Original Article

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# CHILDCARE AND FOLLOW-UP OF CHILDREN EXPOSED TO SYPHILIS OR NOTIFIED WITH CONGENITAL SYPHILIS

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## ABSTRACT

**Objective:** to analyze childcare and follow-up of children exposed to or notified with congenital syphilis in Primary Health Care.
**Method:** a descriptive study carried out in Fortaleza, Ceará, whose population was made up of children exposed to syphilis or notified with congenital syphilis in 2017 and 2018. The data were collected from notification forms and the children's medical records. Sociodemographic variables of the mother and childcare were analyzed. For this purpose, the Statistical Package for the Social Sciences (SPSS), version 22, was used.
**Results:** a total of 715 children took part in the study. The mothers' age varied from 14 to 42 years old, 436 (61%) had Complete Elementary School, 276 (38.6%) had a steady or occasional partner, 97 (13.6%) had a paid job and 23 (3.2%) used drugs. A total of 712 (99.6%) attended prenatal care and 134 (18.7%) were treated for syphilis. In relation to the children, 50 (7.0%) attended only one childcare consultation and a considerable loss was observed in follow-up over the months. Ten (1.4%) completed all eight consultations recommended by the Ministry of Health. No child underwent the Venereal Disease Research Laboratory at one, three, six, 12 and 18 months.
**Conclusion:** childcare and follow-up of children exposed to syphilis or notified with congenital syphilis do not meet the guidelines recommended by the Ministry of Health. There is a significant follow-up loss among the children.

**DESCRIPTORS:** Syphilis. Congenital Syphilis. Disease notification. Childcare. Primary Health Care.

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## PUERICULTURA E SEGUIMENTO DE CRIANÇAS EXPOSTAS À SÍFILIS OU NOTIFICADAS COM A SÍFILIS CONGÊNITA


### RESUMO

**Objetivo:** analisar a puericultura e o seguimento de crianças expostas ou notificadas com sífilis congênita na atenção primária em saúde.
**Método:** estudo descritivo realizado em Fortaleza, Ceará cuja população foi composta por crianças expostas à sífilis ou notificadas com a sífilis congênita nos anos de 2017 e 2018. Os dados foram coletados nas fichas de notificação e nos prontuários das crianças. Foram analisadas variáveis sociodemográficas da mãe e da puericultura da criança. Para isso, utilizou-se o programa *Statistical Package for the Social Science*s (SPSS), versão 22.
**Resultados:** participaram do estudo 715 crianças. A idade das mães variou de 14 a 42 anos, tinham até o ensino fundamental completo 436 (61%), parceiro fixo ou eventual 276 (38,6%), atividade remunerada 97 (13,6%) e fazia uso de drogas 23 (3,2%). Frequentaram o pré-natal 712 (99,6%) e foram tratadas para sífilis, 134 (18,7%). Em relação às crianças, 50 (7,0%) receberam somente uma consulta de puericultura e observa-se perda considerável no seguimento ao longo dos meses. Dez (1,4%) completaram o quantitativo de oito consultas recomendado pelo Ministério da Saúde. Nenhuma criança fez o *Venereal Disease Research Laboratory* de um, três, seis, 12 e 18 meses.
**Conclusão:** a puericultura e o seguimento de crianças expostas à sífilis ou notificadas com a sífilis congênita não atendem às diretrizes recomendadas pelo Ministério da Saúde. Há importante perda de seguimento das crianças.



**DESCRITORES:** Sífilis. Sífilis Congênita. Notificação de doenças. Puericultura. Atenção primária à saúde.


## PUERICULTURA Y SEGUIMIENTO DE NIÑOS EXPUESTOS A SÍFILIS O NOTIFICADOS CON SÍFILIS CONGÊNITA


### RESUMEN

**Objetivo:** analizar la puericultura y el seguimiento de niños expuestos a sífilis o notificados con sífilis congénita en Atención Primaria de la Salud.
**Método:** estudio descriptivo realizado en Fortaleza, Ceará, cuya población estuvo conformada por niños expuestos a sífilis o notificados con sífilis congénita en 2017 y 2018. Los datos se recolectaron de los formularios de notificación y de las historias clínicas de los niños. Se analizaron variables sociodemográficas de las madres y de la puericultura de los niños. Para tal fin se utilizó el *Statistical Package for the Social Sciences* (SPSS), versión 22.
**Resultados:** un total de 15 niños participaron en el estudio. La edad de las madres varió entre 14 y 42 años, 436 (61%) tenían escuela primaria completa como nivel de estudio máximo, 276 (38,6%) tenían pareja estable o eventual, 97 (13,6%) poseían alguna actividad remunerada y 23 (3,2%) consumían drogas. Un total de 712 (99,6%) acudió a las consultas prenatales y 134 (18,7%) recibieron tratamiento para la sífilis. En relación con los niños, 50 (7,0%) solo acudieron a una consulta de puericultura y se observó una considerable pérdida en el seguimiento a lo largo de los meses. Diez (1,4%) completaron las ocho consultas recomendadas por el Ministerio de Salud y ningún niño se sometió al *Venereal Disease Research Laboratory* de uno, tres, seis, 12 y 18 meses.
**Conclusión:** la puericultura y el seguimiento de niños expuestos a sífilis o notificados con sífilis congénita no cumplen con las directrices recomendadas por el Ministerio de Salud; además, se registra una importante pérdida en seguimiento de los niños.



**DESCRIPTORES:** Sífilis. Sífilis Congénita. Notificación de enfermedades. Puericultura. Atención Primaria de la Salud.

## INTRODUCTION

Acquired syphilis is an important public health problem, especially in the poor female population living on the outskirts of large cities[1–2]; and lack of infection control in the population has contributed to the increase in congenital syphilis[3]. When transmitted from an infected pregnant woman to her fetus, syphilis can result in congenital disease, which causes serious consequences for the newborn[4,5,6].

Despite all the efforts undertaken by national and international bodies responsible for health policies in an attempt to control congenital syphilis, worrying data are still observed in Brazil[3,7–8], showing difficulties in its prevention and control. In Ceará (CE), especially in Fortaleza, the data indicate that there has been no progress in reducing this indicator[9–10].

From 1999 to June 2022,293,339 congenital syphilis cases were reported in children under one year of age in Brazil; and, in 2021 alone, the incidence rate was 9.9 cases per 1,000 live births. Between 2020 and 2021, there was a 14.6% increase in the incidence rate, with the highest value in the North Region, followed by the Northeast Region[9]. In Ceará, from January 1st to September 22nd, 2022,1,122 cases were reported with an incidence rate of 16.8 cases per 1,000 live births[11], well above the national mean[9].

With a view to systematically monitoring children's growth and development, the Ministry of Health (*Ministério da Saúde*, MS) recommends that all children undergo monitoring in Primary Health Care (PHC) and attend a minimum schedule of childcare appointments until the sixth year of life. The interval between consultations is variable and should be more frequent in the first two years. It also considers that following this calendar can be one of the indicators of the quality of care provided to children at the level of PHC services[12].

With regard to congenital syphilis, all children whose mothers were diagnosed with syphilis during prenatal care should attend outpatient consultations as part of their childcare routine, plus laboratory evaluations with a non-treponemal test at one, three, six, 12 and 18 months of age. In addition, they should undergo ophthalmological, audiological and neurological evaluations in the first two years of life[13]. Some children may not present signs and symptoms at birth[14], developing them later[15].

The fundamental role of PHC in the process of monitoring children with congenital syphilis is highlighted, as it is at this care level that mothers routinely take them to childcare consultations. Therefore, this study aims at analyzing childcare and follow-up of children exposed to or notified with congenital syphilis in Primary Health Care.

## METHOD

This is an exploratory, quantitative and descriptive study that analyzed the childcare of children exposed to syphilis or notified with congenital syphilis in PHC services from Fortaleza, state of Ceará. The municipality has a population of more than 2.5 million inhabitants. In health, it adopts the full management model with services at different complexity levels. In PHC, services are offered through the Family Health Strategy (FHS), made up of 116 Basic Health Units (BHUs), covering 48% of the population. The municipality recommends the same guidelines as the Ministry of Health for monitoring children in childcare, as well as for the follow-up of those exposed to syphilis or with congenital syphilis[13,16].

The study population was made up of children exposed to syphilis or notified with congenital syphilis in 2017 and 2018. The inclusion criteria were as follows: children exposed to syphilis or notified with congenital syphilis born in the city of Fortaleza and who had a record of attending at least one medical or nursing appointment in PHC units. Stillbirths and children born in Fortaleza but living in other municipalities were excluded. The data were collected from congenital syphilis notification forms

and from *Fastmedic*®, an electronic medical record system that allows online access to patients' monitoring.

Through the mother's treatment history, the child can be diagnosed with congenital syphilis or classified as exposed to syphilis[13]. Children born to mothers who are adequately treated and who do not present clinical changes or laboratory tests at birth are considered exposed and should not be notified as congenital syphilis cases. However, regardless of the congenital syphilis or exposed child diagnosis, all children should attend outpatient consultations until the age of two, considering that many of them are born asymptomatic and may later develop signs and symptoms. The classification of exposed child occurred at the end of 2018, and these cases do not require mandatory notification. Therefore, in that year, all children whose mothers had syphilis during pregnancy were still notified with congenital syphilis.

Data collection took place from December 2019 to February 2020. To this end, an initial survey of the congenital syphilis notification forms corresponding to all children born in 2017 and 2018 was performed in the Epidemiological Surveillance Sector of the Fortaleza Municipal Health Department (Notifiable Diseases Information System [*Sistema de Informação de Agravos de Notificação*, SINAN]). Already in possession of the forms, we proceeded to search for cases in *Fastmedic*®. A form was employed to collect the data, prepared based on material from the MS[13].

The children were identified in the electronic medical records using the mother's full name and date of birth. In cases where this identification was not possible, a search was carried out by crossing the mother's name with each letter of the alphabet in order to identify the child. When the letter of the alphabet is entered into the system, the names of all children starting with that letter appear automatically. Subsequently, they are located by the mother's name and date of birth included in the notification form.

The maternal variables collected were as follows: age (in years old); schooling (complete and incomplete Elementary School, complete and incomplete High School and Higher Education); marital status; having some paid work; use of illicit drugs; prenatal care (yes and no) and number of prenatal consultations; adequate maternal treatment (yes and no); number of miscarriages; and performance, result and titration of the Venereal Disease Research Laboratory (VDRL) during prenatal care. Pregnant women who received three benzathine penicillin doses were considered adequately treated, with 2.4 million IUs for each dose, totaling 7.2 million IUs[13].

In relation to childcare and clinical manifestations of congenital syphilis, the following were considered: number of childcare consultations; child's age at the first consultation; month of life when the VDRL was performed: care locus (if only in PHC, or PHC and reference outpatient services); and if the participant received a visit from the FHS team. The congenital syphilis clinical manifestations analyzed were the following: prematurity, classified as "yes" for children born with a gestational age of less than 37 weeks or "no" for those born with a gestational age equal to or greater than 37 weeks; low birth weight (classified as "yes" when less than 2,500 grams); if they were hospitalized; and other clinical changes suggestive of congenital syphilis (classified as hepatomegaly with or without splenomegaly, skin lesions, jaundice with phototherapy level, serosanguineous rhinitis and limb pseudoparalysis)[13].

Data on the care of the children who attended all eight childcare consultations (Chart 1) and about the follow-up of those born with gestational ages ≤ 37 weeks and weighing ≤ 2,500 g (Chart 2) were presented. The objective was to present more in-depth information about compliance with the MS recommendations for the assessment of congenital syphilis and data on those who presented signs and symptoms at birth. Children with gestational ages ≤ 37 weeks and weighing ≤ 2,500g were included, considering these values as borderline prematurity and low birth weight.

The aspects related to the children's follow-up were as follows: undergoing the VDRL test; month of life when the VDRL test was carried out; presence of clinical manifestations suggestive of

**Chart 1 –** Characteristics and data on the care provided to the children exposed to syphilis or notified with congenital syphilis who attended all eight childcare consultations. Fortaleza, CE, Brazil, 2017-2018. (n=13).

| NB* | Mother treated | Gestational age ≥ 37 weeks | Birth weight | Underwent VDRL† at 1 month | VDRL† result at 1 month | Underwent VDRL† at 3,6,12, 18 months | Presented CS‡ signs and symptoms | Consultation in outpatient clinic of reference service | Underwent Long Bone Radiog.§ | Ophthalmological evaluation | CSF evaluation | Received a visit from the FHS‖ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Yes | No | 2,570 | Yes | Unknown | No | Yes | Yes | Yes | No | No | Yes |
| 2 | Yes | No | 3,440 | No | – | No | No | No | No | No | No | No |
| 3 | Yes | No | 3,040 | No | – | No | Yes | Yes | No | No | No | Yes |
| 4 | No | No | 3,205 | No | – | No | Yes | Yes | No | No | No | Yes |
| 5 | No | No | 3,310 | No | – | No | No | Yes | No | No | No | Yes |
| 6 | No | No | 3,595 | No | – | No | Yes | Yes | No | No | No | Yes |
| 7 | No | No | 3,940 | Yes | Reactive | No | Yes | No | Yes | Yes | No | Yes |
| 8 | No | No | 4,010 | No | – | No | Yes | No | No | No | No | No |
| 9 | No | No | 3,940 | No | – | No | No | No | No | No | No | No |
| 10 | No | No | 4,010 | No | – | No | No | No | No | No | No | No |
| 11 | No | No | 3,010 | No | – | No | No | No | No | No | No | Yes |
| 12 | No | No | 4,330 | No | – | No | Yes | Yes | Yes | Yes | No | Yes |
| 13 | No | No | 3,855 | No | – | No | Yes | No | No | No | No | No |

*NB: Newborn; †VDRL: Venereal Disease Research Laboratory; ‡CS: Congenital Syphilis; §Radiog.: Radiography; ‖FHS: Family Health Strategy.

**Chart 2** – Follow-up data in Primary Health Care corresponding to the children exposed to syphilis or notified with congenital syphilis who were born with gestational ages ≤ 37 weeks and weighing ≤ 2,500 grams. Fortaleza, CE, Brazil, 2017-2018. (n=12).

| NB* | GA† | Weight | Mother treated | No. of childcare appointments | Age at consultations (months old) | Number of VDRLs‡ performed | Age (in months old) when the VDRL‡ was performed | Consultation in outpatient clinic of reference service | Underwent Long Bone Radiography | Attended a consultation with a specialist§ | CSF evaluation | Visit from the FHS‖ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 35 | 2,175 | Yes | 3 | <1,4, 29 | None | – | No | No | No | No | No |
| 02 | 36 | 2,420 | No | 5 | 1,2,3,4, 5 | None | – | No | No | No | No | No |
| 03 | 37 | 1,040 | No | 4 | 1,2,3, 4 | None | – | No | No | No | No | No |
| 04 | 37 | 1,100 | No | 1 | 8 | None | – | No | No | No | No | No |
| 05 | 37 | 1,190 | No | 1 | 4 | None | – | No | No | No | No | No |
| 06 | 37 | 2,040 | No | 6 | 1,2,3,6,8, 12 | None | – | No | No | No | No | No |

**Chart 2** – Cont.

| NB* | GA† | Weight | Mother treated | No. of childcare appointments | Age at consultations (months old) | Number of VDRLs‡ performed | Age (in months old) when the VDRL‡ was performed | Consultation in outpatient clinic of reference service | Underwent Long Bone Radiography | Attended a consultation with a specialist§ | CSF evaluation | Visit from the FHS‖ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07 | 37 | 2,400 | No | 6 | 1,2,3,4, 6.7 | None | – | No | No | No | Yes | No |
| 08 | 37 | 2,170 | Yes | 2 | 2.9 | None | – | Yes | No | No | No | No |
| 09 | 37 | 2,120 | No | 3 | 4,5, 6 | None | – | No | No | No | No | No |
| 10 | 37 | 2,419 | No | 6 | 1,3,4,5, 6 | 2 | 6 and 12 | No | No | No | No | No |
| 11 | 37 | 2,450 | No | 5 | 1,2,4,5, 6 | None | – | No | No | No | No | No |
| 12 | 37 | 2,500 | No | 2 | 1, 2 | None | – | No | No | No | No | Yes |

*NB: Newborn; †GA: Gestational Age; ‡VDRL: Venereal Disease Research Laboratory; §Consultation with a specialist: ophthalmological, audiological and neurological consultation; ‖FHS: Family Health Strategy.

congenital syphilis; and whether ophthalmological, audiological and neurological evaluations were received. Exams were considered carried out when they had at least one record in the system.

The data were entered into the Statistical Package for the Social Sciences (SPSS), version 22. A descriptive analysis was carried out using frequency distribution for the categorical variables and mean and standard deviation calculation for the numerical ones.

The study was approved by the Research Ethics Committee of *Universidade de Fortaleza*, in compliance with Resolution No. 466/2012 of the National Health Council. Its implementation was previously authorized by the Management, Work and Health Coordination of the Fortaleza Municipal Health Department.

## RESULTS

In 2017 and 2018,1,239 children exposed to syphilis or notified with congenital syphilis were identified in Fortaleza. The children included in the study were all 715 who attended at least one PHC consultation, excluding 524 (361 because they did not have a record of a medical or nursing consultation in the electronic medical chart and 163 miscarriage or stillbirth cases). 355 (49.7%) were born in 2017 and 360 (50.3%) in 2018.

The mothers' age varied from 14 to 42 years old (mean of 23.9; SD=3.8) and 667 (93.3%) were 29 years old or younger. 436 (61%) had incomplete or complete Elementary School, 276 (38.6%) had a steady or casual partner, 97 (13.6%) had a paid job and 23 (3.2%) used illicit drugs. 61 (8.5%) had a miscarriage history. 712 (99.6%) attended prenatal care and 584 (82.0%) received six or more consultations (mean of 7.7). 210 (29.4%) pregnant women underwent the first VDRL during prenatal care, with 111 (52.9%) reactive results. VDRL titration was available in 97 cases, of which 36 (37.1%) were > 1:8. 166 (23.2%) pregnant women underwent a second VDRL during prenatal care. 134 (18.7%) were adequately treated (Table 1).

**Table 1** – Maternal sociodemographic characteristics and prenatal care of children exposed to syphilis or notified with congenital syphilis monitored in Primary Health Care. Fortaleza, CE, Brazil, 2017-2018. (n=715).

| Variables | The child attended childcare follow-up in PHC* | |
|---|---|---|
| | n | % |
| Mother's age (years old) | | |
| ≤18 | 33 | 4.6 |
| 19-29 | 634 | 88.7 |
| ≥30 | 48 | 6.7 |
| Schooling | | |
| Incomplete/Complete Elementary School | 436 | 61.0 |
| Incomplete/Complete High School/Higher Education | 279 | 39.0 |
| Marital status | | |
| With a partner | 276 | 38.6 |
| Without a partner | 439 | 61.4 |
| Performs some paid activity | | |
| Yes | 97 | 13.6 |
| No | 618 | 86.4 |
| Use of illicit drugs | | |
| Yes | 23 | 3.2 |
| No | 692 | 96.8 |
| Number of miscarriages (n=61) | | |
| 1 | 52 | 85.2 |
| ≥1 | 9 | 14.8 |
| Attended prenatal care | | |
| Yes | 712 | 99.6 |
| No | 03 | 0.4 |
| No.† of prenatal consultations (n=712) | | |
| <6 | 128 | 18.0 |
| ≥6 | 584 | 82.0 |
| Underwent 1st VDRL‡ in prenatal care | | |
| Yes | 210 | 29.4 |
| No | 505 | 70.6 |
| 1st VDRL‡ result (n=210) | | |
| Reactive | 111 | 52.9 |
| Non-reactive | 99 | 47.1 |
| Titration of the 1st VDRL‡ (n=97) | | |
| ≤1:8 | 61 | 62.9 |
| >1:8 | 36 | 37.1 |
| Underwent a 2nd VDRL‡ in prenatal care | | |
| Yes | 166 | 23.2 |
| No | 549 | 76.8 |
| Mother adequately treated§ | | |
| Yes | 134 | 18.7 |
| No | 581 | 81.3 |

*PHC: Primary Health Care; †No.: Number of prenatal consultations; ‡VDRL: Venereal Disease Research Laboratory; §Pregnant women that received three benzathine penicillin doses (2.4 million IUs for each dose, totaling 7.2 million IUs) were considered adequately treated.

Table 2 describes aspects related to childcare, follow-up and clinical manifestations in children exposed to syphilis or with congenital syphilis monitored in PHC. 50 (7.0%) attended only one childcare consultation and a considerable follow-up loss was observed among the children over the months. Ten children (1.4%) completed all eight consultations recommended by the Ministry of Health. None of them attended their first consultation in the first week of life (data not presented in the Table).

**Table 2 –** Childcare, follow-up and clinical manifestations in children exposed to syphilis or with congenital syphilis monitored in Primary Health Care. Fortaleza, CE. Brazil, 2017-2018. (n=715).

| Variables | The child attended childcare and follow-up in PHC* | |
|---|---|---|
| | n | % |
| Number of childcare consultations | | |
| 1 | 50 | 7.0 |
| 2 | 134 | 18.7 |
| 3 | 135 | 18.9 |
| 4 | 194 | 27.1 |
| 5 | 99 | 13.8 |
| 6 | 64 | 9.0 |
| 7 | 26 | 3.6 |
| 8 | 10 | 1.4 |
| >8 | 3 | 0.5 |
| Month of life when VDRL† was performed | | |
| First | 9 | 1.3 |
| Third | 2 | 0.3 |
| Sixth | 3 | 0.4 |
| Did not undergo any VDRL† | 701 | 98.0 |
| Follow-up locus | | |
| Only in PHC* | 648 | 90.6 |
| In PHC* and in outpatient clinics of reference services | 67 | 9.4 |
| Received a visit from the FHS‡ team | | |
| Yes | 130 | 18.2 |
| No | 585 | 81.8 |
| Prematurity | | |
| Yes | 118 | 16.5 |
| No | 597 | 83.5 |
| Low birth weight (n=710) | | |
| Yes | 38 | 5.4 |
| No | 672 | 94.0 |
| Other clinical manifestations suggestive of congenital syphilis§ | | |
| Yes | 223 | 31.2 |
| No | 492 | 68.8 |

*PHC: Primary Health Care; †VDRL: Venereal Disease Research Laboratory; ‡FHS: Family Health Strategy; §Other clinical manifestations suggestive of congenital syphilis: classified as hepatomegaly with or without splenomegaly, skin lesions, jaundice with phototherapy level, serosanguineous rhinitis and limb pseudoparalysis.

Nine (1.3%), two (0.3%) and three (0.4%) children, respectively, underwent the VDRL examination at one, three and six months of age. Only 648 (90.6%) were only monitored in PHC and 67 (9.4%) in PHC and in outpatient clinics of reference services. 130 (18.2%) children received a visit from the FHS team, 118 (16.5%) were born premature and 38 (5.4%) were born with low birth weight. 223 (31.2%) presented other clinical manifestations at birth (Table 2).

Table 3 presents the variables corresponding to the mothers and follow-up of children who were born prematurely, with low birth weight and with some clinical manifestation suggestive of congenital syphilis (hepatomegaly with or without splenomegaly, skin lesions, jaundice with phototherapy level, serosanguineous rhinitis and limb pseudoparalysis).

In relation to the mothers, most of them were aged between 19 and 29 years old, had Complete Elementary School, underwent prenatal care and attended at least six consultations. However, a considerable percentage was not adequately treated. Only eight (3.6%) children that presented clinical manifestations suggestive of congenital syphilis attended eight or more childcare consultations as recommended by the Ministry of Health, and a low proportion was monitored in some reference service. Those who presented clinical manifestations suggestive of congenital syphilis attended more consultations at one and three months, 174 (78.0). The vast majority did not undergo VDRL examinations, ophthalmological and hearing evaluations, or long bone radiographies. The majority did not present delayed psychomotor development or serosanguineous rhinitis and did not receive any visit from the FHS.

**Table 3 –** Maternal sociodemographic characteristics, prenatal care and childcare of children who presented clinical manifestations at birth, prematurity or low weight, monitored in Primary Health Care. Fortaleza, CE, Brazil, 2017-2018. (n=276)

| Variables | The child attended childcare and follow-up in PHC* | | | | | |
|---|---|---|---|---|---|---|
| | Presence of clinical manifestations at birth (n=223) | | Prematurity (n=17) | | Low weight (n=36) | |
| | n | % | n | % | n | % |
| Mother's age | | | | | | |
| ≤18 | 14 | 6.3 | – | – | 04 | 11.1 |
| 19-29 | 199 | 89.2 | 17 | 100.0 | 31 | 86.1 |
| ≥30 | 10 | 4.5 | – | – | 01 | 2.8 |
| Mother's schooling level | | | | | | |
| Inc./Com. El. Sc.† | 137 | 61.4 | 09 | 52.9 | 24 | 66.7 |
| Inc./Com. Hi. Sc./Hi. Ed.‡ | 86 | 38.6 | 08 | 47.1 | 12 | 33.3 |
| Mother attended prenatal care | | | | | | |
| Yes | 223 | 100.0 | 16 | 94.1 | 36 | 100.0 |
| No | – | – | 1 | 5.9 | 00 | 00 |
| No.§ of prenatal consultations | | | | | | |
| <6 | 88 | 39.5 | 04 | 23.5 | 08 | 22.2 |
| ≥6 | 135 | 60.5 | 12 | 70.6 | 28 | 65.8 |
| Unknown | – | – | 01 | 5.9 | – | – |
| Mother treated adequately | | | | | | |
| Yes | 43 | 19.3 | 01 | 5.9 | 10 | 27.8 |
| No | 180 | 80.7 | 16 | 94.1 | 26 | 72.2 |

**Table 3 –** Cont.

| Variables | The child attended childcare and follow-up in PHC* | | | | | |
|---|---|---|---|---|---|---|
| | Presence of clinical manifestations at birth (n=223) | | Prematurity (n=17) | | Low weight (n=36) | |
| | n | % | n | % | n | % |
| Number of childcare consultations | | | | | | |
| <8 | 215 | 96.4 | 17 | 100 | <8 | 215 |
| ≥8 | 8 | 3.6 | – | – | – | – |
| Child monitored in outpatient clinic of reference services | | | | | | |
| Yes | 32 | 14.3 | 01 | 5.9 | 4 | 11.1 |
| No | 191 | 85.7 | 16 | 94.1 | 32 | 88.9 |
| Age at child's appointment (months old) | | | | | | |
| 1-3 | 174 | 78.0 | 07 | 41.2 | 4 | 11.1 |
| >3 | 49 | 22.0 | 07 | 41.2 | 28 | 77.8 |
| Unknown | – | – | 03 | 17.6 | 4 | 11.1 |
| Month of life when the VDRL‖ was performed | | | | | | |
| 1 | 7 | 3.1 | – | – | – | – |
| 3 | 1 | 0.4 | – | – | – | – |
| Did not undergo VDRL‖ | 215 | 96.5 | 117 | 99.2 | 36 | 100 |
| The child underwent | | | | | | |
| Ophthalmological evaluation | 13 | 5.8 | 1 | 5.9 | 1 | 2.8 |
| Hearing evaluation | 8 | 3.6 | 1 | 5.9 | 2 | 5.6 |
| Long Bone Radiography | 16 | 7.2 | – | – | – | – |
| No evaluations | 186 | 83.4 | 15 | 88.2 | 33 | 91.6 |
| The child presented | | | | | | |
| Delay in psychomotor development | 08 | 3.6 | – | – | 3 | 8.3 |
| Serosanguinous rhinitis | – | – | 3 | 17.6 | 6 | 16.7 |
| No alterations | 215 | 96.4 | 14 | 82.4 | 27 | 75.0 |
| The child received a visit from the FHS¶ team | | | | | | |
| Yes | 85 | 38.1 | 4 | 23.5 | 02 | 5.6 |
| No | 138 | 61.9 | 13 | 76.5 | 34 | 94.4 |

*PHC: Primary Health Care; †El. Sc.: Elementary School; ‡Inc./Com. Hi. Sc./Hi. Ed.: Complete/Incomplete High School/Higher Education; §No.: Number; ‖VDRL: Venereal Disease Research Laboratory; ¶FHS: Family Health Strategy.

Chart 1 presents diverse information about the care provided to the 13 children notified with congenital syphilis who attended all eight childcare consultations recommended by the Ministry of Health. Three had their mothers adequately treated. All of them presented gestational ages ≥ 37 weeks and birth weight > 2,500 grams. Two underwent the 30-day VDRL test, the results of which were only available for one child. None underwent VDRL at three, six, 12 and 18 months.

Eight children presented signs and symptoms suggestive of congenital syphilis; among them, three had long bone radiographies, and two underwent ophthalmological evaluations. Six were referred

to an outpatient clinic at a reference unit. The CSF evaluation was not performed on any child and eight were visited by the FHS team.

Chart 2 shows the PHC follow-up data for the 12 children notified with congenital syphilis that gestational ages ≤ 37 weeks and weight ≤ 2,500 grams at birth. Six mothers underwent the VDRL during prenatal care, and two of them were treated. Three children were born with extremely low birth weight; none attended the number of consultations recommended by the Ministry of Health for childcare follow-up; and, among those that underwent more consultations, the period does not meet the one established by the Ministry of Health. No child underwent the VDRL at one, three, six, 12 and 18 months. Three presented signs and symptoms compatible with congenital syphilis, and one was referred for consultation at a reference service.

## DISCUSSION

The findings of this study present a detailed description of childcare for children exposed to syphilis or notified with congenital syphilis in PHC. The sociodemographic characteristics of the mothers show young women, with low schooling levels, without sex partners and without a fixed income, a profile that is similar to the one found in other studies carried out in Brazil[17–18].

Good adherence to prenatal care was observed among mothers, and a considerable percentage of them attended at least six consultations. These findings are corroborated by other studies, which show that, although there is good prenatal coverage in Brazil[19], the assistance provided during this period has not been sufficient for the timely diagnosis and treatment of pregnant women with syphilis, so as to avoid vertical transmission[20].

A low proportion of pregnant women underwent the VDRL test, a situation that may have been due to the increasing implementation of the Rapid Test (RT) in the prenatal routine. It is worth noting that the MS recommends RT at the first consultation; and, for pregnant women with reactive results, a blood sample should be taken to perform the VDRL test, which aims at assessing the infection stage, as well as at monitoring and controlling post-treatment cure. The importance of carrying out RTs in all pregnant women at the first prenatal consultation is unquestionable, considering that they are practical and easy to perform tests, that their results are available in a maximum of 30 minutes and that, most importantly, they favor early treatment initiation[13].

Most of the mothers had low schooling levels, a worrying fact because it is one of the conditions related to the determining factors for syphilis during pregnancy[21], an aspect that can lead them to not attend prenatal care and experience greater difficulties caring for their newborns' health[22]. Drug use is also a factor associated with children's low attendance at childcare, a fact shown in a study carried out in Fortaleza, Ceará, which found that children born to drug-using mothers attend fewer follow-up appointments[23].

There was a considerable follow-up loss among the children in childcare over the months, a situation that is similar to the one found in another study also carried out in Fortaleza, Ceará, which evaluated the follow-up of children with congenital syphilis in PHC[20]. This serious follow-up loss problem shows that there seems to be certain difficulty on the part of mothers taking them for follow-up at the BHUs[24,25]. It is worth noting the proportion of children that attended their first childcare consultation and did not complete the recommended number of appointments. This alerts to the importance of PHC services monitoring these children and actively searching for those who miss the appointments.

It is noted that no premature or low birth weight child attended the number of consultations recommended by the Ministry of Health or was adequately evaluated for syphilis. This situation is worrying, as they presented health problems at birth, and lack of adequate follow-up might lead to deterioration of the clinical condition. There was no information in the medical records about whether or not these children remained hospitalized for a prolonged period of time after birth, which may

have compromised attendance at the BHUs. This finding shows that PHC units are passive in the process of monitoring and actively searching for children with congenital syphilis, who are generally part of more socially vulnerable population groups[8] and live in areas that are difficult to access. For this reason, it becomes necessary to identify strategies to reach this population segment, as well as to improve adherence to the consultations and, consequently, minimize losses.

Children should be monitored in PHC as early as possible in order to identify signs and symptoms suggestive of congenital syphilis, as well as to provide timely treatment and avoid possible sequelae of the infection. In addition, they live in regions located within the coverage areas of these units: therefore, these are the places to which the mothers are linked and where they received prenatal care.

The congenital syphilis diagnosis must be made through a careful clinical examination, laboratory and imaging tests. During a child's follow-up, it is recommended to request a VDRL test for diagnosis and therapeutic monitoring[13]. However, the number of children who did not undergo this examination stands out, making it impossible to carefully assess the clinical evolution and appropriately refer the case. Even among those who attended childcare, it was possible to observe faulty management behaviors, evidenced by the low proportion of recommended exams carried out, a situation also found in other studies conducted in different regions of the country[20,26].

For the monitoring of children to be effective, there should be articulation between the maternity hospital and the PHC units, with a view to scheduling the consultation upon discharge from the maternity hospital. It is evident that there are weaknesses in the assistance provided in childcare consultations for children exposed to syphilis or notified with congenital syphilis, shown by the low number of laboratory tests carried out to evaluate this condition. The study shows that the evaluation of physical examination, laboratory tests and health education are poorly implemented in the PHC everyday practice, meaning that childcare does not meet the requirements established by the children's health care guidelines[20,27,28].

It is believed that there could be better adherence to children's follow-up consultations if the mothers were informed about the likely consequences of congenital syphilis for the newborns during prenatal care, in the maternity hospital and at the first childcare consultation. A childcare consultation should be carried out in the third of pregnancy, with instructing pregnant women on general care for their newborn as one of its objectives. This consultation qualifies prenatal care and helps pregnant women receive important guidelines, especially when they are diagnosed with a vertically transmitted infection, such as syphilis[16,29].

This study had as a limitation the fact that it worked with secondary data, which makes it subjected to deficiencies related to incompleteness of the information, a situation evidenced in the SINAN notification forms and in the *Fastmedic*® medical records, which showed errors in filling out. It is possible that the low frequency of some records does not mean that the action was not performed but, rather, that it was not recorded.

## CONCLUSION

It is concluded that children exposed to syphilis or with congenital syphilis are not adequately monitored in PHC. Such findings show the need to implement monitoring and active search for children that fail to attend consultations and identify strategies for follow-up maintenance and adherence. On the other hand, it is necessary to qualify the professionals with regard to this theme, as well as to organize the health care network, aiming to guarantee both scheduling of the children's PHC consultations upon discharge from the maternity hospital and the performance of complementary exams. at the highest complexity level.

It is important to note the importance of the professionals working in PHC units who, even during prenatal consultations, can contribute with the due guidelines to the mothers on the importance

of monitoring their children, as well as detecting risk situations early in time, thus avoiding evolution and sequelae of the infection.

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## NOTES

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### CONTRIBUTION OF AUTHORITY

Study design: Oliveira FA, Araújo MAL.
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Discussion of the results: Oliveira FA, Araújo MAL, Barros VL.
Writing and/or critical review of the content: Oliveira FA, Araújo MAL, Barros VL, Guanabara MAO, Vasconcelos LDPG, Sena MVM.
Review and final approval of the final version: Oliveira FA, Araújo MAL, Barros VL, Guanabara MAO, Vasconcelos LDPG, Sena MVM.

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### CONFLICT OF INTEREST

There is no conflict of interest.



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