

# PREVALENCE OF POSITIVITY IN RAPID TEST FOR SYPHILIS IN CAMPAIGN IN NORTHEASTERN BRAZIL

## PREVALÊNCIA DE POSITIVIDADE EM TESTE RÁPIDO PARA SÍFILIS EM CAMPANHA NO NORDESTE DO BRASIL

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### ABSTRACT

**Introduction:** Syphilis is a systemic infectious disease caused by the *Treponema pallidum* bacterium of sexual transmission predominance. The cases diagnosed in Brazil increase each year, and the prevalence of syphilis during pregnancy is approximately 1%, but the reported number is lower than the expected, indicating difficulties in the diagnosis. Campaigns for the detection of syphilis are one of the strategies to enable early diagnosis and timely treatment. **Objective:** To survey the prevalence of rapid test reagent for syphilis and infection risk factors. **Methods:** Epidemiological, descriptive, transversal research. Collection was made in 2016's Carnival in the Piauí State capital, Teresina. Population was composed of individuals who agreed to voluntarily participate through express consent (n=532), 57% women and 43% men. The testing was carried out by trained professionals, initiated by the pre-test counseling through individual interview and guarantee of confidentiality of the information. Then, the rapid test was performed by blood puncture from the digital pulp. Finally, the result was passed through post-test counseling, guidance on prevention and referral of positive cases for further investigation of the infection. **Results:** The prevalence of rapid test reagents for syphilis was 5.4%. A predominance of males (65.5%), browns (45%), age group 29–39 years (38%), and singles (65.5%) was observed, 8 to 11 years of school education (34.4%), 52% were tested for the first time. Regarding sexual practice, 76% reported having one to five sexual partners in the last year, and only 24.1% reported using condoms with casual partners, and 55.2% affirmed no use of condoms with fixed partners. The use of alcohol and/or other drugs prior to intercourse was reported by 86.2%. **Conclusion:** The prevalence found justifies the need to intensify actions that increase access to diagnosis and timely treatment for the infection control. The study shows the importance of educational campaigns and cases detection due to the good adherence of the participants, and points out that strategies should be adopted to make the population aware of the increase in cases and the ways to prevent the disease.

**Keywords:** syphilis; prevalence; epidemiology.

### RESUMO

**Introdução:** A sífilis é uma doença infecciosa sistêmica causada pela bactéria *Treponema pallidum*, de transmissão predominantemente sexual. Os casos diagnosticados no Brasil aumentam a cada ano, e a prevalência da sífilis na gestação é de aproximadamente 1%, sendo o número notificado inferior ao esperado, indicando dificuldades no diagnóstico. Campanhas para detecção da sífilis é uma das estratégias para possibilitar o diagnóstico precoce e o tratamento oportuno. **Objetivo:** Levantar a prevalência de teste rápido reagente para sífilis e os fatores de risco à infecção. **Métodos:** Pesquisa epidemiológica, descritiva, transversal. A coleta foi realizada no carnaval de 2016, na capital piauiense, Teresina. A população foi composta dos que aceitaram participar voluntariamente com consentimento expresso (n=532), sendo 57% mulheres e 43% homens. A testagem foi realizada por profissionais capacitados e iniciou-se pelo aconselhamento pré-teste por meio de entrevista individual e garantia de sigilo das informações. Em seguida, fez-se o teste rápido mediante punção de sangue da polpa digital. Ao final, o resultado foi repassado por aconselhamento pós-teste, com orientações sobre prevenção e encaminhamento dos casos positivos para continuação da investigação da infecção. **Resultados:** A prevalência de testes rápidos reagentes para sífilis foi de 5,4%. Observou-se predominância no sexo masculino (65,5%), de pardos (45%), idade entre 29 e 39 anos (38%), solteiros (65,5%), com escolaridade entre 8 e 11 anos de estudo (34,4%). Do total, 52% realizava o teste pela primeira vez. Quanto à prática sexual, 76% afirmaram ter tido de um a cinco parceiros sexuais no último ano, apenas 24,1% relataram usar preservativos com parceiros eventuais, e 55,2% contaram não usar camisinha com parceiros fixos. O uso de álcool e/ou outras drogas previamente às relações sexuais foi relatado por 86,2%. **Conclusão:** A prevalência encontrada justifica a necessidade de se intensificar ações que possibilitem a ampliação do acesso ao diagnóstico e o tratamento oportuno para controle da infecção. O estudo permite deduzir a importância de campanhas educativas e de detecção de casos em virtude da boa adesão dos participantes, além de apontar que devem ser adotadas estratégias para tornar mais evidente à população o aumento dos casos e formas de prevenção da doença.

**Palavras-chave:** sífilis; prevalência; epidemiologia.

## INTRODUCTION

Syphilis is a systemic infectious disease caused by the *Treponema pallidum* bacterium of sexual transmission predominance. Relevant factors of syphilis transmission may be related to social, biological, behavioral and cultural aspects that influence the occurrence of the disease in the population<sup>(1)</sup>.

The World Health Organization (WHO) estimates that syphilis in pregnancy leads to more than 300,000 fetal and neonatal deaths per year worldwide, and adds 215,000 children to increased risk of premature death. The incidence of congenital syphilis estimated for Brazil was 3.51 per thousand live births, ranging from 1.35 per thousand in the Midwest to 4.03 per 1,000 in the Northeastern region. The number of diagnosed acquired syphilis cases in the country grows every year. In 2015, 65,878 acquired syphilis cases were reported, with the detection rate of 42.7 cases/100,000 inhabitants. It was observed that 32.8% of pregnant women with syphilis were diagnosed in the third quarter of pregnancy. The prevalence of syphilis in pregnancy is approximately 1%, but the notified number is lower than the expected, indicating difficulties of diagnosis<sup>(2)</sup>.

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Campaigns for the detection of syphilis are one of the strategies to enable early diagnosis and timely treatment. Testing for syphilis is recognized as a cost-effective measure<sup>(3,4)</sup>. The use of tests with immediate result has been indicated in places where access to laboratory tests is infrequent. The rapid treponemal tests (RT) show sensitivity and specificity similar to the treponemal tests performed in the laboratory. Its sensitivity and specificity are comparable to those of non-treponemal tests<sup>(5)</sup>.

## OBJECTIVES

Estimate the prevalence of positive serology for syphilis in treponemal test on active search campaign titled Fique Sabendo, in the city of Teresina, capital of Piauí State, Brazil; know the risk behavior of acquiring sexually transmitted diseases (STD); and verify the feasibility of RT for syphilis in campaigns in the population of the mentioned capital of Piauí State.

## METHODS

This is a transverse study in non-probability sample of the population above 18 years of age, both sexes, from the syphilis active search campaign titled Fique Sabendo through RT in the city of Teresina. Pregnant women were not included, since all of them are tested during prenatal at the Unified Health System (Sistema Único de Saúde — SUS).

The collection was performed in 2016 at the Carnival's day and night festivities in neighborhoods of the capital, Teresina. The approach of the participants was made in locations with the greatest concentration of revelers. During four days, 532 Rapid Check Sifilis RT were conducted.

The participants agreed to voluntarily take part in the research, by signing a free and informed consent form, with the guarantee of confidentiality of the reported information, and individualized care. The sample was outlined with the free population demand at the site of action in the period set for the campaign.

In the first stage, participants underwent pre-test counseling and responded to structured form containing sociodemographic information, sexual practices, use of alcohol/drugs, level of STD knowledge and antecedents, and participation in prevention activities. In the second step, treponemal RT was conducted, through the collection of blood in digital pulp. Following, in the final stage, the post-test counseling was carried out, and participants received a report describing the test result and information about syphilis, importance of diagnosis, symptomatology, possibility of asymptomatic infection, risk factors for acquisition and transmission. During the counseling, male and female condoms and lubricant gel sachets were available according to individual demand.

The positive results were given guidelines for performing the Venereal Disease Research Laboratory (VDRL) test to confirm the diagnosis, since the RT does not define the active disease, which might be a serological scar. Therefore, participants were referred to the public primary health care network closest to their home for clinical follow-up of the disease investigation. At that time, explanations were also given about understanding the outcome and the importance of timely and appropriate treatment.

The negative results were also discussed on immunological window, prevention importance through safe behavior, as well as information on syphilis testing locations in the city.

Simple descriptive statistics were used to achieve the objectives of determining the prevalence of positivity in the RT for syphilis. The research followed all ethical aspects, guaranteeing confidentiality, privacy, non-stigmatization and non-use of information to the detriment of participants, in accordance with the guiding principles set forth in Resolution no. 466/12 of the National Health Council, which approves rules and regulations of researches involving human beings.

## RESULTS

The sample was composed of 532 participants. The positivity of the RT in the sampled participants was 5.4%: 19 (65.5%) males and 10 (34.5%) females. It was observed a predominance among self-referred browns (45%), aged 29 to 39 (38%), singles (65.5%), with education between 8 and 11 years of study (34.4%) (**Table 1**).

**Table 2** shows the participants' distribution related to syphilis risk behavior; 52% performed the test for the first time. Regarding sexual practice, 76% reported having one to five sexual partners in the last year, only 24.1% reported using condoms with casual partners, and 55.2% said they did not use condoms with fixed partners. The use of alcohol and/or other drugs prior to intercourse was reported by 86.2%.

**Table 1** – Sociodemographic characteristics of the study population, related to the rapid test results for syphilis, Teresina, Piauí, 2016 (n=532).

Variables	Testing	
	Positive cases n (%)	Negative cases n (%)
Sex		
Male	19 (3.6)	513 (96.4)
Female	10 (2.0)	522 (98.0)
Race/Color		
White	6 (1.1)	526 (98.9)
Brown	13 (2.5)	519 (97.5)
Black	7 (1.7)	525 (98.6)
Other	3 (0.6)	529 (99.4)
Marital Status		
Single/Divorced/Widow	19 (3.6)	513 (96.4)
Married/Concubine/Common-law	10 (1.9)	522 (98.1)
Age (years)		
18–28	7 (1.4)	525 (98.6)
29–39	11 (2.0)	521 (98.0)
40–50	4 (0.8)	528 (99.2)
51–61	4 (0.8)	528 (99.2)
≥62	3 (0.6)	529 (99.4)
Education (years at school)		
None	1 (0.2)	531 (99.8)
<4	5 (1.0)	527 (99.0%)
4–7	8 (1.6)	524 (98.4)
8–11	10 (1.9)	522 (98.1)
>11	5 (1.0)	527 (99.0)

## DISCUSSION

This study's proposal was to describe the epidemiological profile, risk behavior and frequency of positivity for syphilis through treponemal test available to general population gathered in public space during Carnival festivities in the city of Teresina. The research was carried out through the campaign Fique Sabendo, considered as a prevention of STD, as it offers diagnosis screening through RT. Prevalence of syphilis (5.4%) was observed. National studies conducted with specific population living in the streets found prevalence between 5.7 and 7.0% in São Paulo<sup>(6,7)</sup>. Prevalence found in this study is considered high, as it was performed with the general population, in which the risks are diluted, and yet are similar to those in specific population, such as the homeless, who usually experience greater vulnerability situations every day.

Syphilis remains an important public health problem, despite having simple diagnostic and treatment methods. The RT for syphilis has been pointed out by the WHO as a tool for rapid diagnosis to be used in specific situations, such as the difficult access to services or laboratory supplies<sup>(8)</sup>. In this research, it was verified that more than half of those diagnosed with syphilis were tested for syphilis screening for the first time, which shows the insufficiency of the access to diagnosis, as well as the non-perception of health professionals to implement a routine testing request for people with active sex life. It was observed the feasibility of the RT in the population due to the good adherence of the participants through the research for the test even at the time of Carnival street festivity.

The availability of rapid testing to the population is a strategic action that proposes to improve access to diagnosis. Although it constitutes itself as triage, it indicates the chance of infection of those with active disease, because, according to the protocol, all reagent

screening cases are guided to the disease investigation and clinical management regarding treatment, notification and follow-up. Thus, it became one of the main goals established by the Brazilian Ministry of Health: in only 2016 more than six million RT were distributed in the country's health facilities<sup>(9)</sup>.

Despite being a health problem of easy diagnosis and available treatment, there is still a resurgence of this infection. These infection cases grow worldwide exponentially. In 2016, approximately 12 million people were diagnosed all over the world with the active disease, almost two-thirds in sub-Saharan Africa. In the Brazilian context, the growth of syphilis cases also calls attention. WHO estimates that 937,000 new cases occur every year<sup>(10,11)</sup>.

It should be emphasized that, in addition to early diagnosis, it is necessary to provide timely and adequate treatment to break the chain of transmission and, therefore, control the disease. benzathine penicillin was recognized by the 69<sup>th</sup> World Health Assembly, in May 2016, as an essential drug for the control of syphilis transmission, and has been globally experiencing shortages for some years. In Brazil, as in other countries, since 2014 there has been a shortage of benzathine penicillin due to the lack of raw material for its production worldwide. In addition to the shortage, data from the second cycle of the National Program for Improving Access and Quality of Primary Care (Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica — PMAQ-AB), in 2013/2014, indicate that only 55% of the family health groups administer benzathine penicillin in primary care, which may contribute to the increase of syphilis cases<sup>(2)</sup>.

Other important factors, including the fact that the infection is present in the female population of fertile age, are diagnosis and treatment of pregnant women, in order to prevent the serious consequences of congenital syphilis, and the best results are obtained when the treatment is received from the 24<sup>th</sup> to the 28<sup>th</sup> gestational week. In Brazil, there was a considerable increase in syphilis cases, mainly from 2014 to 2015, with 21% increase in congenital syphilis, reaching 19,228 cases. The adequate treatment with penicillin is able to prevent 97% of vertical transmission cases<sup>(9,12,13)</sup>.

Considering the public health point of view evidenced in this research, it is important to emphasize the issues related to vulnerabilities that increase the risk of infection. It was observed, for example, the high proportion of people who reported using alcohol and/or other drugs prior to intercourses, revealing the concern about the power these substances exert, as they lower the level of consciousness, directly influencing safe behavior and risk exposure. Taking into account the negative impact of this fact on the health of the population, actions associated with prevention interventions and integral health care should be taken.

It is also noticeable the low adherence to the use of condoms with both fixed and casual partners. It is known that syphilis is a marker of unprotected sex<sup>(7)</sup>. Thus, it is necessary to seek strategies to improve access and adherence to male and female condoms, through a facilitated availability in public places with large population movements, such as nightclubs, bars, universities, besides health education mechanisms to make the condom more attractive to the young adult audience.

It is necessary to overcome the failures in the implementation of syphilis control measures, and it is fundamental to look for differentiated strategies to reach the most vulnerable social groups, taking into account the socioeconomic and cultural contexts<sup>(14)</sup>.

**Table 2** – Behavioral characteristics of the study's participants regarding the risk exposure to syphilis, Teresina, Piauí, 2016 (n=532).

Variable	Rapid test results	
	Positive n (%)	Negative N (%)
Tested for syphilis previously		
Yes	14 (2.7)	518 (97.3)
No	15 (2.8)	517 (97.2)
Number of sexual partners in the last 12 months		
None	1 (0.2)	531 (99.8)
1–5	22 (4.2)	510 (95.8)
6–10	2 (99.6)	530 (99.6)
>11	1 (0.2)	531 (99.8)
Alcohol/drugs use before intercourse		
No alcohol or other drugs use	4 (0.8)	528 (99.2)
Alcohol	18 (3.4)	514 (96.6)
Drugs	7 (1.4)	525 (98.6)
Condom use with fixed partner		
Yes	5 (1.0)	527 (99.0)
No	16 (3.0)	516 (97.0)
Sometimes	8 (1.6)	524 (98.4)
Condom use with casual partner		
Yes	7 (1.4)	525 (98.6)
No	5 (1.0)	527 (99.0)
Sometimes	17 (3.2)	515 (96.8)

## Study limitation

This research has some limitations mainly caused by the methodology design (transverse) used, which does not allow the knowledge about the patients follow-up, such as: attendance at health facility for completion of treponemal test, treatment adherence in confirmed cases, notification and research of the scar tissue cases, as well as serological reception in primary health care.

## CONCLUSION

The prevalence found justifies the need to intensify actions that can increase access to diagnosis and timely treatment for the infection control. The study shows the importance of educational and case detection campaigns due to the good adherence of the participants. It also points out that strategies should be adopted to make information more evident to the population about the increase of cases and ways of preventing the disease.

## Conflict of interests

The authors declare no conflict of interests.

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