

Commentary

The Long Covid abyss in Brazil; Is this another concern for an overwhelmed healthcare system?

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- Covid-19
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- Phenotype

Abstract

Long Covid is an ongoing health hazard to many patients who had an original Covid-19 diagnosis. Whilst there has been much debate about the phenotypic nature of the disease, the implications of these among differing populations is yet to be comprehensively reviewed. This is particularly important for low-to-middle-income countries such as Brazil, that have limited resources and infrastructure within their healthcare systems to manage patients long-term that have had Covid-19 and Long covid. Brazil have had to stare at the Covid abyss with over-crowding of their intensive care units that left their healthcare system in chaos. The ongoing long-Covid case numbers therefore are exacerbating an ongoing issue for patients, policy makers and healthcare professionals.

In line with this, and the population density of Brazil, we have explored the prevalence of long-Covid in one of the largest municipalities in northeast Brazil to report active patient and clinical reported outcomes that would enable a better understanding of the next steps require to curb these issues to a manageable situation.

Methods: We designed a two-step approach to demonstrate the wider implications of long-covid using a commentary and a retrospective, cross-sectional study using real-world data.

Findings: In this commentary we highlight the current issues and potential barriers Brazil faces. We will follow this up with a retrospective, cross-sectional study using real world data to report on the prevalence of long covid within 1,600 patients.

ABBREVIATIONS

LC: Long Covid; BMI: Body Mass Index; INR: International normalised ratio; CRP: C-reactive protein; BIPOC: Black, indigenous and other people of color

INTRODUCTION

SARS-CoV-2 (Covid-19) has led to high levels of morbidity and mortality globally. For most SARS-CoV-2 survivors, recovery could be classed into two broad outcomes; they could make a complete recovery or following an acute phase they continue to have ongoing symptoms such as fatigue and myalgia. In Brazil, the first SARS-CoV-2 case was registered on the 26th of February 2020, in Sao Paulo, whilst the first registered death was recorded on the 17th of March 2020 [1]. Most centres in Brazil struggled to manage morbidity due to the prevailing socioeconomical

conditions during the national crisis [2]. The epidemiological data indicate an incidence of 10.7 million with 596.122 deaths, as illustrated in (Figure 1a & 1b) [3]. The state of São Paulo had the highest confirmed cases in Brazil with 4,330,000, and 148,170 confirmed deaths [4].

Patients with acute and persistent symptomatology following a Covid-19 positive test are facing challenges to access ongoing clinical care for a variety of reasons within Brazil. This can be partly attributed to the lack of resources to diagnose and manage the 'novel' condition about which there was paucity of clinical evidence at the time. Universally accepted clinical definitions and a suitable phenotype for "long-covid (LC)" remains a distant objective. In view of this, the healthcare authorities in Brazil use broader characteristics associated with respiratory, cardiovascular and neuropsychiatry symptoms to

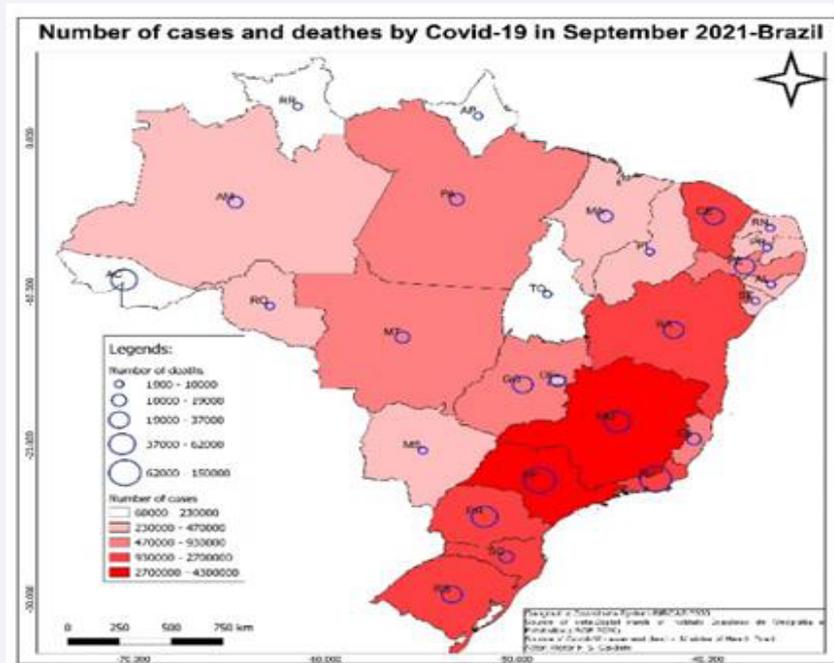


Figure 1a The geographic location represents the number of cases confirmed and number of deaths in Brazil. These cities were geocoded using the software Qgis (v3.10) Geographic Coordinate System SIRGAS 2000. (<https://www.qgis.org/en/site/>)

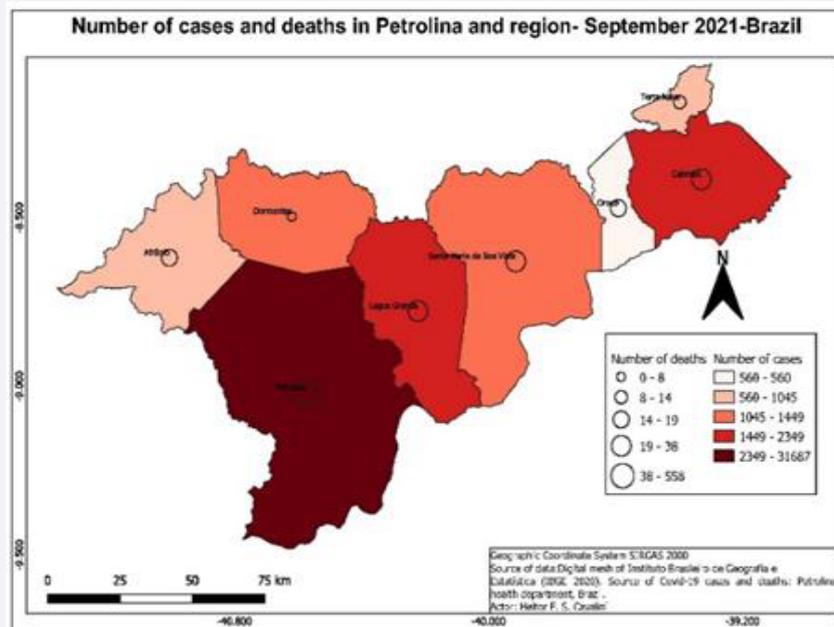


Figure 1b The geographic location represents the number of cases confirmed and number of deaths in Petrolina. These cities were geocoded using the software Qgis (v3.10) Geographic Coordinate System SIRGAS 2000 (<https://www.qgis.org/en/site/>)

be the basis of managing this condition. It is reported that 20% of patients categorized to have LC develop more complex issues such as respiratory failure, respiratory acute stress syndrome, and multiple organ dysfunction [5].

Present diagnosis of LC is based on multiple phenotypic features as demonstrated by Luszek and colleagues [6] who

reported 33 variables of body mass index (BMI), heart rate, respiratory rate, pulse pressure, systolic blood pressure, total protein, mean corpuscular volume, alkaline phosphatase, calcium, anion gap, bicarbonate, haematocrit, aspartate aminotransferase, glucose, absolute monocyte count, absolute neutrophil count, absolute lymphocyte count, white blood cell count, platelet, albumin, bilirubin, international normalised

ratio (INR), lactate dehydrogenase, potassium, sodium, D-dimer, haemoglobin, C-reactive protein (CRP), creatinine, gamma gap, age and oxygen saturation. This in turn is vital for adequately managing effect modifiers such as diabetes or migraine that could potentially worsen for those with a pre-existing diagnosis. This is an important facet for healthcare professionals and systems to consider, to better prepare to care for patients. For instance, in the region of Petrolina, a city in the state of Pernambuco, within North-eastern Brazil, patients showed heart dysfunction, respiratory, and neurological problems after the acute period of the disease [7].

The lack of comprehensive clinical data, and limitations in current literature to generate a more evidence-based approach to manage LC, is a major hurdle. The lack of generalisability and problems with accessing meta-data in hospital systems also attributes to limiting clinical management of LC patients. This further raises complications around affirming a suitable phenotype and, the conceptualisation of its' relevance to explore both future research and clinical management plans.

There has been challenges around obtaining SARS-CoV-2 surveillance data in Brazil given the lack of a central repository and network system that is able to identify and track patients' outcomes short and medium term. Many publications appear to use websites, and non-standardised access points to gather data, such as social media platforms which could lead to unreliable data issues that may result in implementing healthcare policies that lack an evidence base. Therefore, standardisation of information gathering is still a requirement, where appropriate analysis could be conducted that is reflective of the population needs within Petrolina. The socioeconomic burden due to the spread of SARS-CoV-2 and any new variants need to be managed more vigorously. Additionally, vulnerable populations (e.g., patients who are from Black, indigenous and other people of color (BIPOC), children, the elderly, socioeconomically disadvantaged) [8] and municipalities with elevated socially deprived scores should be made the primary focus to introduce preventive measures. Those who have contracted the disease and recovered should be followed-up long-term using multiple clinical and community-based strategies. Approximately 37 million Brazilian workers are in the retail-sector based jobs, thus increasing the probability of contamination of covid-19 to populations. Obeying

social isolation and staying at home, is likely to be a challenge since most of them rely on this source of income to sustain their families. Emergency public policies are required, given that voluntary social isolation remains difficult in Brazil.

CONFLICT OF INTEREST

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