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## Commentary

# COVID-19 – 6 million cases worldwide and an overview of the diagnosis in Brazil: a tragedy to be announced☆☆☆



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## ABSTRACT

On 1 June 2020, 6 million cases of COVID-19 were recorded with a total of 374,927 deaths worldwide. Brazil, at that point, presented a total of 514,992 cases and 29,341 deaths caused by the COVID-19 disease. At that moment, Brazil appeared in the second position regarding number of cases, fourth in number of deaths, second in number of recovered patients (N = 206,555), second in number of follow-up cases (N = 279,096), third in number of active and serious cases (N = 8,318), 39<sup>th</sup> in number of cases per million inhabitants (N = 2,424), and 125<sup>th</sup> in number of SARS-CoV-2 real-time polymerase chain reaction (RT-PCR) exams per million inhabitants (N = 4,378). To beat the pandemic, Brazil needs to optimize the COVID-19 diagnosis through the SARS-CoV-2 identification using RT-PCR tests and adjust its policies to save lives. Brazil is in a crucial moment to minimize the impact of the illness on society by reducing the number of new cases and thus, preventing deaths, mainly of the risk group populations. However, as widely announced, in Brazil the diagnosis using RT-PCR is still scarce and part of the material collected from COVID-19 patients was disposed of and many patients were not tested, regardless of the seriousness of the symptoms, due to errors of medical data records, improper conservation of the samples after collection and/or during transport, which compromised the quality of the material to be tested. Moreover, the federal government has supported the end of the quarantine, while the number of deaths has grown in thousands every day and the cases have been expanding to the interior of the country.

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## 1. Text

On 1 June 2020, 6 million cases of COVID-19 were recorded with a total of 374,927 deaths worldwide. The illness affected individuals in 213 countries and 2 international conveyances. Brazil, at that point, presented a total of 514,992 cases and 29,341 deaths caused by the disease. The mean mortality rate was 5.41% (Secretarias de Saúde do Brasil, n.d.). However, among the states and the federal district, a mortality rate high range was described, with the lowest numbers in Mato Grosso do Sul (1.34%) and the highest in the state of Rio de Janeiro (10.01%). The state of São Paulo, the most populated in Brazil and where the first COVID-19 case was reported, presented a 6.53% mortality rate. At that

moment, Brazil appeared in the second position regarding number of cases, fourth in number of deaths, second in number of recovered patients (N = 206,555), second in number of follow-up cases (N = 279,096), third in number of active and serious cases (N = 8,318), 39<sup>th</sup> in number of cases per million inhabitants (N = 2,424), and 125<sup>th</sup> in number of SARS-CoV-2 real-time polymerase chain reaction (RT-PCR) exams per million inhabitants (N = 4,378) (<https://www.worldometers.info/coronavirus>, n.d.).

According to the Imperial College of London, Brazil presented a 2.81 rate of coronavirus infection, the highest number among the 48 countries included in the survey (Bhatia et al., n.d.). In the descriptive analysis of positions that Brazil occupied in the COVID-19 ranking regarding epidemiological markers it becomes evident that in Brazil, despite occupying the top positions in the number of cases and deaths, the use of SARS-CoV-2 RT-PCR is limited. In Brazil, the number of cases has shown continuous growth and the illness has expanded from the capital cities to the inner regions of the states. Some capitals, where the higher numbers of intensive care units (ICUs) are available, their occupation reached 100% or close to this value, causing a collapse in the health system. This scenery might even worsen with the expansion of the illness to the municipalities in the interior of the country, where many cities do not have ICUs and the patients have to be sent to other cities, which might also be experiencing

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public health system collapse. In addition, due to the size of the Brazilian territory, in some states, a patient has to face a long journey until they get access to a hospital with ICUs. In some places, like the city of Manaus (capital of the state of Amazonas) corpses have been stored in cooled containers due to the increase in deaths associated to respiratory disorders, either confirmed or in phase of confirmation for COVID-19 disease.

The pandemic started on Brazil in 29 February 2,020 with the first case confirmed. Four months after that event, Brazil still lacks epidemiological information of this illness. Epidemiological information is in fact limited in many countries, if not totally, however, in Brazil, some criteria resulting from the governmental decision limited the access to the diagnosis and made the management at a social level more difficult, which might result in an unprecedented disaster. Since the very beginning of the pandemic, Brazil has adopted a norm of using the SARS-CoV-2 RT-PCR exam in patients showing more severe symptoms only (Oliveira et al., n.d.), mainly those in need for the ICUs, which usually result in a higher mortality rate and the increased number of serious cases in follow up, when compared to the total number of confirmed cases. Regarding the etiology of the illness, we cannot confirm that it is more serious in Brazil, but rather that we have underdiagnosed mild cases of the infection or asymptomatic cases, mainly of people who had contact with patients confirmed for this illness. Both groups of individuals, either those with mild symptoms or the asymptomatic ones, might cause the dissemination of the illness, which results in the 2.81 rate of coronavirus infection.

Due to the low number of SARS-CoV-2 RT-PCR tests performed in the population, it is impossible to understand the prevalence of COVID-19 disease and its progression. The factors that might be associated with the low number of SARS-CoV-2 RT-PCR tests carried out include: (i) difficulty to purchase materials; (ii) increase in the price of materials and equipment; (iii) low availability of equipment; (iv) number of qualified people that are available to perform the RT-PCR technique; (v) number of centers or laboratories able to do the exam – in Brazil there are few test centers; and (vi) transportation of the material to the places where the test can be performed (Marson, 2020). As described by the health secretariats, part of the material collected from patients was disposed of and many patients were not tested, regardless of the seriousness of the symptoms, due to errors of medical data records, improper conservation of the samples after collection and/or during transport, which compromised the quality of the material to be tested. Undoubtedly, Brazil is following an uncertain route and without the ability to plan future actions to deal with the COVID-19. The SARS-COV-2 RT-PCR assay must be performed widely in suspicious cases with previous contact with positive COVID-19 patients and/or in individuals with less severe symptoms, since even with its limitations, it is still the gold standard technique for the illness diagnosis (Corman et al., 2020; Li et al., 2020; Tahamtan and Ardebili, 2020).

Social distancing has been described as one of the most efficient mechanism to stop the pandemic and reduce de dissemination of the virus (Flaxman et al., 2020; Lin et al., 2020; Lombardi et al., 2020; Rahimi, 2020; Sohrabi et al., 2020; Wang et al., 2020). In this regard, Brazil adopted social distancing during a period of the quarantine as a measure to stop the pandemic, however, the adherence to this measure was partial and has continuously been losing adherence throughout the pandemic. During the social distancing period, many conflicts have arisen between mayors, governors and the president of the country that led to public demonstrations during the COVID-19 expansion, mainly, associated to the federal government to cease the social distancing and resume activities (The Lancet, 2020). Possibly, the Brazilian government under the responsibility of the president Jair Bolsonaro was the only one to go against the recommendations of the World Health Organization to stop the COVID-19 disease and its progression (The Lancet, 2020). During the first months of the pandemic, the president took part in public demonstrations, incentivized the support to the military regime, harassed reporters, minimized the illness and mocked the number of deaths. Simultaneously, the health minister Luiz Henrique Mandetta was dismissed for defending that Brazil should follow the World Health Organization guidelines and the Justice Minister Sérgio Moro resigned for

disagreeing with the current political affairs mainly about interventions on Federal Policy and about control of the COVID-19 pandemic. Even with the continuous increase in the number of COVID-19 cases, part of the population supports unconditionally the federal government and has promoted demonstrations such as rallies against social distancing. A fact to be highlighted is President Jair Bolsonaro's refusal to show the result of his SARS-CoV-2 RT-PCR test, carried out after his visit to the USA, even after 23 individuals who accompanied him in that visit had tested positive for SARS-CoV-2. In addition, the president Jair Bolsonaro participated in popular demonstrations favoring its government and visited popular markets without individual protection equipment (such as masks) after his return from the USA.

To beat the pandemic, Brazil needs to optimize the COVID-19 diagnosis through the SARS-CoV-2 identification using RT-PCR tests and adjust its policies to save lives. Brazil is in a crucial moment to minimize the impact of the illness on society by reducing the number of cases and thus, preventing deaths, mainly of the risk group populations. However, as widely announced, in Brazil the diagnosis using SARS-CoV-2 RT-PCR is still scarce and part of the material collected from patients was disposed of and many patients were not tested, regardless of the seriousness of the symptoms, due to errors of medical data records, improper conservation of the samples after collection and/or during transport, which compromised the quality of the material to be tested.. Moreover, the federal government, through the image of the president Jair Bolsonaro, has supported the end of the quarantine, while the number of deaths has grown in thousands every day and the cases have been expanding to the interior of the country.

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