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# Syphilis in Brazil: Time of COVID-19

## Sífilis no Brasil: tempos de COVID-19

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**ABSTRACT**

Background: Sexually transmitted infections, such as syphilis, even though they have treatment, represent an important public health problem. In view of the pandemic brought about by the new coronavirus worldwide, changes in the incidence of syphilis in Brazil and in the state of Goiás were noticed. Methods: this is a descriptive, exploratory and retrospective observational study with integrative and systematic analysis. A search was carried out at the SUS IT Department (DATA-SUS), through the TABNET application. Results: the study identified the evolution of cases of acquired, gestational and congenital syphilis in Brazil and in the State of Goias. We can see a gradual increase over the years until 2018, but a slight decrease in 2019 and a significant reduction in 2020. Conclusion: we cannot conclude that social distancing reduced the disease transmission rate, since underreporting of cases can only be proven in a few years, when the number of visits to specialized clinics and the performance of diagnostic tests normalize.

**Keywords:** *Treponema pallidum;* Epidemiology; Pandemic; Coronavírus; STI.

**RESUMO**

Objetivo: Descrever a incidência da sífilis no Brasil e no Estado de Goiás nos últimos 10 anos e sua relação com a distância social ocasionada pela pandemia. Métodos: trata-se de um estudo observacional descritivo, exploratório e retrospectivo com análise integrativa e sistemática. Foi realizada busca no Departamento de Informática do SUS (DATA-SUS), por meio do aplicativo TABNET. Resultados: o estudo identificou a evolução dos casos de sífilis adquirida, gestacional e congênita no Brasil e no Estado de Goiás. Podemos observar um aumento gradual ao longo dos anos até 2018, mas uma ligeira diminuição em 2019 e uma redução significativa em 2020. Conclusão: não podemos concluir que o distanciamento social reduziu a taxa de transmissão da doença, uma vez que a subnotificação de casos só pode ser comprovada em alguns anos, quando o número de consultas em clínicas especializadas e a realização de exames diagnósticos se normalizam.

**Palavras-chave:** *Treponema pallidum*; Epidemiology; Pandemic; Coronavírus; STI.

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## INTRODUCTION

Sexually transmitted infections (STIs), such as syphilis, represent a serious public health problem in the world, especially in developing countries (Machado et al., 2021). Despite the existence of inexpensive and effective antibiotic treatment regimens, syphilis continues to have a profound impact on the reproductive, sexual and psychological health of the population (Kidd et al., 2018; Luo et al., 2021).

Syphilis is an infectious disease caused by the bacterium Treponema pallidum, which can be transmitted from person to person, through sexual contact or during pregnancy (vertical transmission). In the absence of adequate treatment, syphilis can progress to different stages, resulting in irreversible cardiovascular or neurological complications (Lasagabastera and Guerra, 2019).

The natural history of syphilis alternates in periods with different clinical, immunological and histopathological characteristics (primary, secondary and tertiary syphilis), which can be interspersed with latency periods, when there are no signs or symptoms (Gaspar et al., 2019). Primary syphilis is characterized by the appearance of lesions in genitals, called inguinal cancer or lymphadenopathy, which are usually painless and resolve spontaneously. The secondary phase is characterized by a maculopapular rash on the shoulders, arm, chest, or back and a gray papillomatous lesion in the perianal area, called condyloma lata. Tertiary syphilis, on the other hand, is characterized by destructive visceral, cardiovascular or neurological disorders, as well as severe skin lesions that affect untreated patients (Gaspar et al., 2019; Peeling et al., 2017).

Congenital syphilis is the infection of the fetus by Treponema pallidum that occurs via the transplacental hematogenous route, when the pregnant woman was infected and did not correctly treat the infection. In this case, the disease can occur regardless of the stage of pregnancy or clinical stage of the disease in the mother (Domingues et al., 2021).

In December 2019, an outbreak of pneumonia began in Wuhan, China, prompting an etiological and epidemiological investigation carried out by the Chinese Center for Disease Control and Prevention (CDC). As a result of this investigation, it was discovered that the etiology of this pneumonia was one of the viruses belonging to the Coronaviridae family, of the order Nidovirales, called the new coronavirus of 2019 (2019-nCoV) (Lu et al., 2020; Zhou et al., 2020).

The new coronavirus was later named SARS-CoV-2, due to its high similarity to SARS-CoV, which was identified in 2002 as the etiologic agent of an epidemic of severe

acute respiratory syndrome. Severe acute respiratory syndrome caused by the new coronavirus was then called COVID-19 (Coronavirus 19 Disease) (Huang et al., 2020; Lima et al., 2020). The rapid spread of the new virus across continents led the World Health Organization (WHO) to declare a pandemic. Since then, there has been a significant increase in human infections on all continents, which has led to the need for preventive measures such as the use of masks and social distancing (Nussbaumer-Streit et al., 2020).

The feeling of panic and fear of being exposed to the new coronavirus can make some people fail to pay proper attention to other infections or diseases that deserve serious care, such as syphilis. Thus, this paper aims to describe the incidence of syphilis in Brazil and the Goias State in the last 10 years and its relationship with the social distance caused by the pandemic.

## METHODS

This is a descriptive, exploratory and retrospective observational study with integrative and systematic analysis. A search was carried out on secondary data in the public domain and unrestricted access available at the SUS IT Department (DATA-SUS), through the TABNET application, referring to cases of syphilis reported in Brazil and in the state of Goias in the last 10 years.

## RESULTS AND DISCUSSION

### *Epidemiological Surveillance*

Strengthening epidemiological surveillance, government management, communication and education help to reduce the incidence of comorbidities. The integration of these sectors is the main objective of the Ministry of Health in the fight against syphilis in the country (Brasil, 2017).

The Notifiable Diseases Information System (SINAN) is a data collection system where it is possible to transmit and disseminate data collected by the government through the epidemiological surveillance system. This system uses the internet as a way to make

data more accessible to users in any part of the country, in addition to facilitating its feeding and avoiding duplication of data. SINAN collects important information in order to assist in the development of public policies to promote and protect the health of the population (Laguardia et al., 2004).

The information department of the Unified Health System (DATA-SUS) started its research and information in 1991. This body is managed by the Strategic and Participatory Management Secretariat of the Ministry of Health, with the purpose of collecting, processing and disseminating data on the health. The information collected by this department is available on TABNET.

When analyzing the distribution of cases of acquired syphilis according to sex, we conclude that, regardless of the year in question, the incidence is higher in men both nationally and in the State of Goiás. In all years analyzed, the number of confirmed cases secondary or tertiary congenital syphilis is lower than the other clinical classifications. Regarding gestational age, the number of cases in the third trimester was higher between 2010 and 2014 across the country, but as of 2015 notification in the first trimester was higher (Tables 1 and 2). Patients notified in the second or third trimester of pregnancy have a lower chance of their child being notified with congenital syphilis and pregnant women who exhibited primary clinical classification have a quarter of the chances of having their children notified with congenital syphilis, when compared to pregnant women with tertiary or latent classification (Favero et al., 2019).

Conjecturas

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**Table 1.** Syphilis cases1 in Brazil between 2010 and 2020.

| | Total | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Acquired Syphilis* | | | | | | | | | | | | |
| Men | 468,759 | 2,457 | 10,982 | 17,032 | 23,437 | 30,452 | 41,745 | 54,083 | 71,743 | 94,715 | 91,355 | 30,753 |
| Women | 314,234 | 1,468 | 7,219 | 10,872 | 15,868 | 20,060 | 27,534 | 37,048 | 50,285 | 64,144 | 61,399 | 18,337 |
| Cases | 783,544 | 3,925 | 18,207 | 27,913 | 39,315 | 50,544 | 69,307 | 91,201 | 122,097 | 158,966 | 152,915 | 49,154 |
| *Gestational syphilis - clinical classification* | | | | | | | | | | | | |
| Sífilis primária | 103,171 | 3,784 | 4,852 | 5,684 | 6,795 | 8,507 | 10,099 | 11,151 | 14,093 | 16,725 | 15,315 | 6,166 |
| Primary syphilis | 19,611 | 766 | 906 | 1,102 | 1,307 | 1,662 | 1,901 | 2,156 | 2,617 | 3,186 | 2,959 | 1,049 |
| Tertiary syphilis | 34,870 | 809 | 1,102 | 1,335 | 2,197 | 3,003 | 3,500 | 4,110 | 5,389 | 6,109 | 5,108 | 2,208 |
| Latent syphilis | 105,375 | 1,486 | 2,344 | 3,205 | 4,414 | 6,001 | 8,092 | 10,624 | 15,190 | 21,611 | 23,077 | 9,331 |
| Unrecognized | 94,143 | 3,255 | 4,544 | 5,106 | 6,192 | 7,443 | 9,183 | 10,239 | 12,527 | 15,551 | 14,668 | 5,435 |
| *Gestational syphilis - gestational age* | | | | | | | | | | | | |
| 1° trimester | 125,431 | 2,186 | 3,170 | 3,810 | 5,351 | 7,692 | 10,562 | 14,210 | 19,803 | 24,627 | 23,642 | 10,378 |
| 2° trimester | 98,523 | 3,299 | 4,318 | 5,097 | 6,645 | 8,164 | 9,764 | 11,003 | 13,896 | 15,863 | 14,788 | 5,686 |
| 3° trimester | 110,081 | 3,821 | 5,153 | 6,188 | 7,368 | 8,860 | 10,468 | 10,754 | 13,397 | 18,740 | 18,553 | 6,779 |
| Gestational age unrecognized | 21,636 | 764 | 1,107 | 1,337 | 1,541 | 1,190 | 1,977 | 2,238 | 2,555 | 3,663 | 3,972 | 1,292 |
| Unrecognized | 461 | 1 | - | - | - | - | 3 | 54 | 87 | 90 | 172 | 54 |
| *Congenital syphilis - child's age* | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Under 7 days | 188,759 | 6,646 | 9,153 | 22,234 | 13,498 | 15,755 | 18,997 | 20,529 | 24,218 | 25,662 | 23,396 | 8,671 |
| 7 to 27 days | 3,208 | 162 | 188 | 207 | 231 | 270 | 337 | 355 | 376 | 439 | 468 | 175 |
| 28 to 364 days | 2,741 | 138 | 146 | 193 | 243 | 285 | 306 | 370 | 368 | 340 | 266 | 86 |
| 1 years old | 270 | 7 | 13 | 21 | 27 | 18 | 35 | 36 | 34 | 27 | 42 | 10 |
| 2 to 4 years old | 179 | 5 | 9 | 12 | 5 | 18 | 28 | 28 | 20 | 19 | 28 | 7 |
| 5 to 12 years old | 121 | 5 | 7 | 11 | 4 | 7 | 9 | 12 | 15 | 25 | 22 | 4 |
| Unrecognized | 15 | - | - | - | - | - | - | - | 3 | 5 | 5 | 2 |
| *Congenital syphilis - final diagnosis* | | | | | | | | | | | | |
| Recent congenital syphilis | 171,048 | 6,358 | 8,685 | 10,623 | 12,970 | 15,081 | 18,270 | 19,890 | 23,298 | 24,834 | 22,637 | 8,402 |
| Late congenital syphilis | 351 | 32 | 16 | 25 | 10 | 25 | 39 | 40 | 38 | 48 | 56 | 22 |
| Abortion because of syphilis | 6,657 | 278 | 375 | 456 | 473 | 628 | 708 | 739 | 894 | 903 | 899 | 304 |
| Stillborn due to syphilis | 6,243 | 295 | 440 | 574 | 555 | 619 | 695 | 661 | 807 | 746 | 611 | 240 |
| *Congenital syphilis - prenatal care* | | | | | | | | | | | | |
| Yes | 146,156 | 5,088 | 6,984 | 8,557 | 10,482 | 12,666 | 15,479 | 17,323 | 20,455 | 21,683 | 20,163 | 7,276 |
| No | 27,574 | 1,368 | 1,842 | 2,411 | 2,597 | 2,745 | 2,931 | 2,884 | 3,286 | 3,554 | 2,896 | 1,060 |
| Unrecognized | 10,619 | 507 | 690 | 710 | 929 | 942 | 1,302 | 1,123 | 1,296 | 1,294 | 1,194 | 632 |
| *Congenital syphilis - time of diagnosis* | | | | | | | | | | | | |
| During prenatal | 97,324 | 2,888 | 4,034 | 4,943 | 6,289 | 7,912 | 10,150 | 12,261 | 14,426 | 15,251 | 14,222 | 4,948 |
| At the time of delivery/curettage | 63,350 | 2,955 | 3,909 | 4,834 | 5,438 | 5,965 | 6,838 | 6,584 | 7,857 | 8,438 | 7,634 | 2,898 |
| After delivery | 14,345 | 784 | 1,107 | 1,275 | 1,478 | 1,663 | 1,612 | 1,558 | 1,634 | 1,486 | 1,229 | 519 |
| Unrealized | 1,180 | 56 | 53 | 61 | 98 | 107 | 119 | 107 | 152 | 196 | 171 | 60 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unrecognized | 8,150 | 280 | 413 | 565 | 705 | 706 | 993 | 820 | 968 | 1,160 | 997 | 543 |
| *Congenital syphilis - maternal treatment scheme* | | | | | | | | | | | | |
| Adequate | 8173 | 275 | 305 | 373 | 425 | 595 | 802 | 853 | 1,115 | 1,474 | 1,462 | 494 |
| Inappropriate | 101,116 | 3,214 | 4,548 | 6,292 | 7,977 | 9,546 | 11,219 | 12,523 | 14,312 | 14,481 | 12,661 | 4,343 |
| Unrealized | 52,735 | 2,746 | 3,662 | 3,712 | 3,915 | 4,419 | 5,361 | 5,635 | 6,596 | 7,043 | 6,825 | 2,821 |
| Unrecognized | 22,325 | 728 | 1,001 | 1,301 | 1,691 | 1,793 | 2,330 | 2,319 | 3,014 | 3,533 | 3,305 | 1,310 |

[1]Data until 06.30.2020.

Source: MS/SVS/Department of Chronic Diseases and Sexually Transmitted Infections; 2020.

**Table 2.** Syphilis cases1 in Goias State between 2010 and 2020.

| | Total | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Acquired Syphilis* | | | | | | | | | | | | |
| Men | 12142 | 56 | 81 | 98 | 186 | 292 | 731 | 1235 | 1500 | 3195 | 3456 | 1312 |
| Women | 6609 | 48 | 62 | 86 | 147 | 182 | 418 | 681 | 915 | 1619 | 1821 | 630 |
| Cases | 18822 | 104 | 143 | 184 | 333 | 474 | 1149 | 1916 | 2415 | 4816 | 5310 | 1978 |
| *Gestational syphilis - gestational age* | | | | | | | | | | | | |
| 1° trimester | 2993 | 75 | 99 | 119 | 125 | 168 | 202 | 258 | 409 | 626 | 672 | 240 |
| 2° trimester | 4319 | 144 | 139 | 211 | 331 | 382 | 394 | 406 | 643 | 693 | 731 | 245 |
| 3° trimester | 3760 | 99 | 119 | 178 | 301 | 324 | 404 | 390 | 423 | 647 | 650 | 225 |
| Gestational age unrecognized | 398 | 19 | 18 | 33 | 57 | 41 | 32 | 41 | 39 | 45 | 58 | 15 |
| Unrecognized | 0 | - | - | - | - | - | - | - | - | - | - | - |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Congenital syphilis - child's age* | | | | | | | | | | | | |
| Under 7 days | 167,8 | 8,6 | 10,7 | 10,9 | 20,1 | 20,9 | 18,6 | 19,5 | 58,5 | - | - | - |
| 7 to 27 days | 3,5 | - | 0,4 | 0,1 | 0,5 | 0,8 | 0,5 | 0,2 | 1 | - | - | - |
| 28 to 364 days | 3,5 | 0,5 | 0,5 | 0,4 | 0,5 | 0,5 | 0,3 | 0,2 | 0,6 | - | - | - |
| 1 years old | 0,4 | - | - | - | 0,1 | - | - | 0 | 0,3 | - | - | - |
| 2 to 4 years old | 0,1 | - | - | - | - | 0,1 | - | - | - | - | - | - |
| 5 to 12 years old | 0,1 | - | - | 0,1 | - | - | - | - | - | - | - | - |
| Unrecognized | 0 | - | - | - | - | - | - | - | - | - | - | - |
| *Congenital syphilis - final diagnosis* | | | | | | | | | | | | |
| Recent congenital syphilis | 3353 | 69 | 107 | 113 | 224 | 326 | 368 | 400 | 416 | 505 | 569 | 256 |
| Late congenital syphilis | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Abortion because of syphilis | 64 | 3 | 0 | 0 | 3 | 1 | 9 | 8 | 6 | 18 | 12 | 4 |
| Stillborn due to syphilis | 117 | 2 | 0 | 5 | 5 | 9 | 13 | 14 | 15 | 21 | 19 | 14 |
| *Congenital syphilis - prenatal care* | | | | | | | | | | | | |
| Yes | 2712 | 60 | 85 | 89 | 174 | 250 | 282 | 309 | 335 | 416 | 498 | 214 |
| No | 611 | 11 | 19 | 29 | 52 | 68 | 75 | 80 | 73 | 91 | 69 | 44 |
| Unrecognized | 215 | 3 | 3 | 1 | 6 | 19 | 33 | 33 | 29 | 38 | 34 | 16 |
| *Congenital syphilis - time of diagnosis* | | | | | | | | | | | | |
| During prenatal | 2046 | 33 | 60 | 45 | 110 | 184 | 209 | 227 | 275 | 324 | 412 | 167 |
| At the time of delivery/curettage | 920 | 18 | 19 | 41 | 65 | 70 | 114 | 114 | 117 | 157 | 139 | 66 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| After delivery | 396 | 10 | 26 | 26 | 43 | 66 | 51 | 62 | 35 | 37 | 20 | 20 |
| Unrealized | 39 | 4 | - | 2 | 3 | 4 | 7 | 5 | 3 | 4 | 6 | 1 |
| Unrecognized | 137 | 9 | 2 | 5 | 11 | 13 | 9 | 14 | 7 | 23 | 24 | 20 |
| *Congenital syphilis - maternal treatment scheme* | | | | | | | | | | | | |
| Adequate | 213 | 3 | 2 | 8 | 14 | 17 | 9 | 10 | 13 | 51 | 65 | 21 |
| Inappropriate | 2027 | 34 | 44 | 53 | 134 | 212 | 272 | 285 | 306 | 280 | 295 | 112 |
| Unrealized | 920 | 28 | 47 | 52 | 64 | 74 | 85 | 94 | 87 | 143 | 138 | 108 |
| Unrecognized | 378 | 9 | 14 | 6 | 20 | 34 | 24 | 33 | 31 | 71 | 103 | 33 |

1Data until 06.30.2020.

Source: MS/SVS/Department of Chronic Diseases and Sexually Transmitted Infections, 2020.

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The notification of cases of congenital syphilis is greater in newborns (up to 7 days) and tends to decrease with increasing age, probably due to the proximity to birth and the proper perinatal exams. Furthermore, the recent diagnosis of congenital syphilis is extremely superior to the number of late diagnosis (Table 1). Both observations are relevant and should be highlighted, since early diagnosis is crucial for advance treatment of the disease in order to minimize future sequelae and prevent unfavorable pregnancy outcomes for mother and child (Damasceno et al., 2014).

Approximately 79% of all notifications of congenital syphilis cases in Brazil and 77% in Goias went through prenatal care, with 87% of national notifications and 84% in Goias being diagnosed during prenatal care or childbirth/curettage (Table 1 and 2). The same was described by Favero et al. (2019), who analyzed the relationship between notification and prenatal care for pregnant women with syphilis in Maringa (Parana State). The authors reported that 94% of children described with congenital syphilis were born to mothers who had received prenatal care, with 78% of them diagnosed during pregnancy and 11% after delivery. However, only 43% of cases were born to mothers who received adequate treatment during pregnancy. The authors also described that only 46% of the partners of pregnant women diagnosed with syphilis underwent concomitant treatment. This low adherence to the partner's treatment indicates a high risk of the pregnant woman being recontaminated during pregnancy and transmitting to her fetus. In addition, the researchers point to possible flaws in the public health system and indicate the need to improve the quality of prenatal care, as well as the underreporting related to the low performance of diagnostic tests.

The notification of abortion and stillbirth because of syphilis increased between 2010 and 2018, but it decreased significantly in 2020. These cases represent a total of 7% of the notifications of congenital syphilis cases in the country and 5% in Goias. This fact can be justified by the lack adequate treatment of pregnant women, since we can observe that 55% of pregnant women underwent inadequate treatment throughout the country and 57% in the state of Goias (Table 1 and 2).

When carrying out a cross-sectional study at the Dona Regina Reference Hospital, located in Palmas-TO, Konka & Lago17 reported that in 2004 there were five fetal losses and 23 live births with congenital syphilis, of which 87% had weight greater than 2. 5 kg.

One child presented clinical symptoms with septicemia, but the others did not show changes on physical examination. Five newborns were submitted to complementary evaluation, one of which showed CSF alteration and one alteration on long bone X-ray.

*Time Of COVID-19*

When we observe the evolution of cases of acquired, gestational and congenital syphilis in Brazil (Table 1) and in the State of Goias (Table 2), we can see a gradual increase until 2018, but a slight decrease in 2019 and a significant reduction in 2020.

The increase in the notification of cases between 2010 and 2018 can be explained by the increase in syphilis detection rates, which may have been driven by the organization of health services and awareness of professionals (Saraceni et al., 2017). On the other hand, we can relate the pandemic we experienced in the last year to the reduction in the incidence of syphilis in 2020, since this disease is contagious and social distance has significantly reduced human contact. Thus, we can infer that quarantine was beneficial not only to reduce the spread of Corona virus, but probably other pathogens as well. However, it should be noted that it is not possible to show whether this reduction in the number of cases is because of a reduction in contagion or just an underreporting, caused by a decrease in testing, a reduction in the demand for medical care, and a decrease in the frequency of screening campaigns. If we have gone through underreporting, in the coming years we will see a significant increase in the number of cases.

The same was observed by Crane et al. (2021) in the United States of America, which informed a 20% reduction in reporting chlamydia, 3% gonorrhea, but a 5.5% increase in syphilis cases in the first 40 weeks of the pandemic. However, after 40 weeks an 18% reduction in the occurrence of chlamydia and 7% of syphilis was observed. However, like us, the authors reported that it is not possible to determine whether there was a reduction in contagion or just an underreporting. The authors suggest that measures should be taken to encourage home testing.

A survey conducted in Rhode Island (USA) analyzed the number of visits to the main clinic in the province dedicated to the care of sexually transmitted infections (STI's) during the pandemic, divided into 3 periods: (1) pre-COVID-19 (September 1st, 2019 to February 29, 2020); (2) evolution (March 1st, 2020 to April 11, 2020; and (3) plateau (April 12, 2020 to May 13, 2020). The researchers observed that during the evolution phase there was a reduction by 55 % in the total number of visits, 60% in

screening and 62% in the number of consultations for treatment compared to the pre-COVID-19 phase. In the plateau phase, this decrease was even more significant, as they observed a reduction of 84% in the total number of clinical visits, 100% in screening visits and 77% in treatment. To solve the problem, the clinic resorted to telemedicine, but they did not provide screening tests by this modality (Tao et al., 2021).

A study carried out in New York, USA, between April 20 and July 8, 2020 – beginning of social distancing –, with a sample of 108 patients who sought the team for preventive routine follow-up and filled in all the data online, reported that, among the 87 individuals who sent the kits for analysis, 8 patients had a positive diagnosis for gonorrhea and 14 for chlamydia, all asymptomatic. There were no reports of HIV-positive test results from the self-administered OraSure HIV test. One limitation of this pilot study was the lack of syphilis testing and the other is the lack of availability of fourth-generation HIV testing at home. The authors concluded that home collection, like telemedicine, can offer patients an alternative to quarterly visits, which, in turn, can help with initiation and retention of PrEP and, at the same time, spare 0patients from in-person visits. An alternative in times of social distance (Carnevale et al., 2021).

However, there are barriers to large commercial or state laboratories adopting plans to process samples collected at home, including the need to carry out validation studies to modify the package insert and proof that assays collected at home have good precision of the pre-analytical component, in addition to the post-analytical phase for release by the Food and Drug Administration (FDA). The exclusion of some groups of people because of the language and literacy barriers, as well as limitations on Internet access or a stable home address are other obstacles to using tests at home (Melendez et al., 2021).

Another factor that must be taken into account is the way people relate, which has been changing more and more. Before the pandemic, the number of encounters caused by apps such as Tinder or Match Group only increased, but the pandemic may have influenced the number of users. With that in mind, Lozic (2021) analyzed these applications and concluded that the number of Match Group users increased by 5.9% in the third quarter of 2019 and 7.3% in the same period in 2020, while the Tinder grew by 9.6% in the third quarter of 2019 and 6.5% in 2020. Despite this, researchers report that the trend of users is variable depending on the situation with the pandemic, however, the number of users of the Tinder continues to grow, despite being a digressive growth.

Despite going against what is expected about measures of social distancing, this fact can be justified by the need that individuals felt to make new friends and keep busy.

An online survey conducted in the UK found that of the 868 individuals who responded to questions about sexual practice during self-isolation/social distancing, 39.9% reported having sexual activity at least once a week. In addition, they described some variables dependent on this fact, such as being male, being young, being married or in a stable relationship, consuming alcohol and being isolated for a greater number of days (Jacob et al., 2020). Thus, we can observe that the fact of being married or in a stable relationship is a dependent variable for sexual practice can reduce the spread of STIs.

## CONSIDERATIONS

The self-isolation/social distancing caused by the pandemic triggered a reduction in the number of notifications of syphilis cases throughout Brazil, as observed in another study carried out in the USA. However, we cannot conclude that social distancing reduced the disease transmission rate, since underreporting of cases can only be proven in a few years, when the number of visits to specialized clinics and the performance of diagnostic tests normalize.

More studies are suggested that relate the reporting of cases of syphilis and other sexually transmitted infections with the years 2020 and 2021. In addition to studies that analyze the effect of the pandemic on changes in the behavior of individuals regarding the rigor in choosing partners.

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