





Effects of the COVID-19 on the public interest in medical specialties in Brazil

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SUMMARY

OBJECTIVE: The aim of this study was to evaluate the effects of the COVID-19 pandemic and the social isolation on the interest rates of different medical specialties in Brazil.

METHODS: The research was performed using the terms “Médico” (Doctor), “Infectologista” (Infectologist), “Cirurgião” (Surgeon), “Geriatra” (Geriatrician), “Otorrinolaringologista” (Otolaryngologist), and “Oftalmologista” (Ophthalmologist), related to several medical specialties, and “COVID-19,” which represented the public interest for the disease, utilizing the Brazilian version of Google Trends, where the data were acquired. The time range of this analysis was from 29 September, 2019 to 20 September, 2020. The data were tabulated in Microsoft Excel, exported to the Statistical Package for the Social Sciences software, and correlated with searches for the term “COVID-19” using Pearson’s correlation. 95% confidence interval was used for all analyses.

RESULTS: “Geriatra” (72.26±16.42) and “Cirurgião” (72.15±12.53) remained with the higher means among the evaluated specialties. In terms of standard deviation, “Oftalmologista” (64.71±16.72) and “Infectologista” (22.03±16.60) presented the most significant changes. After utilizing the Pearson’s analysis to identify the correlation between each medical specialty and the term “COVID-19,” all the evaluated specialties presented significant statistical correlations. “Oftalmologista” ($r = -0.607$) was notoriously the most negatively affected, while “Infectologista” ($r = 0.504$) was pointed to have the highest positive correlation with the term.

CONCLUSIONS: Several changes in the interest rates of different medical specialties in Brazil were found during the time range of the COVID-19 pandemic.

KEYWORDS: Social Isolation. COVID-19. Medical specialties.

INTRODUCTION

In December 2019, a new virus, named Sars-CoV-2, was discovered in the city of Wuhan in Hubei Province, China¹. The pathogen quickly disseminated to more than 200 countries, becoming a public health emergency of international concern. In response to the outbreak, national governments adopted many serious interventions that affected the epidemic evolution of the disease, the global economy, and the population’s lifestyle².

The lockdown is the most radical policy to prevent the circulation of people and the spread of the virus. Vertical isolation refers to the restriction of movement of the risk group for COVID-19. In a survey that analyzed 24 countries that were most affected by the disease, it was found that 20 of them (83%) adopted a lockdown, in an attempt to flatten the transmission curve, and 3 countries (13%) opted to the vertical isolation to decelerate the increase in the number of cases. The countries that

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adopted the lockdown are South Africa, Germany, Argentina, Canada, China, Spain, the United States, France, India, Italy, the United Kingdom, Russia, and Singapore. The countries that have adopted vertical isolation are South Korea, Sweden, and Turkey³.

In Brazil, the first case detected was a tourist who visited Italy in February and got infected by the virus⁴. The incidence of cases increased until the latest July and started to decrease in August. It has 58.9 deaths per 100,000 of its inhabitants, being the eighth nation with the highest mortality rate and the second nation in absolute number⁵.

Although community quarantine reduces the spread of the disease, it also brings a relevant economic and social impact, resulting in a significant increase in unemployment, a higher rate of mental illness, and a greater difficulty in having access to medical care for other pathologies⁶.

The COVID-19 pandemic altered the dynamic of medical practice, not only by raising the demand for some services and devices like intensive care units and mechanic ventilators but also by causing a decrease in ambulatory care practices, examinations, and surgical procedures, due to the suspension of elective surgeries and some primary health services and due to the increase in the unemployment rates which leads to the loss of health insurance⁷⁻⁹.

Thus, the scope of this study was to evaluate the effects of the COVID-19 pandemic and the social isolation on the interest rates of different medical specialties in Brazil.

METHODS

Google Trends (GT) is a platform that works by comparing relative popularity in geographical and temporal ranges based on the sample of Google search data, varying from 0–100¹⁰.

On September 9, 2020, a research was performed using the terms “Médico” (Doctor), “Infectologista” (Infectologist), “Cirurgião” (Surgeon), “Geriatra” (Geriatrician), “Otorrinolaringologista” (Otolaryngologist), and “Oftalmologista” (Ophthalmologist), related to several medical specialties, and “COVID-19”, represented the public interest for the disease, using the Brazilian version of GT, where the data were acquired. The time range of this analysis was from September 29, 2019 to September 20, 2020.

The data were tabulated in Microsoft Excel, exported to the Statistical Package for the Social Sciences software, and correlated with searches for the term COVID-19 using Pearson’s correlation. 95% confidence interval was used for all analyses.

RESULTS

During the first months of the time range, all curves remained stable, with a mild increase in all specialties. On February 26, 2020, the first case of COVID-19 occurred in Brazil,

corresponding to the same time when changes in the pattern of the GT graph occurred (Figure 1).

During most of the time, the term “Médico,” representing a general interest for doctors without a specific specialty in Google Search, remained with similar interest rates during all the COVID-19 pandemics and the lockdown, with a small increase during the pandemics, showing a peak of interest rate at the end of September.

In contrast, the terms “Oftalmologista,” “Cirurgião,” “Geriatra,” and “Otorrinolaringologista” faced a severe decrease in their interest rates, achieving their minimum frequency of Google Searches during the end of March and the start of April, the same time when most of the Brazilian States adopted more strict rules of social isolation. Later, during the subsequent months, a continuous recovery happened, by the point that at the end of June, most of those specialties had around 70% of their annual interest rate, similar to their rates presented before the COVID-19 pandemic.

The term “Infectologista” presented the most notorious changes during the pandemics, presenting an abrupt increase in its Google Search Interest rates, varying from a relative frequency of 21 on March 1, 2020 to 100 on March 22, 2020, when the coronavirus started to spread through the country. Later, the curve started to drop, turning back to a pattern similar to the time range before the pandemic.

When comparing the mean of the relative frequency of research, “Geriatra” (72.26±16.42) and “Cirurgião” (72.15±12.53) remained with the higher values among the evaluated specialties. In terms of standard deviation, “Oftalmologista” (64.71±16.72) and “Infectologista” (22.03±16.60) presented the most significant changes, which could suggest that those medical specialties were the most impacted for the pandemic among the group that we analyzed (Table 1).

After utilizing the Pearson’s analysis to identify the correlation between each medical specialty and the term “COVID-19,” all the evaluated specialties presented significant statistical correlations.

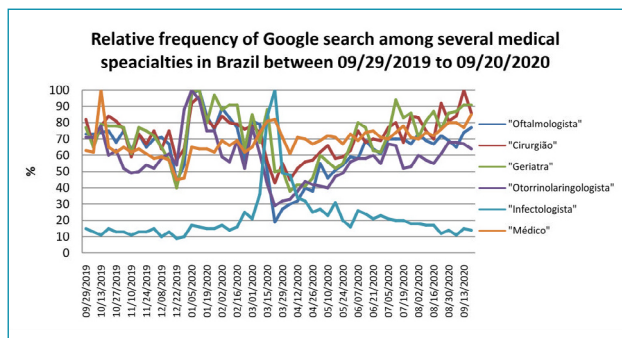


Figure 1. Relative frequency of Google search among several medical specialties in Brazil between September 29, 2019 and September 20, 2020.

“Oftalmologista” ($r = -0.607$) was notoriously the most negatively affected, while “Infectologista” ($r = 0.504$) was pointed to have the highest positive correlation with the term “COVID-19.” The term “Médico” ($r = 0.359$) presented the lowest correlation (Table 2).

DISCUSSION

It is notorious that the COVID-19 pandemic has brought many challenges for several medical specialties, reflecting on their interest rates of public online searching platforms, which could be correlated to significant effects on both consultation of outpatients and elective surgeries.

One study used GT to analyze the interest rates of the term “coronavirus” worldwide, from December 31, 2019 to April 1, 2020, and it was found a small peak on January 31, a few days after the outbreak of the disease in Wuhan, corresponding to <25% of the relative frequency compared with the peak of 100% on March 12, 2020, one day after the World Health Organization declared the coronavirus pandemic¹¹. In Brazil, the highest peak occurred at the time as the beginning of the quarantine in the main capital of Brazil, with a subsequent

Table 1. Mean value of Google Trends relative public interest in several medical specialties.

Medical specialty	Mean value of Google Trends relative public interest (\pm SD)
“Oftalmologista”	64.71 (\pm 16.72)
“Cirurgião”	72.15 (\pm 12.53)
“Geriatra”	72.26 (\pm 16.42)
“Otorrinolaringologista”	58.48 (\pm 14.49)
“Infectologista”	22.03 (\pm 16.60)
“Médico”	68.84 (\pm 9.06)

Table 2. Pearson’s correlation between the evaluated medical specialties and “COVID-19” from September 29, 2019 to September 20, 2020.

Medical specialty	r-value when compared with the term “COVID-19”	p-value
“Oftalmologista”	$r = -0.607$	<0.001*
“Cirurgião”	$r = -0.450$	0.001*
“Geriatra”	$r = -0.433$	0.001*
“Otorrinolaringologista”	$r = -0.573$	<0.001*
“Infectologista”	$r = +0.504$	<0.001*
“Médico”	$r = +0.359$	0.009*

* $p < 0.05$.

downgrade in the interest rates for “coronavirus.”¹² These data fit in the time range of most of the changes that occurred in the interest rates in different medical specialties in Brazil, which points toward a major influence of the pandemic in this scenario.

Many factors associated with the pandemic could contribute to this situation, such as the mental impact of the spread of the disease or the social isolation, which can substantially increase the incidence of mental illness, for example, anxiety and depression, with the contribution of many other factors, such as changes in family functionality, in workplaces, and economic or social insecurity, which are variables hard to measure^{13,14}.

The economic impact of the virus has changed the consumption pattern of several people, due to general lower income during the pandemics or massive job loss, especially in the non-necessary services¹⁵.

We believed that the sum of these factors could have contributed to the notorious decrease in the interest rates of several medical specialties. Although we were not able to explain the contrasting increase in the interest for the term “Infectologista,” we believed that it is the medical specialty mostly related to the coronavirus in terms of management and researching.

Among the possible impacts of different interest rates, the pandemic can change the perspective of many students about the medical specialty they want to follow; one study pointed that about 20% of the medical students would have their future choice influenced by the effects of the COVID-19¹⁶. Beyond that, many residency programs had to adapt their curriculums to the new circumstances, lowering face-to-face activities and elective procedures and increasing studying hours designated to learn how to manage patients infected by the COVID-19¹⁷.

Furthermore, many specialists from different countries are reporting a decrease in outpatient’s consultation, which could lead to discontinuity in chronic disease care that can result in further mistreatment or aggravation of medical conditions^{18,19}. However, there have been increased interest rates on terms related to telemedicine during March 2020, in Brazil, which could represent an alternative for many patients¹⁹. Although it is a promising method, we believe that it still needs several improvements, especially in countries where a significant percentage of the population does not have adequate access to the Internet.

CONCLUSION

Several changes in the Interest rates of different medical specialties in Brazil were found during the time range of the COVID-19 pandemic, with synchronic effects of outpatients’ consultations and elective procedures, representing a challenging situation for patients and for medical doctors.

AUTHORS' CONTRIBUTION

LQLV: Conceptualization, Data curation, Investigation, Writing – original draft, Writing – review & editing. **JPB:** Conceptualization, Data curation, Formal analysis, Investigation,

Methodology, Writing – original draft, Writing – review & editing. **PGBS:** Formal analysis, Software, Writing – original draft. **JCR:** Project administration, Supervision, Writing – review & editing.

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