cutout). In the second stage, 62 articles were eligible for full text reading, being excluded 42 productions, since they did not answer the guiding question of the review, remaining 20 articles, which composed the sample and were analyzed.

The data was extracted through the use of our own tool, containing information about the main author, journal, year of publication, level of evidence, design, and location of the study, sample and main results.

The level of evidence was classified according to the model below: Level I - systematic review or meta-analysis of randomized controlled trials; Level II - well-designed randomized controlled trials; Level III - well-designed non-randomized controlled trials; Level IV - well-designed cohort and case-control stu-

dies; Level V - systematic review of descriptive and qualitative studies; Level VI - descriptive or qualitative study and Level VII - opinion of authorities and/or reports<sup>(9)</sup>. The data was analyzed and synthesized in a descriptive way through semantic similarity. The flowchart of the selected articles is described in Figure 2.



**Figure 2** – Flowchart of selected articles. Teresina, PI, Brazil, 2020

## Results

We identified 1,010 productions in the indexed databases and bibliographic index, and the sample consisted of 20 studies.

It is observed that the periodicals Epidemiology and health services and Sexually transmitted diseases presented two publications each. The year 2017 was the most prevalent, with six studies. The predominant type of study was the cross-sectional one in 14 productions, being that 18 presented level of evidence

VI. Brazil was the country with the largest number of studies on the subject, with a total of ten studies (Figure 3).

Non-treatment of the partner, inadequate treatment, failure to perform serological tests and diagnosis, late onset and/or failure to perform prenatal care were the main causes of loss of follow-up in pregnant women with syphilis.

In addition, pregnant women under 20 years of age, with low schooling, low knowledge of pregnant women about STIs, lack of knowledge in the manage-

ment of syphilis by professionals, lack of professional training, lack of guidance to pregnant women, limited knowledge and fear of injection by the partnership,

as well as stigma related to syphilis, are factors associated with loss of follow-up in pregnant women with syphilis.

Main author, magazine/year	Outline and Level of Evidence	Location and Sample	Main results
Tridapalli et al. Arch Dis Child Fetal Neonatal/2012 <sup>(10)</sup>	Cross-sectional study, VI	Italy (303)	Significant factors were lack of prenatal screening and inadequate maternal treatment
Domingues et al. Rev Bras Saúde Matern Infant/2012 <sup>(11)</sup>	Cross-sectional study, VI	Brazil-RJ (2,353)	Failures in counseling, in carrying out serological examinations of pregnant women and in approaching partners
Domingues et al. Rev Saúde Pública/2013 <sup>(12)</sup>	Cross-sectional study, VI	Brazil-RJ (46)	Late onset prenatal care, failure to make the diagnosis in pregnancy and lack of partnership treatment
Nonato et al. Epidemiol Serv Saúde/2015 <sup>(13)</sup>	Historical cohort IV	Brazil-MG (353)	Under 20 years of age, antenatal late start, absence of VDRL and low schooling
Castro; Pérez, Rev Cubana Invest Bioméd/2015 <sup>(14)</sup>	Cross-sectional study, VI	Equador-Guayaquil (71)	Of the 18 pregnant women with syphilis, only three were treated
García et al. Sex Transm Dis/2015 <sup>(15)</sup>	Cross-sectional study, VI	Peru (114)	Out of 144 women, 46 (31.9%) had concomitant partner-patient treatment.
Suto et al. Rev Enferm Atenção Saúde/2016 <sup>(16)</sup>	Cross-sectional study, VI	Brazil-BA (6)	Inadequate treatment in 2/3, lack of professional training and low prenatal coverage.
Lafeté et al. Rev Bras Epidemiol/2016 <sup>(5)</sup>	Descriptive/ retrospective study, VI	Brazil-MG (214)	Late diagnosis, after delivery, and inadequate treatments
Cavalcante et al. Epidemiol Serv Saúde/2017 <sup>(17)</sup>	Descriptive study VI	Brasil-TO (375)	Failures in the diagnosis and monitoring of pregnant women, children and partners
Moreira et al. Cogitare Enferm/2017 <sup>(18)</sup>	Descriptive study VI	Brazil-RO (326)	Failure in early diagnosis of gestational syphilis
Barbosa et al. Rev Enferm UFPE on line/2017 <sup>(19)</sup>	Descriptive study VI	Brazil-PI (388)	Fifteen percent of pregnant women without prenatal care and inadequate treatment of sexual partners
Nkamba et al. BMC Health Serv Res/2017 <sup>(20)</sup>	Estudo transversal VI	Zambia and Democratic Republic of Congo (112)	Lack of knowledge and training, reservations about same day screening and treatment, lack of treatment and stigma
Garcés et al. Biomédica/2017 <sup>(21)</sup>	Estudo transversal VI	Colombia (306)	Knowledge deficits in gestational syphilis management were detected among professionals
Silva-Chávarro; Bois-Melli, Rev Mex Pediatr/2017 <sup>(22)</sup>	Case-control study IV	Argentina (206)	Age equal to 18 years and number of consultations equal to five were significant risk factors for treatment failure
Cunha et al. Arq Catarin Med/2018 <sup>(23)</sup>	Cross-sectional study, VI	Brazil-SC (117)	Only 30.4% of partners received treatment
Slutsker et al. Morb Mortal Wkly Rep/2018 <sup>(24)</sup>	Cross-sectional study, VI	USA-New York (578)	Failure to perform prenatal and syphilis testing before 45 days of delivery, as well as syphilis infection after the first examination
Kanai et al. J Compilation/2018 <sup>(25)</sup>	Cross-sectional study, VI	Japan (9)	The lack of orientation of doctors regarding the syphilis test and the low knowledge of pregnant women about sexually transmitted infections
DiOrío et al. Sex Transm Dis/2018 <sup>(26)</sup>	Cross-sectional study, VI	USA-Indiana (23)	Failure to adhere to prenatal care
Silva Neto et al. Rev Soc Bras Med Trop/2018 <sup>(27)</sup>	Cross-sectional study, VI	Brazil-SP (149)	Low quality prenatal care is a key factor for high rates of congenital syphilis in Itapeva
Nakku-Joloba et al. BMC Infect Dis/2019 <sup>(28)</sup>	Cross-sectional study, VI	Uganda (54)	Low partner compliance associated with limited knowledge, fear of injection and lack of communication skills

**Figure 3** – Summary of studies included (n=20). Teresina, PI, Brazil, 2020

## Discussion

The limitations of this review are related to the low level of evidence from the selected studies and the reduced number of studies on factors related to loss of follow-up in pregnant women with syphilis. Gaps in syphilis coping strategies in pregnant women were noted<sup>(5,11,14,16)</sup> mainly related to attracting sexual partners<sup>(10-13,17,19,21)</sup>. This reinforces the need for the engagement of professionals, especially of the Primary Care, with educational actions, quality prenatal care and active search, both of the pregnant woman and the partnership, in order to ensure the effective treatment of syphilis in pregnancy.

However, the data from this research has the potential to contribute to the development and/or improvement of actions aimed at the management of gestational syphilis with a focus on professional training and factors that contribute to the loss of follow-up.

In this study, young pregnant women and those with low schooling with syphilis presented association with the loss of follow-up<sup>(13)</sup>. Research conducted in Tocantins corroborates these findings<sup>(17)</sup>. It is suggested that socio-demographic conditions should be evaluated in the approach to young women of reproductive age, as well as the active and timely search for women to begin prenatal care, at the ideal time, in the logistics of the principles of Primary Care.

Pregnant women with a late onset and failure to perform prenatal care show greater loss of follow-up to syphilis treatment. Difficulty in accessing health services and low prenatal adherence were a reality identified in New York from 2010 to 2016<sup>(24)</sup>, reinforcing the findings of this study. Thus, it is necessary to promote greater access of pregnant women to health care networks, focusing on Primary Care, the main gateway to the Unified Health System, following the principles of territoriality and longitudinality, in addition to actively seeking out the absentees for greater adherence to maternal care.

The non-performance of serological tests and

diagnosis was evidenced in this study, corroborating a research carried out in Mato Grosso do Sul, Brazil, where the poor quality of prenatal care contributed to the high prevalence of syphilis, resulting in low adherence to follow-up<sup>(29)</sup>. Authors concluded that timely syphilis screening in the first and third trimesters of pregnancy contributed to the non-occurrence of congenital syphilis<sup>(30)</sup>. There is an urgent need to improve the quality of assistance, with reinforcement of the increase of material inputs, professional qualification and articulation between the different points of the support networks for diagnosis, treatment and follow-up.

It is important to point out that pregnant women who are not treated properly and the failure to treat the partnership are associated with the loss of follow-up. Such a situation is common in several Brazilian regions<sup>(17-18)</sup> and in other countries, such as Peru and Argentina, showing the low adherence of the pregnant woman and the partnership to the treatment, the majority had less than five consultations and this was considered a risk factor for failures in the treatment of syphilis<sup>(15,22)</sup>.

The importance of raising awareness among pregnant women and partners about the need for proper treatment of syphilis during antenatal visits is reinforced, as well as providing guidance on the consequences of not treating these infections for maternal and child health. Furthermore, professional training is essential because it allows the correct treatment of gestational syphilis, taking into consideration the clinical classification of the disease, which contributes to the reduction of the transmission chain.

In this investigation, the knowledge deficit in syphilis management by professionals and the lack of training were present in the loss of follow-up. Research conducted in Japan corroborates these findings by identifying that the lack of orientation regarding the syphilis test after the first trimester, the lack of adequate knowledge of the professional to treat gestational syphilis, and the lack of awareness of pregnant women regarding STIs contribute to the loss of

follow-up<sup>(25)</sup>. A study conducted in Zambia and the Democratic Republic of Congo identified difficulties in the diagnosis and treatment of syphilis, including the lack of knowledge and training of professionals on the evolution of best practices in screening with diagnostic tests and early treatment<sup>(20)</sup>. This reinforces the need to invest in continuing education and enrolment in the care field in order to qualify assistance and have practices based on the best scientific evidence.

Pregnant women have low knowledge and stigma in relation to syphilis, which compromises the treatment. International study corroborates these findings<sup>(20)</sup>. It is necessary to stimulate the creation of therapeutic groups with pregnant women to better link and address the different factors that influence the clinical follow-up of syphilis cases with emphasis on the health education process.

In view of the above, it is clear that the loss of follow-up in pregnant women with syphilis is a worldwide problem, with different proportions, being an important factor for the high number of cases of vertical transmission. Studies, with high levels of evidence, may be important for a better visibility of the problem, providing public policies for maternal-infant integral health. In addition, research of this nature should be expanded, in different social, environmental and cultural contexts, in order to create strategies that ensure greater adherence of pregnant women with syphilis, as well as the permanent and continued qualification of health professionals for care with good clinical and scientific practices.

## Conclusion

Pregnant women under 20 years of age, low schooling, little knowledge about sexually transmitted infections, stigma related to syphilis, limited knowledge, fear and non-treatment of the sexual partner, inadequate treatment, as well as lack of knowledge and training in the management of syphilis by professionals and lack of guidance to pregnant women were associated with the loss of follow-up of pregnant women with syphilis.

## Colaborations

Silva PL and Magalhães RLB contributed in the conception and design, analysis and interpretation of the data and in the final approval of the version to be published. Silva EF, Borges BVS and Lira JAC collaborated in the writing of the article and relevant critical review of the intellectual content. Galvão MTG contributed in the final approval of the version to be published.

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