

Tropical medicine rounds

Impact of the COVID-19 pandemic on the diagnosis of new leprosy cases in Northeastern Brazil, 2020

Thais Silva Matos¹, MSc,  Vanessa Almeida do Nascimento², MSc,  Rodrigo Feliciano do Carmo^{3,4}, PhD,  Tânia Rita Moreno de Oliveira Fernandes⁵, MD, PhD,  Carlos Dornels Freire de Souza², PhD  and Tarcísio Fulgêncio Alves da Silva¹, PhD 

¹Programa de Pós-Graduação em Reabilitação e Desempenho Funcional (PPGRDF), Universidade de Pernambuco (UPE), Petrolina, Brazil, ²Programa de Pós-Graduação em Saúde da Família (PROFSAÚDE), Universidade Federal de Alagoas (UFAL), Maceió, Brazil, ³Programa de Pós-Graduação em Ciências Biológicas e da Saúde, Universidade Federal do Vale do São Francisco (UNIVASF), Petrolina, Brazil, ⁴Programa de Pós-Graduação em Biociências, Universidade Federal do Vale do São Francisco (UNIVASF), Petrolina, Brazil, and ⁵Universidade Federal do Vale do São Francisco (UNIVASF), Petrolina, Brazil

Correspondence

Carlos Dornels Freire de Souza, PhD
Programa de Pós-Graduação em Saúde da Família (PROFSAÚDE)
Universidade Federal de Alagoas (UFAL)
Maceió
Alagoas
Brazil
E-mail: carlos.freire@arapiraca.ufal.br

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Introduction

In early December 2019, an outbreak of coronavirus disease 2019 (COVID-19), caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), occurred in Wuhan City, Hubei Province, China.¹ On March 11, 2020, the World Health Organization (WHO) declared the outbreak a pandemic.²

In Brazil, the first case was confirmed in February 26.³ The arrival of the disease in the Brazilian territory brought additional challenges, with a real burden on the public health system and potential effects in coping with other prevalent diseases in the

Abstract

This study analyzed the impact of the COVID-19 pandemic on the detection of new cases of leprosy in the state of Bahia, Brazil. The periods January–September 2019 and January–September 2020 were compared. There was a 44.40% reduction in the diagnosis of leprosy when comparing the two periods (1,705 in 2019 and 948 in 2020). There was a reduction in the number of municipalities with reported cases: 251 municipalities in 2019 and 202 in 2020, expressing a reduction of 24.25%. Considering only the months following the arrival of the virus (April–September), the reduction was 51.10%. An inverse correlation was observed between the number of new cases of leprosy and the cumulative number of cases of COVID-19 (Spearman's correlation coefficient = -0.840 ; $P < 0.001$) and the number of new monthly cases of COVID-19 (Spearman's correlation coefficient = -0.817 ; $P < 0.001$). A slight increase was also observed in the proportion of multibacillary cases in the state (70.38% in 2019 and 72.69% in 2020) as well as in the proportion of individuals with the degree of physical disability not assessed at diagnosis, whose proportion rose from 16.39% in 2019 to 22.53% in 2020. The negative impact of COVID-19 in tackling leprosy should be seen as a warning sign for health and political authorities.

country, among which stand out the neglected diseases such as leprosy, leishmaniasis, schistosomiasis, among others.

The state of Bahia, the setting of this study, is located in the Northeast region of Brazil. It is the largest state in the Northeast, with 417 municipalities, and the fifth largest in Brazil. It has an estimated population for 2020 of 14.9 million inhabitants.⁴ The first case of COVID-19 in the state was registered on March 6, 2020. In September 30, the date of the study, Bahia occupied the fifth national position in the number of cases of COVID-19 (Brazil = 4.8 million; Bahia = 310,526), with an incidence rate of 2,087.84/100,000 inhabitants, and the second position in number of deaths (Brazil = 143.9 thousand; Bahia

6,744 deaths), with a mortality rate of 453.44/100,000 inhabitants.⁵

The adoption of nonpharmacological measures to reduce contamination by COVID-19 in the population, such as social distancing and mobility restrictions, has reached specialized health services, bringing changes in the routine of these outpatient clinics (adjustments of schedules and number of attendances, removal of infected health professionals, among others).² On the other hand, fear has reduced the population's demand for health services for other diseases.

Among the diseases affected, leprosy stands out, a potentially disabling infectious disease when diagnosed and treated late.⁶ In the global scenario, the country occupies the first position in the prevalence coefficient and the second position in number of patients. In 2019, 23,612 new cases of the disease were diagnosed in Brazil.⁷

Therefore, this study analyzed the impact of COVID-19 on the detection of new cases of leprosy in the state of Bahia, northeast Brazil, between the months of January and September 2019 and 2020.

An ecological study was carried out with all new registered cases of leprosy in residents of the state of Bahia between January and September 2019 and 2020. In addition to the number of cases, the proportion of cases was analyzed according to operational classification (paucibacillary and multibacillary) and

according to the degree of physical disability at the time of diagnosis (grade zero, grade I, grade II, and not assessed). Data were extracted from the Health Surveillance Superintendence (<http://www3.saude.ba.gov.br/cgi/deftohtm.exe?sinan/hans.def>). Initially, the spatial distribution of the number of new cases detected by municipality of residence was carried out, and then the percentage of variation in the detection of new cases was calculated according to the month of notification. The correlation between the number of new leprosy cases and COVID-19 in the period was tested using Spearman's nonparametric correlation. The proportion of multibacillary cases and according to the degree of disability was assessed over the time series. The time trend on a logarithmic scale was also performed. Significance of 5% was considered. Since secondary data were used, the Ethics Committee was not required.

When comparing the two years analyzed, we observed a reduction in the number of municipalities with notification of leprosy cases: 251 municipalities in 2019 and 202 in 2020, expressing a reduction of 24.25%. The number of municipalities without a record of the disease went from 165 (39.57%) to 215 (51.56%). The municipalities of Salvador, capital of the state, and Juazeiro, in the northern region, are the municipalities with the highest number of registrations in 2019 (214 and 83, respectively). In 2020, they registered 128 (−40.19%) and 56 (−32.53%), respectively (Fig. 1).

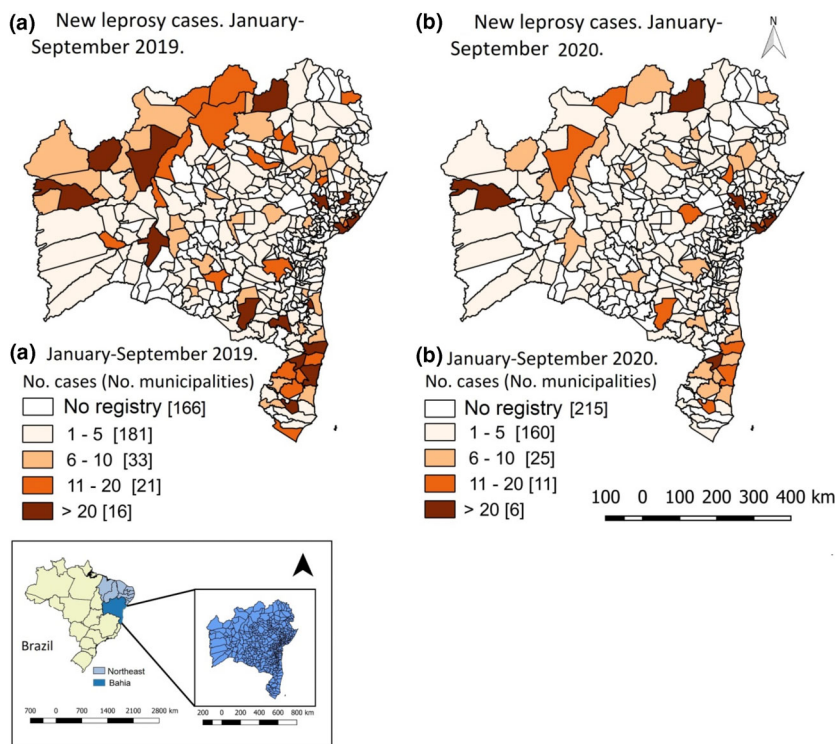
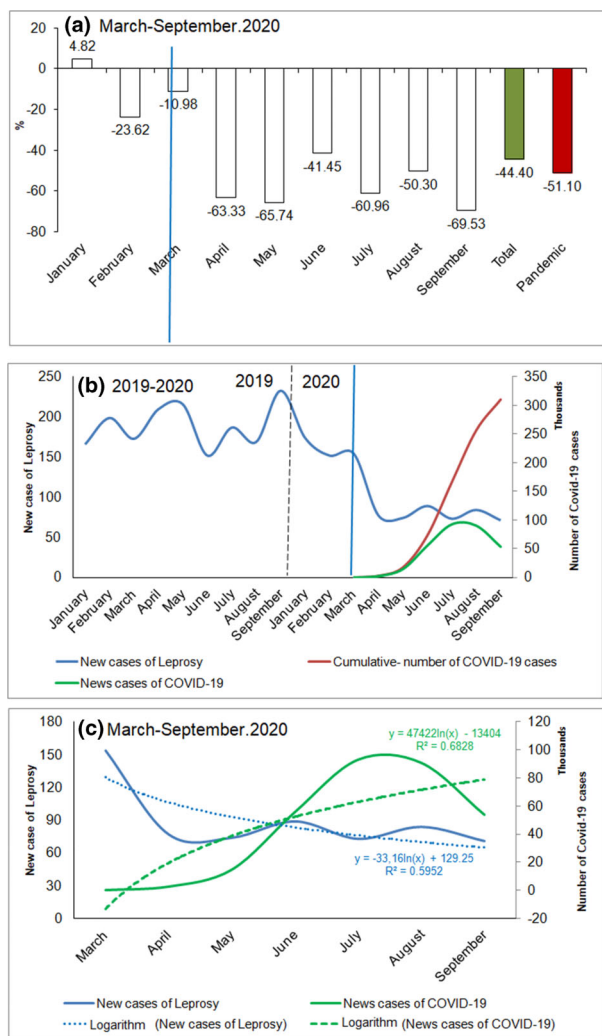


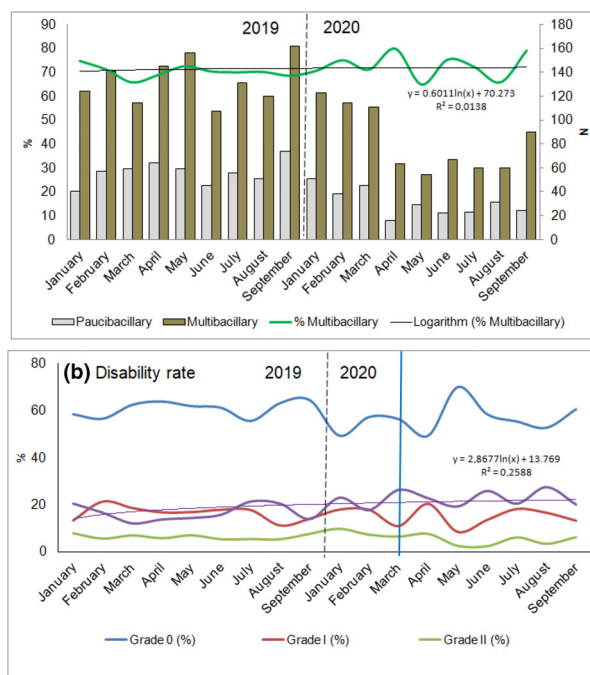
Figure 1 Spatial distribution of new leprosy cases diagnosed between (a) January–September 2019 and (b) January–September 2020. Bahia, Brazil, 2020



Legend
 — Confirmation of the first case of COVID-19 in Bahia: March 6, 2020.
 — Pandemic: April to September 2020. Percentage change in relation to 2019.

Figure 2 Impact of the COVID-19 pandemic on the detection of new leprosy cases in the state of Bahia, Brazil, 2020. (a) Percentage change in new cases of leprosy compared to 2019; (b) number of new cases of leprosy during the period evaluated, as well as the number of new and accumulated cases of COVID-19; and (c) correlation between the number of leprosy cases and COVID-19

Between January and September 2019, the state of Bahia registered 1,705 new cases of leprosy in residents. In 2020, there was a reduction of 44.40% (948 confirmed cases). Considering only the months following the arrival of the new coronavirus in the state (March), this reduction was 51.10% (957 confirmed cases in 2019 and 468 in 2020). It is noteworthy that in the following month (April), the reduction was 63.33% (Fig. 2a). Additionally, an inverse correlation was observed between the number of new leprosy cases and the cumulative number of COVID-19 cases (Spearman's correlation



Legend
 — Confirmation of the first case of COVID-19 in Bahia: March 6, 2020.

Figure 3 Impact of COVID-19 on (a) operational classification and (b) disability rate due to leprosy in the state of Bahia, Brazil, 2020

coefficient = -0.840 ; $P < 0.001$) and the number of new monthly cases of COVID-19 (Spearman's correlation coefficient = -0.817 ; $P < 0.001$) (Fig. 2b). Between March and September 2020, there was a growing trend in the number of new cases of COVID-19 and a downward trend in the number of new cases of leprosy (Fig. 2c).

When we evaluated the number of multibacillary cases in the state, we observed a similar distribution in the two years studied: 70.38% in 2019 and 72.69% in 2020 (Fig. 3a). Regarding the degree of physical disability, there was an increase in the proportion of nonassessed individuals, whose proportion rose from 16.39% in 2019 to 22.53% in 2020. In addition, we observed a slight decline in the proportions of individuals without incapacity (from 60.95 to 56.12%), grade I (from 16.33 to 15.18%) and grade II (from 6.33 to 6.17%) (Fig. 3b).

The observed decrease in the number of new leprosy cases registered in the state may indicate a major setback in the fight against leprosy caused by the pandemic of COVID-19, both because of the decrease in the number of diagnoses made and because of the operational losses that the pandemic caused in leprosy surveillance programs. The potential result is an increase in the hidden prevalence of leprosy and maintenance of the transmission chain in the community.

In the state of Bahia, between 2010 and 2019, 23,845 new cases of leprosy were registered, with an annual average of 2,384 cases.⁷ During this period, the annual percentage

reduction in cases was 2.9%. Therefore, by 2020, it was expected that at least 2,020 new cases would be registered.

The social impact of the *almost certain* setback in coping with leprosy is another issue that deserves attention. This is due to two reasons: First, leprosy is a disease strongly associated with the living conditions of the population in a dual relationship,⁸ *both perpetuated by poverty and perpetuating it*; second, the late diagnosis increases the risk of physical disabilities, impacting on problems such as social segregation, prejudice, and financial and psychosocial losses to the individual and their family members.^{6,7}

Studies carried out in the states of Alagoas⁹ and Bahia¹⁰ point to the existence of a high hidden prevalence of the disease. High proportions of multibacillary cases and individuals with grade 2 physical disability in the diagnosis, associated with poor contact control and a cure rate still far from ideal, were challenges even before the arrival of COVID-19 in the country.^{9,10} In times of pandemic and in the post-pandemic future, these challenges will become even more serious and will require a greater commitment from the Brazilian public authorities.

Other situations make the problem even more serious: the absence of the diagnosis of children and individuals with reactive episodes, multibacillary forms, and with physical disabilities. Although this study has not evaluated these issues, we recommend that these aspects be considered in the elaboration of strategies for coping with the disease in times of pandemic.

In addition to the challenge of maintaining disease surveillance actions, there is also a need to protect leprosy patients from possible contamination by COVID-19.¹¹ There are no studies on COVID-19/leprosy coinfection that can answer whether COVID-19 can worsen the clinical picture of individuals with leprosy or if leprosy can be a risk factor for worsening COVID-19. These issues must be urgently investigated.

In order to mitigate the impacts, important actions have been taken by scientific and political authorities in the country. The Brazilian Society of Hansenology (SBH) launched the "Guidelines for people affected by leprosy during the COVID-19 pandemic".¹¹ The document provides recommendations in order to improve the flow of services and reduce the exposure of leprosy patients, among which the orientation that patients should, as far as possible, receive the multidrug therapy (MDT) blister pack for 2 or 3 months in order to avoid going to health services.¹¹ The Ministry of Health (MOH),¹² in turn, recommended that the outpatient clinics/health unit develop strategies to prevent groups at risk for COVID-19 from moving to health units. For this, the MDT could be delivered to a person responsible for the individual or be done by a health professional by home visit.

Finally, this study warns of the negative impacts of the COVID-19 pandemic on the fight against leprosy in Brazil. This impact results from the set of actions implemented to contain the expansion of contamination by the new coronavirus, such

as social distance, reduction in the number of people in ambulatories, among others. Although the recommendations proposed by the scientific authorities are important, practical measures must be taken in order to maintain actions to fight the disease and protect patients with leprosy.

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