Incidence of the new coronavirus disease in Brazil in periods before and after the elections and the governmental influence on the progression of cases

Incidência da doença do novo coronavírus no Brasil nos períodos pré e pós-eleitorais e a influência governamental na progressão dos casos

Incidencia de la enfermedad del nuevo coronavirus en Brasil en períodos antes y después de las elecciones y la influencia del gobierno en la progresión de los casos

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Abstract
The research aimed to carry out an epidemiological survey comparing the cases of COVID-19 in moments before and after the electoral period in Brazil, pointing out the influences of the federal public administration in the increase in incidence and consequent mortality. This is a quantitative epidemiological study with a critical approach, based on secondary data from the Information and Notifiable Diseases System (SINAN) found in the Information Technology Department of the Unified Health System (DATASUS), whose data are from March to December 2020, and January to March 2021 were selected. We analyzed 12,748,747 confirmed cases of COVID-19 grouped in incidence by month in the period evaluated and compared them by the non-parametric Kruskal-Wallis method, where a P value <0.05 was considered statistically significant. The data from this study demonstrate the significant increase in cases of COVID-19 in Brazil, where in November (the month after the elections), there is an increase in notifications compared to the month of October, the increase becomes statistically significant from the month of December onwards, which is the drastic scenario in the following year. In summary, based on the data expressed, it can be concluded that the Brazilian electoral period was largely influential in the worsening of the pandemic in the country.
Keywords: Coronavirus; Democracy; Brazil.

Resumo
A pesquisa teve como objetivo realizar um levantamento epidemiológico comparando os casos de COVID-19 em momentos antes e após o período eleitoral no Brasil, apontando as influências da administração pública federal no aumento da incidência e consequente mortalidade. Trata-se de um estudo epidemiológico quantitativo com abordagem crítica, baseado em dados secundários do Sistema de Informação e Agravos de Notificação (SINAN) encontrados no Departamento de Informática do Sistema Único de Saúde (DATASUS), cujos dados são de março a dezembro de 2020, e janeiro a março de 2021 foram selecionados. Analisamos 12.748.747 casos confirmados de COVID-19 agrupados em incidência por mês no período avaliado e os comparamos pelo método não paramétrico de Kruskal-

Wallis, onde um valor de P <0,05 foi considerado estatisticamente significativo. Os dados deste estudo demonstram o aumento significativo de casos de COVID-19 no Brasil, onde em novembro (o mês posterior às eleições), há um aumento nas notificações em relação ao mês de outubro, o aumento passa a ser estatisticamente significativo a partir do mês de dezembro em diante, que é o cenário drástico no ano seguinte. Em síntese, com base nos dados expressos, pode-se concluir que o período eleitoral brasileiro teve grande influência no agravamento da pandemia no país.
Palavras-chave: Coronavírus; Democracia; Brasil.

Resumen
La investigación tuvo como objetivo realizar un levantamiento epidemiológico comparando los casos de COVID-19 en momentos antes y después del período electoral en Brasil, señalando las influencias de la administración pública federal en el aumento de la incidencia y consecuente mortalidad. Se trata de un estudio epidemiológico cuantitativo con enfoque crítico, basado en datos secundarios del Sistema de Información y Enfermedades de Declaración Obligatoria (SINAN) que se encuentran en el Departamento de Tecnologías de la Información del Sistema Único de Salud (DATASUS), cuyos datos son de marzo a diciembre de 2020, y se seleccionaron de enero a marzo de 2021. Se analizaron 12.748.747 casos confirmados de COVID-19 agrupados en incidencia por mes en el período evaluado y se compararon por el método no paramétrico de Kruskal-Wallis, donde se consideró estadísticamente significativo un valor de P < 0,05. Los datos de este estudio demuestran el aumento significativo de casos de COVID-19 en Brasil, donde en noviembre (el mes posterior a las elecciones), hay un aumento de notificaciones en comparación con el mes de octubre, el aumento se vuelve estadísticamente significativo a partir del mes de diciembre en adelante, que es el escenario drástico en el año siguiente. En resumen, a partir de los datos expresados, se puede concluir que el período electoral brasileño influyó en gran medida en el empeoramiento de la pandemia en el país.
Palabras clave: Coronavirus; Democracia; Brasil.

1. Introduction

Pandemics are caused by easily spread diseases of pathogens, infecting a high number of individuals in a short period of time (Malinverni & Brigagão, 2020). That said, the new coronavirus disease (COVID-19) qualifies as the fifth recorded pandemic since the first influenza outbreak in 1918 (Chen et al., 2021), both viruses, transmitted by the respiratory route of easy dissemination. The first reports of SARS-CoV-2 were narrated in Wuhan, China, which culminated in its worldwide dissemination, having as main pathogenicity the involvement of a respiratory syndrome (Liu et al., 2020).

After the notifications of the first occurrences of COVID-19 in the world, Brazil appears in the ranking of countries with the highest rates of contamination and mortality (Marinho et al., 2021). Moreover, a critical bias often propagated was the lack of competence of the federal government. In this perspective, the calamitous situation in which the country finds itself is a systematic consequence applied by the Jair Bolsonaro government, which fails to set goals against the measures of prevention and collective immunization, starting to use resources to encourage exacerbated agglomeration, the non-use of masks, use of drugs without scientific accuracy for such a disease, in addition to going against the vaccine (Calil, 2021).
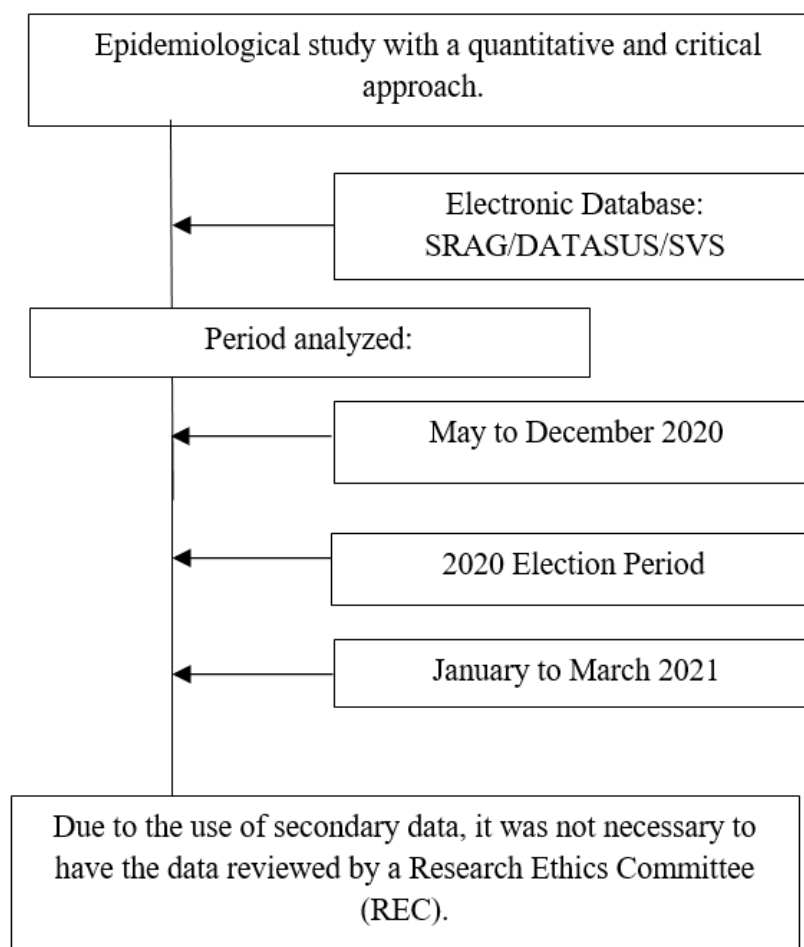
The federal government's disregard for science and, consequently, the pandemic's impact on the health and wellbeing of Brazilians has led to a deficit in the coordination, scaling up, and funding of internationally sanctioned public health methods, in which the ministry of health has not instituted a national plan to address the pandemic. In addition, municipalities and regions ingnorated by the state did not receive sufficient assistance, what neglected, became a key element in solving the public health crisis (Ferigato et al., 2020).

Even in the face of a scenario of sick people, crowded beds, and deaths, formalities such as municipal elections were able to take place, which may have directly influenced the worsening of the panorama throughout the country. In summary, the present study had as its objective, to perform an epidemiological survey comparing the cases of COVID-19 in moments before and after the electoral period in Brazil, besides pointing out the influences of the federal public management in the increase of the incidence and consequent mortality.).

2. Methodology

This is an epidemiological study quantitative character and critical approach, conducted by means of secondary data from the Interactive Panel of Coronavirus Disease Cases 2019 (COVID-19) in Brazil (https://susanalitico.saude.gov.br/), as well as from the Severe Acute Respiratory Syndrome - SARS Database including data from COVID-19 prepared through the from the computer department of Single Health System (DATASUS) and the Secretariat of Health Surveillance – SVS where data referring to the months of May to December of the year 2020 as well as January to March of 2021 were analyzed. Since these were public samples, the need for submission to the Research Ethics Committee was ruled out, being in accordance with Resolution number 466 of December 12, 2012 of the National Health Council, represented in Figure 1.

Figure 1: Methodology flowchart.

Source: Authors (2022).

2.1 Statistical analysis

The data collected refer to the confirmed cases for COVID-19 in Brazil dated from May 1, 2020 to March 31, 2021, totaling 12.748.747 cases. To evaluate the impacts provided by the Brazilian Elections in face of the COVID-19 pandemic, the informations obtained was organized through the Microsoft Excel 2016® software and analyzed through the Graphpad Prism version 7 software, where the Kruskal-Wallis non-parametric analysis tool was used to verify if there are significant differences between the averages of cases obtained in the evaluated period. A p value <0.05 will be considered statistically significant. Graphpad Prism and Microsoft Excel 2016® software were also used to construct the graphs and tables according to the purpose of work.

3. Results and Discussion

A total of 12,748,747 confirmed cases for COVID-19 evaluated between May 1, 2020 to March 31, 2021 were evaluated. Table 1 illustrates the sample numbers in the months evaluated, as well as the cumulative case values.
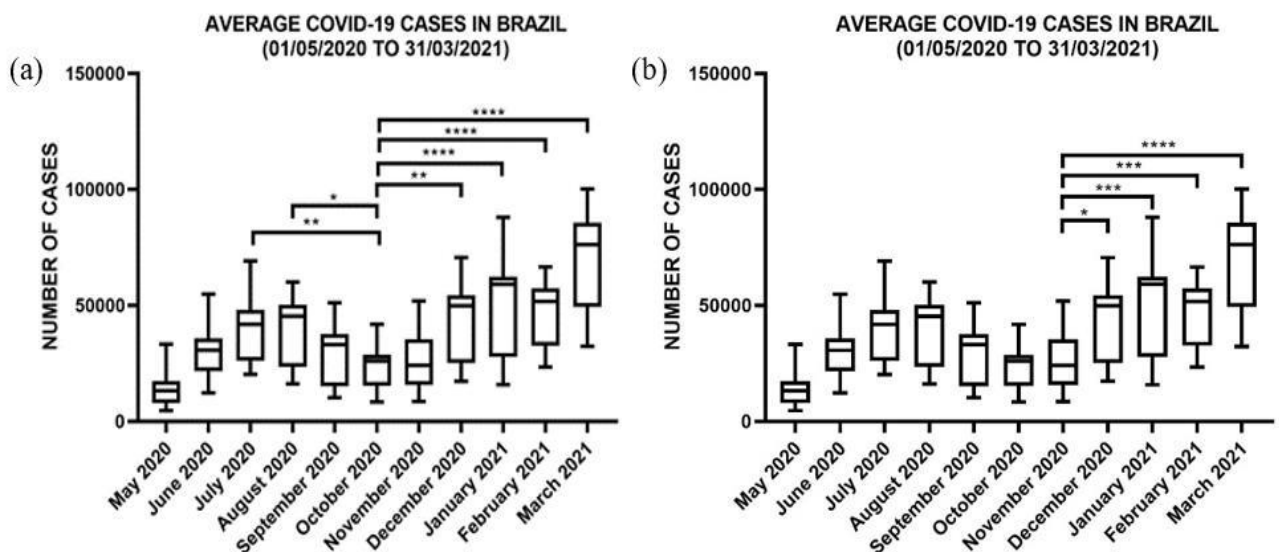
Table 1: Incidence and prevalence of confirmed cases of COVID-19 in Brazil dated May 1, 2020 to March 31, 2021.

MONTH	INCIDENCE CASES	CUMULATIVE OF CASES
May 2020	428.693	514.200
June 2020	887.841	1.402.041
July 2020	1.260.444	2.662.485
August 2020	1.245.787	3.908.272
September 2020	902.663	4.810.935
October 2020	724.670	5.535.605
November 2020	800.273	6.335.878
December 2020	1.340.095	7.675.973
January 2021	1.528.758	9.204.731
February 2021	1.346.528	10.551.259
March 2021	2.197.488	12.748.747

Source: Authors (2022).

The non-parametric Kruskal-Wallis analyses allowed the comparison of the number of incident cases between the months in the evaluated period and showed that there is a statistically significant increase in the incidence of COVID-19 cases in Brazil after the election period (October and November), as shown in Figure 2.

Figure 2: (a) Non-parametric Kruskal-Wallis analysis comparing the incidence of COVID-19 cases in Brazil in the month of October 2020 with the other years of the evaluated period; ** (July 2020 vs October 2020) P= 0,0091; * (August 2020 vs October 2020) P= 0,0136; ** (October 2020 vs December 2020) P = 0,0013; **** (October 2020 vs January 2021) P <0,0001; **** (October 2020 vs February 2021) P <0,0001; **** (October 2020 vs March 2021) P <0,0001. (b) Nonparametric Kruskal-Wallis analysis comparing the incidence of COVID-19 cases in Brazil in November with the other years of the evaluated period; *(November 2020 vs December 2020) P = 0,0191; ***(November 2020 vs January 2021) P = 0,0002; ***(November 2020 vs February 2021) P = 0,0003; ****(November 2020 vs March 2021) P <0,0001.

Source: Authors (2022).

The findings showed a significant increase in cases of COVID-19 after the electoral period, suggesting that the high transmission rate is correlated to the political movements that occurred during the same time interval. The statistical test was based on the Kruskal-Wallis non-parametric analysis, with the aid of the Graphpad Prism software, for the possibility of analyzing and comparing three or more independent groups, both quantitative variables that do not obey normality parameters, and ordinal qualitative variables. The data analyzed from the reported incidents may have suffered changes, specifically during the electoral period due to the low demand of the population at the health units for testing, preferring to participate in political demonstrations, as well as not having their right to vote suspended because of a possible quarantine.

The periods compared between May 1, 2020 to March 31, 2021 had a p-value < 0.05 rejecting the null hypothesis, having sufficient evidence for the alternative hypothesis, demonstrating that there was indeed an increase in the incidences of the new coronavirus cases in the period after the election. As for SARS-CoV-2, it has been observed that it has shaken globally not only in terms of those infected and killed, but also politically and economically, placing Brazil as the worst federation in management against the new coronavirus, and these statements have been described in several studies (Ferigato *et al.,* 2020; Aquino *et al.,* 2021).

Rosário (2020) and Silva et al., (2020) talk about the pandemic course in the country, affirming the situation of neglect as a result of a genocidal representativeness of the current government, where, denied the science, moreover, based on the studies of Silva (2021) the president would have also encouraged the use of drugs without scientific evidence as: hydroxychloroquine, azithromycin, ivermectin, among others.

Public health policy should be based on science, during the pandemic period, Brazil had to deal with scientific illiteracy coming from government officials, who treated the lethal virus pandemic with a profile of severe clinical heterogeneity as a mere "little Flu", encouraging the use of medications without proven efficacy (Kit-COVID) for such pathology, bringing narratives of a pseudoscience (Barberia et al., 2021; Cardoso et al., 2020). Therefore, narratives of this profile coming from leaders bring catastrophic results, with disrespect for social isolation and the non-use of masks, increase the transmission of the virus, therefore, the reflection of poor management directly impacts the behavior of the population, who choose to follow politicians when instead of science (Dada et al., 2021).

The state leader, as well as his supporters, were against social isolation, as well as the closing of commerce that intuited the minimization of new cases. In several moments he was publishing speeches against the protective and restrictive measures to contain the pandemic, always underestimating the health professionals. Another finding in the national politics facing the pandemic, was the lack of a plan to face it, following blindly, neglecting the signs of collapse, which is squeezed in the difficulties that the states and cities are passing, forcing them to elaborate their own planning (Alcadipani, 2020; Alvarenga et al., 2021; Carvalho & Lima, 2020; Satomi *et al.,* 2020; Silva et al., 2020).

It is worth mentioning that the second wave of COVID-19 started in November 2020, in the month of municipal elections, consequently, in March 2021 the beds in ICUs reached 90%, thus, the notoriety that electoral interests were greater than the concern of the pandemic, with the formation of agglomerations in electoral campaigns and the non-use of masks at rallies (Tarouco, 2021). According to Silva and Pena (2020), Brazil became the cradle of the coronavirus variants, due to several factors, including: non-compliance with the necessary measures for prevention, low testing and lack of information on the part of the population. That said, the results obtained in this research demonstrate that possibly, as previous municipal authorities, they worsened the pandemic in Brazil, which culminated in coronavirus transmissions in clusters caused by electoral candidates, the candidates who are currently in government dealing with the consequences caused by them.

4. Final Considerations

Given the explicit data, it is possible to demonstrate the strong influence of the electoral period in the increase of

cases of COVID-19 in Brazil. In the month of October 2020, which hosted the elections, recurrences of agglomerations and direct contact between people were observed, in addition to the rejection of the use of masks, which culminated in the extreme rise of cases in the following months. Another essential fact was the influence of some political representatives who, at that moment, stopped preaching preventive methods to get closer to the population. Even so, we must emphasize the irresponsibility of the federal government, which manifested itself superficially only after the critical stages of the pandemic, where the incidence and mortality were already in uncontrollable stages.

Study limitations

This study is limited to the analysis of secondary data collected from the databases (SRAG/DATASUS/SVS). Any errors prior to the release of the data can directly impact the results and statistical analyses. Furthermore, the analyses are limited to the raw numbers of confirmed cases of COVID-19 in the country, not evaluating clinical outcomes, symptomatology, other laboratory results, socioeconomic conditions of the Brazilian regions, and other data that may or may not influence the incidence/prevalence of COVID-19 cases.

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