Impact of COVID-19 on TB diagnosis in Northeastern Brazil

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Dear Editor,

COVID-19 has quickly spread across all continents.[1] In Brazil, the disease was confirmed on 26 February 2020, and by 23 August 2020 globally there were 23.2 million cases and 805,000 deaths. Of these, 3.5 million cases and 114,000 deaths have been registered in Brazil, making it one of countries most affected by COVID-19.[2]

Globally, non-pharmacological measures aimed at containing transmission of the virus, slowing the peak of the epidemic curve and reducing the burden on health systems were widely recommended and adopted.[3] Among these measures, social distancing, restricting mobility and changes in the function of health services, although necessary, have a side effect in the fight against other diseases, with TB meriting special attention. TB is an infectious disease caused by *Mycobacterium tuberculosis*, which in 80% of cases affects the lung. It is estimated that a quarter of the world population is infected with TB, and annually, there are 10 million people

diagnosed and 1.5 million deaths.[4] TB is a disease associated in many cases with social and economic vulnerability which can easily be aggravated by COVID-19, constituting a perfect storm.[5] In Brazil, approximately 71,000 TB cases are diagnosed annually and 4,500 deaths occur.[6] For this reason, we wanted to analyse the impact of COVID-19 on the diagnosis of new cases of TB in the state of Bahia, Brazil.

An ecological study was conducted involving all new cases of TB registered in Bahia, Brazil. The state is the fifth largest in the country and has the fourth largest population (15.1 million inhabitants). TB notifications were compared in two time periods: records made between January and July 2019 and records made between January and July 2020. The data were extracted from the Information System for Notifiable Diseases (*Sistema de Informação de Agravos de Notificação*, SINAN) of the state of Bahia (http://www3.saude.ba.gov.br/cgi/deftohtm.exe?sinan/tube.def). After collection, the municipalities were classified into four categories: 1) those with a reduction in the number of notifications; 2) those with an increase in the number of notifications; 3) those with no recorded notifications over the 2 years; and 4) those with no variation in the number of notifications. The percentage change was also calculated. Thematic maps were created to present the results.

In 2019, the state of Bahia registered 4,911 new cases of TB, of which 57.9% ($n = 2,844$) were registered between January and July. In 2020, the accumulated number of new cases in these same months declined by 26.4% ($n = 2,094$). The number of municipalities without notifications went from 101 (24.2%) to 123 (29.5%). In the first 2 months of 2020, before the arrival of COVID-19 in Brazil, there were reductions in the number of case notifications by –11.6% in January and in February by –10.8%. In March, the first confirmed case occurred in Bahia, and there was an increase of 17.8% in the number of notifications. In the following months, there was a sharp decrease in the notification of cases with –49.0% in May and –48.5% in July (Figure 1).

A reduction in diagnosis was observed in 202 (48.4%) municipalities. In addition, 47 municipalities (11.3%) did not register any cases in the first 7 months of the 2 years analysed, 46 (11.0%) registered the same number of new diagnoses, and in 122 (29.3%) there was an increase in the number of notifications. It is important to note that of these municipalities showing an increase in 2020, 54 had not registered any TB cases in the period from January to July 2019 (Figure 1). The municipalities that had a reduced number of new cases ($n = 202$, 48.4%) were responsible for 88.1% ($n = 2,504$) of the diagnoses made in 2019 (January–July). In 2020, these same municipalities registered 1,508 patients (–39.8%). When the analysis is for only those months following the arrival of the virus in the state (April–July), the number of diagnoses declined from 1,663 to 938 (–43.5%) (Figure 1).

The COVID-19 pandemic has presented even more challenges for TB as a public health problem,[5–7] especially in low- and middle-income countries. As is the case for Brazil, these settings already suffer from a high number of TB cases and are now being badly affected by COVID-19. The negative effects of the pandemic have been reported globally.[8] Although it is not possible, at least for now, to estimate the impact of the pandemic on TB diagnosis, there is reason to believe that there will be a significant setback in the gains achieved over recent decades. Among the reasons for this, the following stand out. First, the two diseases primarily affect the respiratory system and the clinical impact of the interaction between SARS-CoV-2 and *M. tuberculosis* on the same individual is not known.[7–9] Second, TB/COVID-19 co-infection can increase the risk of mortality, especially in the most immunologically vulnerable (the elderly and the immunocompromised).[7] Third, as TB is a disease strongly associated with poor living conditions, the COVID-19 pandemic has further accentuated the importance of social vulnerability.[7] Finally, the measures adopted to reduce the transmission of COVID-19 have resulted in a reduction in the operation of outpatient clinics and less demand from the population for other health issues, which reduced TB diagnosis, as seen in this study.

Our approach to coping with COVID-19 can learn from TB programmes. The Delphi consensus suggested a set of steps that can be taken to confront COVID-19: political engagement, strategic planning, social mobilisation, strengthening scientific research, and expanding public resources for COVID-19 are possible ways to contain the pandemic.[9] Measures such as the screening of suspected cases, early diagnosis, expansion of health care, and respiratory isolation can also contain the spread of the virus.[9]

In the context of the global pandemic, there is an urgent need for research that elucidates the relationship between COVID-19 and TB, the adoption of strategies that protect TB patients from infection by SARS-CoV-2, and the adoption and/or strengthening of strategies to ensure the diagnosis of TB during the pandemic period.

Conflicts of interest: none declared.

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Figure Impact of the COVID-19 pandemic on the diagnosis of TB, Bahia, Brazil, 2020

Percent change in tuberculosis notification, Bahia, Brazil, 2020.

A) Number of cases notified January-July/ 2019

B) Number of cases notified January-July/2020

C) Classification of municipalities

D) Percentage of reduction in the number of diagnoses

— Confirmation os SARS-CoV-2 in Bahia (March 06, 2020)

A)
0 - 0 [101]
1 - 10 [283]
11 - 20 [13]
21-50 [12]
+50 [8]

B)
0 - 0 [123]
1 - 10 [268]
11 - 20 [15]
21 - 50 [7]
+50 [3]

C)
No case [47]
Without variation [46]
Increase [122]
Decrease [202]

D)
-100.0 - -80.0 [87]
-79.0 - -60.0 [27]
-59.0 - -40.0 [39]
-39.0 - -20.0 [36]
-20.0 - 0.1 [13]