Research Letter

Digital public interest on coronavirus information and social distancing: a Brazilian nationwide analysis using an infodemiology approach

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Teaser

The decline of social distancing measure in Brazil seems to be associated to the reduction of interest on coronavirus information. Exploring the trends of public interest in searching COVID 19 information on the Internet may be a useful and complementary tool to COVID-19 surveillance and commitment to disease preventive measures.

Social distancing is a non-pharmacological measure designed to reduce interactions between people in a broader community and used to mitigate the spread of coronavirus disease 2019 (COVID-19) in settings where community transmission is believed to have occurred.[1] In Brazil, social distancing procedures included travel restrictions, banning of public gatherings and closure of schools, universities, and non-essential commercial activities and public services, but socioeconomic factors and the resistance to change of attitudes and behavioral intentions may have contributed to the low compliance in prevention and control measures of COVID-19 in the community.

Despite a number of digital technologies have been implemented to tracked adherence of people to quarantine and social distancing, COVID-19 surveillance and control are challenge especially in low- and middle-income countries. In recent years, Google Trends[TM] have been used as an efficient real time surveillance system for epidemic outbreaks and is recognized as a surrogate tool for estimating epidemiology and gathering data about patterns of disease and population behavior.[2]

We used Google Trends[TM] to assess online search activity on the novel coronavirus in Brazil and the results were correlated with a geolocation index of social distancing (namely Social Isolation Index [SII]) provided by a geo-tracking and advertising software supplier.[3] The dataset from Google Trends[TM] was obtained using the keyword *coronavirus* and the results were expressed as a relative search volume (RSV) factor ranging between 1 and 100, where 100 represented the highest share of the term over the time series. SII was reported in percentage and higher values indicated a smaller number of people entering or leaving within a radius of 450 meters their habitual homes during a day. RSV and SII were extracted day by day from February 1 to August 20, 2020 and the relationship between these measures was analyzed using the Spearman's rank correlation (ρ). P-values < 0.05 were considered statistically significant.

The online interest for coronavirus information in Brazil suddenly increased since March 11 (RSV 14) after the World Health Organization (WHO) has declared COVID-19 a pandemic and peaked after Brazilian Ministry of Health recognized the community transmission of the virus throughout the national territory on March 20 (RSV 94) and the beginning of a quarantine order in São Paulo state on March 21 (RSV 100). Interestingly, the SII increased from 24.4% on March 11 to 62.2% on March 21, which was the highest score reached during the COVID-19 outbreak in Brazil. A progressive decline in both online interest for coronavirus information and social isolation was observed from the end of March and a strong correlation was found between RSV and SII ($\rho = 0.638$; P-value < 0.001) (Figure 1).

Although there is a good-quality of evidence supporting the social distancing as an effective way in reducing incidence and mortality during the COVID-19 pandemic[4], effectiveness of control measures for SARS-CoV-2 transmission depend on the socioeconomic and cultural aspects as well as the credibility of political authorities and health information. Political beliefs, motivational aspects, income inequalities, low educational level, and the large number of Brazilian informal workers may be associated to the decreased interest for coronavirus information and the progressive decline in SII overtime since mid-March 2020.

Since Google Trends[TM] measures the relative popularity of a specific term, it is possible that search queries for coronavirus had initially enthusiastically draw attention the public interest followed by a gradual shift of interest to new topics. It is important to rapidly detect and respond to public rumors, perceptions, attitudes and behaviors around COVID-19 and control measures.[5] Recently, an infodemiology study showed that public response time to COVID-19 was different across countries, and the overall duration of public attention was brief.[6] Moreover, the enthusiasm about returning to

normalcy has the potential to undermine the lessons learnt[7] and communication campaigns should be continuously performed to provide trust information on COVID-19 and strengthening the public's vigilance to disease.[5] The decline in interest on coronavirus information in Brazil is worrying because it is followed by the reduction of containment measures - especially social distancing - in the country considered the new epicenter of the COVID-19 pandemic.

Despite digital technologies can amplify socioeconomic inequalities and are more accessible to high-income societies[8], exploring the trends of public interest in searching COVID 19 information on the Internet may be a useful and complementary tool to COVID-19 surveillance and commitment to disease preventive measures.

Conflict of Interest

The authors declare no financial interests or connections, direct or indirect, or other situations that might raise the question of bias in the work reported or the conclusions, implications or opinions stated—including pertinent commercial or other sources of funding for the individual author(s) or for the associated department(s) or organization(s), personal relationships or direct academic competition.

Authors' Contributions

All authors contributed equally to the manuscript.

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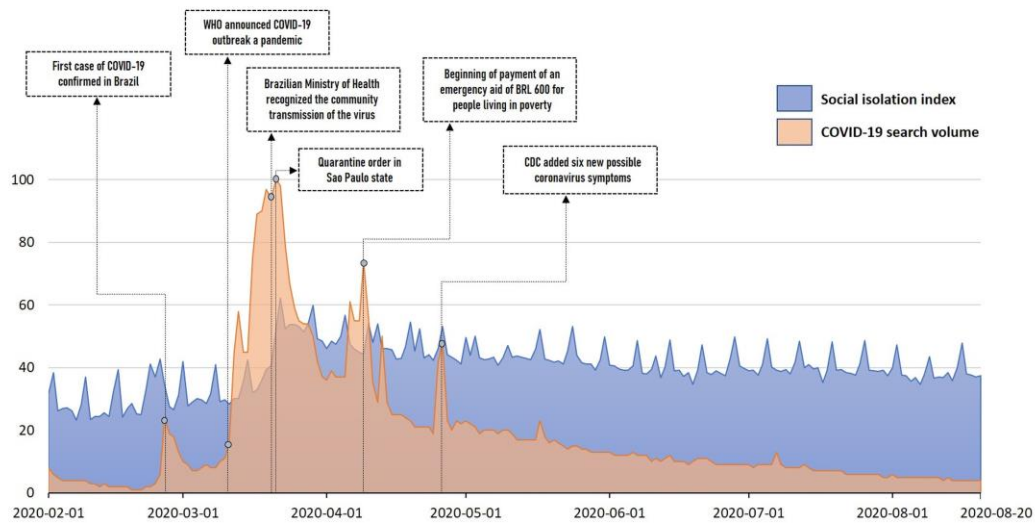
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Figure legends

Figure 1. Behavior of social isolation index and COVID-19 search volume using Google Trends[TM] over time in Brazil. The main events associated to COVID-19 outbreak in Brazil are highlighted in the graph.