

Fact or Fake? An analysis of disinformation regarding the Covid-19 pandemic in Brazil

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Abstract *This paper aims to present an analysis of the most widespread fake news about the New Coronavirus (Sars-CoV-2) on social networks and how it can harm public health. This is a quantitative empirical study, based on the notifications received by the Eu Fiscalizo Brazilian application. The conclusions show that WhatsApp is the primary channel for sharing fake news, followed by Instagram and Facebook. We can conclude that the dissemination of malicious content related to Covid-19 contributes to the discrediting of science and global health institutions, and the solution to this problem is to increase the level of adequate information for Brazilian society.*

Key words *Fake news, Health, Pandemic, Post-truth, Covid-19*

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Introduction

In late December 2019, the first cases of a new acute respiratory disease, similar to pneumonia, were identified in Wuhan, China. The disease outbreak spread rapidly to other countries, affecting millions of people and leading the World Health Organization (WHO) to declare the world situation as a pandemic on March 11, 2020¹.

Given the speed of infection, based on China and other European countries' experience, quarantine in Brazil was gradually established, following recommendations by the WHO and the Brazilian Ministry of Health. The Federal District was the first unit of the federation to establish increased social distancing measures².

In this context, social distancing was recommended as a strategy to control population mobility, reducing non-essential commercial activities, restricting people's movement at events and public transport, and closing schools and universities. Simultaneously, government authorities established masks and hand hygiene with alcohol gel as preventive measures, always following recommendations from global health institutions and the Brazilian Ministry of Health³. Similar actions were taken by the states, as was the case in São Paulo, on March 16, and Rio de Janeiro, on March 17. Again, on March 17, Brazil recorded its first death by COVID-19. At that time, 301 cases of the disease were confirmed in the country. Despite the recommended measures, the curve of cases and deaths increased exponentially at frightening levels⁴.

On the part of the Ministry of Health, the public statements at the onset of the crisis made daily by the then Minister Luiz Henrique Mandetta and his representatives underlined the need to reinforce isolation to stop the upward trend of the curve of infected people and preserve Hospital ICU beds, so as not to saturate the Unified Health System (SUS)⁵.

As in many parts of the world, there were drastic changes in Brazilians' daily lives, which were accompanied by a spiraling growth of not always accurate information, disseminated every day by the official media, or by social networks. As a result, a growing circulation of rumors about infection produced a second pandemic malfunction: the spread of fake news related to COVID-19, whose primary sources were social networks⁶. This movement reached the entire world, to the point that the World Health Organization (WHO) called it "infodemia". The term was incorporated in the current vocabulary as

the mass dissemination of fake news and rumors that compromise the credibility of official explanations based on scientific evidence⁷. "Inaccurate information about COVID-19 is spreading faster than the virus itself", said WHO social media manager Aleksandra Kuzmanovic in an interview with CNN television in early March⁸. Thus, the natural history of the disease and speculation about it began to be told in real-time.

The dissemination of false information and the culture of misinformation in the health area is not new. In 2008, rumors spread about a natural recipe for protection against yellow fever, on social networks and the WhatsApp messaging app. One of the theories disseminated was that the disease was a scam created to sell vaccines. There were still other theories, such as the one that said that the vaccine paralyzed the liver, that mutations of the virus affected the vaccine's effectiveness, and that the consumption of propolis could repel the mosquito transmitting the disease. During this period, a very diverse and confusing popular reaction was observed. Some ran in search of the vaccine, while others were victims of those who led them to believe that immunization would be ineffective and lead to death.

Because of the outbreak of yellow fever in urban areas, the Ministry of Health's goal was to vaccinate 80% of the Brazilian population. However, only 55% joined the campaign. According to the World Health Organization, fake news may have been one of the causes that hampered the achievement of the established goal⁹.

Henriques¹⁰ believes health is a good culture medium for rumors and the rapid circulation of news. The researcher believes that the speed of the dissemination of fake news occurs because part of the population does not receive adequate information about the health problems that affect it, due to the lack of credibility in health authorities, and the anxiety caused by news about diseases and epidemics. Currently, those who follow news and social networks observe that the phenomenon of fake news seems to have taken on alarming proportions amid the turbulent sea of information during the COVID-19 outbreak, viralizing news that increases the risk to the health of the population¹¹.

In this context, this paper aims to present some fake news circulating on social networks during the COVID-19 pandemic. This is an empirical study based on the content analysis technique that studies the circulation of fake news during the health crisis notified by the *Eu Fiscalizo* application users.

The phenomenon of fake news

The term fake news refers to the mass production and propagation of false news, to intentionally distort facts in order to attract audiences, deceive, misinform, mislead, manipulate public opinion, discredit or exalt an institution or a person, before a specific subject, to obtain economic and political advantages¹².

The term fake news became popular worldwide during news coverage of the 2016 U.S. Presidential Elections¹². The term was used in the media by the candidate for U.S. Presidency against his opponents to disqualify information that favored their candidacy¹³. Likewise, in the United Kingdom, the referendum that led the country to leave the European Union (Brexit) and enter a severe political crisis was primarily shaped by lies spread by xenophobes and right-wing activists¹⁴. The spread of fake news also reached the Brazilian Presidential Elections, when the extreme right supposedly managed to subvert the already battered national democracy through to the viral power of social networks. The issue remains under investigation here in Brazil amid a pandemic: The Fake News Parliamentary Investigation Committee (CPI) disputes the news with the New Coronavirus¹⁵.

Therefore, in the political context, fake news and statements left journalism's scope and were used as an election marketing tactic. The phenomenon of spreading fake news gained almost immediate speed, combined with the internet's global reach¹³ and new technologies, cell phones, and digital platforms that expanded the human communication capacity. In just one click, news can reach millions of people, without its source being immediately identified¹⁶. In the same vein, García¹⁷ quotes Goebbels, the Nazi propaganda minister's famous phrase: a sufficiently repeated lie becomes a truth.

It is the first time that the world has faced a pandemic in this digital age of political marketing, an era also called "post-truth". This term was recently included in the Oxford University Press dictionary and defined the set of circumstances in which objective facts are less influential than appeals to emotion and personal beliefs^{18,19} in public opinion formation. Figueira and Santos²⁰ state that the growing influence of fake news on the offline universe and the blurring distinction between factual materiality and the subjective analytical character of opinions characterize the so-called "post-truth", the object of analysis in the communication area, especially from 2016, as

one of the effects of the U.S. Presidential Elections.

In other words, quickly disseminated excessive fake news reveals an unsettling loss of confidence in institutions previously known for presenting and representing the truth of the facts: the press, science, and intellectual elites, in general²¹. Fake news and post-truth go hand in hand. In the specific case of social experience during the Covid-19 pandemic, the most dangerous combination of the two terms occurs, because the information and guidelines that contradict scientific knowledge disseminate fear and even quackery, increasing the likelihood of advancing infection and deaths¹⁰.

Material and methods

In this study, the quantitative content analysis was applied to fake news about Covid-19 produced, disseminated, and notified by the *Eu Fiscalizo* application users. The application was conceived from a post-doctoral study by researcher Claudia Galhardi, at the National School of Public Health (ENSP). It was supervised by Maria Cecília de Souza Minayo and supported by the Research Support Foundation of the State of Rio de Janeiro (Faperj), which allowed users to evaluate content conveyed in the media, entertainment, digital platforms and, through it, notify content that they deemed inappropriate, thus exercising their citizenship for the right to quality communication and entertainment²².

Launched in a session of the Federal Senate on February 10, a month before the first Covid-19 case was registered in Brazil, the platform that received several complaints about inappropriate content for children and adolescents on open, subscription and streaming service television, cinema, electronic games, shows, and advertising, now receives 98% notifications about fake news and Covid-19.

The content analysis of fake news collected from March 17 to April 10, 2020, is based on this application's data. This type of analysis can be applied from a hermeneutic and quantitative viewpoint. In this investigation, the most adopted quantitative approach in communication is used to understand the scope of symbolic phenomena, their social role, effects, and repercussions²³⁻²⁶.

Figure 1 shows the methodological design proposed here.

The period established for the study of fake news notification concerning the new Corona-

virus (Sars-CoV-2) was 25 consecutive days. For this purpose, 154 news related to the topic were separated from the reported fake news and stored in the application during the stipulated time. Then, they were coded and analyzed.

Results and discussion

Table 1 shows the data on the main fake news received in the application, during the research phase analyzed here.

As shown in the Table 1, the fake news received between March 17 and April 10 reveals that 65% of them taught homemade methods to prevent the spread of Covid-19; 20% showed homemade methods to cure the disease; 5.7% referred to banking scams; 5% mentioned scams on fundraising for a research institution; and 4.3% concerned the use of the New Coronavirus as a political strategy.

The survey found that 10.5% of fake news was posted on Instagram, 15.8% on Facebook, and 73.7% circulated via WhatsApp. The results also show that 26.6% of the fake news published on Facebook assigns to Fiocruz the advisor's role concerning protection against the New Coronavirus. The study also points out that 71.4% of

the fake messages circulated by WhatsApp cite the Foundation as a source of texts on Covid-19 and measures to protect and combat the disease. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) together account for 2% of the institutions cited as a source of information on care and measures against the New Coronavirus in WhatsApp messages²⁷.

Below, we highlight the ten main fake news carried about the Coronavirus, denounced through *Eu Fiscalizo*. These topics were commented by ENSP pulmonologist and researcher, Margareth Dalcolmo:

1. *Water boiled with garlic serves as a treatment for Coronavirus.* According to Margareth Dalcolmo, to date, there is no scientifically proven treatment with garlic for the Coronavirus. Tests are being carried out with drugs and not food. However, nothing in science can validate the effectiveness of any of them so far.

2. *The Coronavirus is more extensive than usual, so any mask prevents it from entering the body.* The Coronavirus is not more extensive than a typical virus, according to the researcher. Above all, the mask protects in public transport, elevators, among other places, with a more significant number of people.

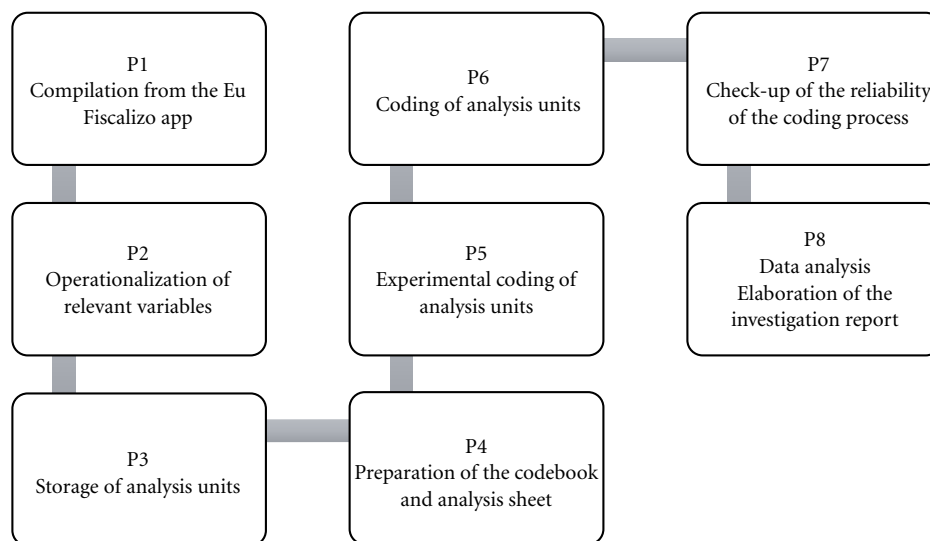


Figure 1. Methodological design of the analysis.

Table 1. Main fake news disseminated on social networks WhatsApp, Facebook, and Instagram (March 17 to April 10, 2020).

Fake News	Total
Homemade Covid-19 infection prevention methods	65%
Homemade Covid-19 cure methods	20%
Banking scams	5.7%
Scams/fundraising - research institutions	5%
Covid-19 is a political strategy	4.3%
Total	100%

Source: Galhardi and Minayo (2020).

3. *When it falls on a metal surface, the virus remains alive for 12 hours and, in tissue, for nine hours. Therefore, washing clothes or putting them in the sun for two hours eliminates the virus.* The virus stays longer on plastic surfaces, not metal. The researcher points out that washing clothes with soap and water is indicated for the elimination of infection. However, the exposure or not of clothing to the sun does not interfere with its elimination.

4. *The virus lives in the hands for 10 minutes.* According to Margareth, there is no scientific evidence to prove how long the virus remains in the hands. It is recommended to wash them properly with soap and water whenever possible.

5. *The virus exposed to a temperature above 26 degrees dies.* According to the researcher, there is no temperature limit to which the virus cannot resist.

6. *As the virus does not resist the temperature above 26 degrees, the water exposed to the sun can be consumed without any danger.* Since there is no temperature limit to which the virus cannot resist, it is not recommended to consume water exposed to the sun.

7. *The virus spreads in the air – Yes, but through droplets or aerosol, caused by cough, including in medical procedures.* Hence the reason that so many health professionals were contaminated, according to her.

8. *Avoid eating ice cream or cold dishes.* Cold or hot dishes do not interfere with the resistance of the virus, according to the researcher.

9. *Gargling with warm or salty water prevents the virus from reaching the lungs.* Warm or saltwater does not prevent the virus from reaching the lungs. Margareth explains that lung involvement will depend on the physiological characteristics of the infected individual.

10. *Gel alcohol can be made at home with just two ingredients –* It is not recommended to produce gel alcohol at home. The cleaning material most suitable for the elimination of the Coronavirus, according to the researcher, is any detergent that is used to wash dishes, or bleach. Homemade cleaning material can be made by diluting bleach in the proportion of 1 liter to 3 liters of water. This also serves to clean smooth surfaces, especially plastic ones, where the virus can stay longer. The best cleaning way and the gold standard is still soap and water. Gel alcohol alone cannot be used all the time. The hands need to be washed, says the researcher.

Fake news disseminated by the digital platforms related to SARS-CoV-2 can influence the population's behavior and put the citizen's adherence to scientifically proven care at risk. This investigation's quantitative data prove that the dissemination of fake news on cure and prevention without any scientific basis is produced either by ignorance or to misinform and induce citizens to incur in mistakes in personal decisions and their health care. This is even more dangerous in a pandemic scenario, as research shows that 110 million Brazilians believe fake news about Covid-19²⁸.

Information from the same source indicates that nine out of ten Brazilians interviewed in the country read or heard at least one false information about the disease, and seven out of ten believed in at least one uninformative content about the pandemic²⁹. In other words, ignorance, misinformation, or bad faith can lead specific individuals to infect hundreds of people with the Coronavirus, neutralizing doctors, and public authorities' efforts. This is what Avaaz (non-governmental social mobilization organization) campaign coordinator Laura Moraes²⁹ evaluates.

Communication experts are unanimous in stating that the President of the Republic of Brazil's statements have contributed to misinform and confuse the population about disease transmission prevention methods. Right after criticizing the quarantine and the closure of schools and businesses, in a statement on the evening of March 24, the digital monitoring platform Torabit identified thousands of user comments on social media who were unsure as to whether they should stop the quarantine or not. "It was a huge confusion because several medical entities and governors immediately condemned the President's statement. Many people did not know whom they should believe in", said advertising executive Stephanie Jorge, co-founder of Torabit,

in a report in the *Pesquisa Fapesp* Journal. According to Stephanie, an explosion of fake news was observed those days associating the new Coronavirus with political facts⁸.

Another emblematic example during this period was the increased poisoning cases caused by drinking cleaning products in New York City after the American President declared that ingesting disinfectant would fight the new Coronavirus. The use of disinfectant is provenly effective in killing the virus in the disinfection of homes. However, in the daily press conference at the White House on Covid-19, the President of the United States suggested ingesting certain products for the treatment of infected patients. According to a NY Daily News report, in the 18 hours following Trump's statement, the number of New Yorkers who turned to health officials due to poisoning caused by drinking bleach or other cleaning products increased against the same period in 2019³⁰.

Fake news is also identified in certain influential people's messages to disseminate content that is not necessarily fake but aims to capitalize politically and economically³¹. Some criminals take advantage of society's fear and panic to spread links and seize victims' confidential data³². The *Eu Fiscalizo* app notified a banking scam. The SMS message requested the customer to click on a link to update their data; otherwise, their account would be blocked (Figure 2). According to the Lupa agency, from March to June 2020, 65 frauds were denied by fake news verification platforms in Latin America, Spain, and Portugal³³.

Another vehicle with information that helps explain the national situation in the face of fake news is the global cybersecurity company Kaspersky, in partnership with the CORPA research company, in Latin America. According to these agencies' research, 62% of Brazilians do not know whether a message is false or true³².

Another type of scam has been denounced in the *Eu Fiscalizo* app. It refers to a post produced by the *Movimento Brasil Livre* ("Free Brazil Movement", MBL) to collect donations. The publication highlights the Oswaldo Cruz Foundation (Fiocruz) as a reference laboratory for combating Covid-19 and prints the photo of the Foundation Castle, headquarters of Rio de Janeiro (Figure 3). The narrative presented in the post is true. However, in the post's footer, the MBL website is indicated and directs the user to the Movement's contribution page. Fiocruz indeed launched, on April 2, 2020, a fundraising campaign to be used to face the new Coronavirus. However, the

campaign christened as *Unidos contra a Covid-19* ("United against Covid-19"), receives donations from individuals and companies made directly on the institution's website³⁴.

Another message shared on social networks delegitimizing the official data presented by the Civil Registry Transparency Portal about deaths in Ceará due to the New Coronavirus was also detected by the *Eu Fiscalizo* app. The post received mentioned that death certificates from respiratory diseases in Ceará, from March 16 to May 10, 2020, were being changed to deaths by Covid-19 (Figure 4). According to agency Lupa's verification, the post's data were outdated and included deaths unrelated to respiratory problems. On May 11, the numbers verified on the 2019 Civil Registry Transparency Portal showed 2,808 deaths from respiratory diseases against 3,217 in 2020 – which represented an increase of approximately 409 in the State and an increase of 14.5% when compared to that recorded in 2019³⁵.

A study by researchers at the Massachusetts Institute of Technology concludes that sharing fake news is 70% more likely to go viral than real news. According to the survey, each true post reaches, on average, a thousand people, while fake posts reach from one thousand to 100 thousand³⁶.

In a recent paper published in the journal *Trends in Cognitive Science*, psychology and neural science professor at the New York University, Jay Van Bavel³⁷, shared what he discovered about the process that leads people to believe fake news. Among the points raised, the professor highlights the so-called "confirmation bias", which translates into many individuals' tendency to seek information that reaffirms their own beliefs, whether through selective memories or readings from sources that are at their side. For this reason, this researcher concludes that humans tend to embrace and share evidence that reinforces their worldview and reject everything that contradicts it³⁷.

In an interview with BBC News Brasil, psychiatrist and director of the Brazilian Psychiatric Association, Cláudio Martins³⁸ stated that people who share fake news experience a sense of well-being similar drug users. Martins argues that immediate reward and pleasure mechanisms are triggered by the brain when someone receives news that pleases him, which drives people to compulsively transmit the same information so that their circle of friends will feel the same. This explains the behavior of compulsive fake news forwarders. The researcher believes that this feel-

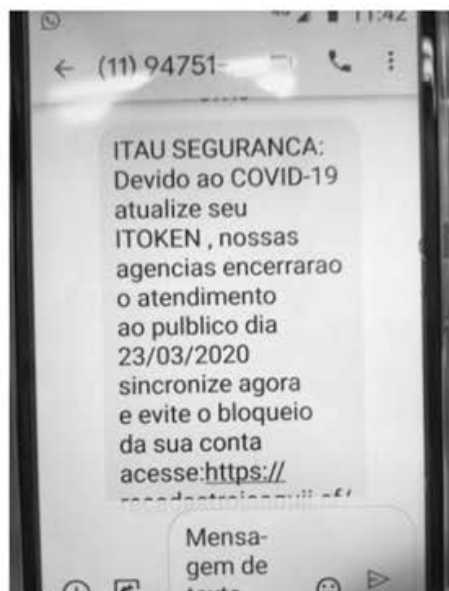


Figure 2. Banking scam notification received by Eu Fiscalizo between March 17 and April 10.

Source: Post extracted from the Eu Fiscalizo app database.



Figure 3. Notification of the fake fundraising campaign received by Eu Fiscalizo between March 17 and April 10.

Source: Post extracted from the Eu Fiscalizo app database.

ing of euphoria prevents the development of the critical sense of those who receive fake news. It is “emotional infantilization”, which means that few people do not bother to check the origin or the veracity of the information. The feeling, he explains, is the same as when they hear gossip. According to Martins, it is necessary to understand that the belief in fake news is a sociocultural phenomenon that involves several factors of personal and social life from a behavioral viewpoint³⁸.

Final considerations

This text presented the first stage of research on fake news, to understand the rise of denialism to scientific information in times of Covid-19 pandemic in the post-truth era. Firstly, noteworthy is the low investment in health in long-range technologies, based on information science, a point addressed by Souza³⁹ in a recent paper. Therefore, this work is essential, more informative than analytical, which stirs the debate about fake news.

The data collected here show that the WhatsApp messaging application is the most widely used platform for disseminating disinformation, followed by Facebook.

When analyzing the phenomenon of fake health news, during the pandemic, we can affirm that the spread of fake news contributes to discrediting science and global public health institutions, and weakens people’s adherence to the necessary preventive care, when addressing with the epidemic.

In line with the construction of institutional discredit, it is worth remembering that the empirical study that used the *Eu Fiscalizo* application showed that 26.6% of fake news published on Facebook point to Fiocruz as a guide for homemade formulas for protecting against the new Coronavirus, and 71.4% of the fake messages circulated by WhatsApp cited the Oswaldo Cruz Foundation as a source of texts with guidelines for homemade protection measures to eliminate the virus. In summary, the study reveals that this institution’s name is used to legitimize misinformation in health. This intentional action can

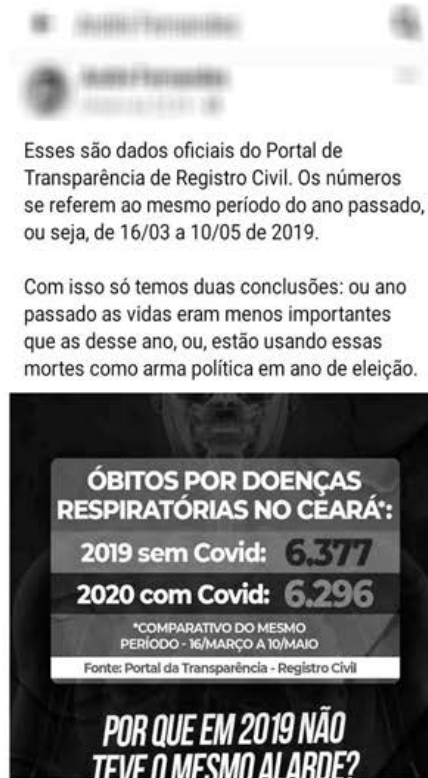


Figure 4. Notification of data distortions on deaths in Brazil received by Eu Fiscalizo between March 17 and April 10.

Source: Post extracted from the Eu Fiscalizo app database.

contribute to making the wrong decisions and promote disbelief in science and official guidelines.

How can we put an end to fake news? This is the question that instigates the media and society

today. It is a challenging and complex undertaking. What can be recommended is that citizens always check the content disseminated from supposed official sources. At the same time, institutions must increase the level of reliable information accessible to the entire population. Many researchers working in communication emphasize that the temptation to regulate content is a delicate maneuver, as it can flirt with censorship, which is abhorrent. The best regulatory approach is possibly acting directly in the public debate, increasing social awareness about the harmful impacts of fake news. An extraordinary effort made by the European Community aims to increase the degree of scientific knowledge in social life. In Brazil, despite all the situational political weather, it seems that this process is also taking place, and it is important to encourage it.

Similarly, it is essential to carry out and deepen research that contains hypotheses about the beliefs and values of people who more easily adhere to the narratives broadcast on the networks. It is also essential to seek to understand how mediation takes place between digital platforms and the consumer and content sharing society.

This paper has limitations. The empirical work consisted of observing a short period of operation of the *Eu Fiscalizo*, and that is all we could do for now. However, it is crucial to deepen its role and contribution and elicit issues that help improving interaction with the population aiming at health in the country. We are equally aware that, although this text brings much information, the central questions for analyzing the phenomenon of fake news have not been answered. The current reflections are still very contradictory, superficial, erratic, and must be further studied and discussed, which was not achieved in this work. Possibly, its role is to raise issues to be further analyzed and debated in the academic sphere and the arena of political and social practices.

Collaborations

CP Galhardi participated in the design, methodology, statistical analysis; interpretation of data and writing of the article. NP Freire participated in the conception, design, writing of the article and discussion of the findings. MCS Minayo guided the research, critical review of intellectual content; discussion of the findings, final approval of the version to be published. MCM Fagundes carried out the bibliographic survey.

References

1. World Health Organization (WHO). *WHO Director-General's opening remarks at the media briefing on COVID-19* [Internet]. 2020 [acessado 2020 Jun 12]. Disponível em: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
2. Aquino EML, Silveira IH, Pescarini JM, Aquino R, Souza-Filho JA, Rocha AS, Ferreira A, Victor A, Teixeira C, Machado DB, Paixão E, Alves FJO, Pilecco F, Menezes G, Gabrielli L, Leite L, Almeida MCC, Ortelan N, Fernandes QHRF, Ortiz RJE, Palmeira RN, Pinto Junior EP, Aragão E, Souza LEPE, Barral Netto M, Teixeira MG, Barreto ML, Ichihara MY, Lima RTRS. Medidas de distanciamento social no controle da pandemia de COVID-19: potenciais impactos e desafios no Brasil. *Ciênc Saude Colet* 2020; 25(Supl. 1):2423-2446.
3. Brasil. Ministério da Saúde (MS). *Orientações para retomada com segurança* [Internet]. 2020 [acessado 2020 Jul 20]. Disponível em: <https://coronavirus.saude.gov.br/orientacoes-para-retomada-com-seguranca>
4. G1. *São Paulo registra a primeira morte pelo novo coronavírus no Brasil* [Internet]. 2020 [acessado 2020 Jul 20]. Disponível em: <https://g1.globo.com/sp/sao-paulo/noticia/2020/03/17/estado-de-sp-tem-o-primeiro-caso-de-morte-provocada-pelo-coronavirus.ghtml>
5. El País. *Mandetta apela por isolamento para evitar colapso do sistema de saúde no final de abril* [Internet]. 2020 [acessado 2020 Jul 20]. Disponível em: <https://brasil.elpais.com/brasil/2020-03-20/mandetta-apela-por-isolamento-para-evitar-colapso-do-sistema-de-saude-no-final-de-abril.html>
6. O Globo. *Da 'gripezinha' ao 'e daí?', confira as reações de Bolsonaro enquanto aumentavam as mortes pela pandemia no Brasil* [Internet]. 2020 [acessado 2020 Jul 20]. Disponível em: <https://oglobo.globo.com/brasil/da-gripezinha-ao-dai-confira-as-reacoes-de-bolsonaro-enquanto-aumentavam-as-mortes-pela-pandemia-no-brasil-24402593>
7. Zarocostas J. How to fight an infodemic. *Lancet* 2020; 395(10225):676.
8. Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP). *Epidemia de fake news* [Internet]. 2020 [acessado 2020 Jul 20]. Disponível em: <https://revistapesquisa.fapesp.br/epidemia-de-fake-news/>
9. Sacramento I, Paiva R. Fake News, WhatsApp e a vacinação contra febre amarela no Brasil. *Matrizes* 2020; 14(1):79-106.
10. Henriques C. A dupla epidemia: febre amarela e desinformação. *Rev Eletrônica Comunicação Informação Inovação Saúde* 2018; 12(1):9-13.
11. Lara-Navarra P, Falciani H, Sánchez-Pérez EA, Ferrer-Sapena A. Gerenciamento de informações em saúde e meio ambiente: em direção a um sistema automático para detecção de notícias falsas. *Int J Environ Res Public Health* 2020; 17:1066-1076.
12. Dicionário de Cambridge. *Significado de fake news em inglês* [Internet]. *Cambridge Dictionaire*. [acessado 2020 Jul 20]. Disponível em: <https://dictionary.cambridge.org/pt/dicionario/ingles/fake-news>

13. Estadão. *WhatsApp confirma ação de empresas em disparo de mensagens durante eleições* [Internet]. 2019 [acessado 2020 Jul 20]. Disponível em: <https://politica.estadao.com.br/blogs/estadao-verifica/whatsapp-confirma-acao-de-empresas-em-disparo-de-mensagens-durante-eleicoes/>
14. Revista Piauí. *Cenas de um Brexit sem fim: As consequências da pequena rebelião britânica* [Internet]. 2019 [acessado 2020 Jul 20]. Disponível em: <https://piaui.folha.uol.com.br/materia/cenas-de-um-brexit-sem-fim/>
15. UOL. *Coronavírus faz CPI das Fake News estudar 52 quebras de sigilo à distância* [Internet]. Brasília; 2020 [acessado 2020 Jul 20]. Disponível em: <https://noticias.uol.com.br/politica/ultimas-noticias/2020/03/20/coronavirus-cpi-fakenews-votacao-52-quebras-sigilos-whatsapp-facebook.htm>
16. Weedon J, Nuland W, Stamos A. *Information Operations and Facebook* [Internet]. Facebook Newsroom; 2017 [acessado 2020 Jul 02]. Disponível em: <https://fbnewsroomus.files.wordpress.com/2017/04/facebook-and-information-operations-v1.pdf>
17. García JS. Paralogismos y sofismas del discurso político español. La falacia en un corpus de debates parlamentarios. *Anuario Estudios Filológicos* 2010; 33:271-290.
18. Dicionário de Oxford. *Definition of post-truth adjective from the Oxford Advanced Learner's Dictionary* [Internet]. [acessado 2020 Jun 15]. Disponível em: <https://www.oxfordlearnersdictionaries.com/us/definition/english/post-truth?q=POST-TRUTH>
19. D'Ancona M. *Pós-verdade: a nova guerra contra os fatos em tempos de fake news*. Barueri: Faro editorial; 2018.
20. Figueira J; Santos S. *As fake news, a nova ordem (des) informativa*. Coimbra: University Press; 2019.
21. Barbosa M. Isso a imprensa não mostra. In: Barbosa A, organizador. *Pós-verdade e fake news: reflexões sobre a guerra de narrativas*. Rio de Janeiro: Cobogó; 2019. p.7-17.
22. Agência Focruz de Notícias. *Pesquisadoras da Focruz lançam novo aplicativo Eu Fiscalizo* [Internet]. 2020 [acessado 2020 Jun 25]. Disponível em: <https://agencia.focruz.br/pesquisadoras-da-focruz-lancam-novo-aplicativo-eu-fiscalizo>
23. Bardin L. *Análise de conteúdo*. São Paulo: Almedina Brasil; 2011.
24. Krippendorff K. *Content Analysis: An introduction to its methodology*. Los Angeles: Sage; 2013.
25. Minayo MCS. *O desafio do conhecimento*. São Paulo: Editora Hucitec; 2015.
26. Igartua JJ. *Métodos cuantitativos de investigación en comunicación*. Barcelona: Bosch; 2006.
27. Informe ENSP. *Pesquisa revela dados sobre Fake News relacionadas ao novo coronavírus* [Internet]. [acessado 2020 Jul 21]. Disponível em: <http://www.ensp.fiocruz.br/portal-ensp/informe/site/materia/detalhe/48662>
28. AVAAZ. *O Brasil está sofrendo uma infodemia de Covid-19* [Internet]. [acessado 2020 Jul 07]. Disponível em: https://avaazimages.avaaz.org/brasil_infodemia_coronavirus.pdf
29. Coletiva.Net. *Pesquisa alerta que sete a cada dez brasileiros acreditam em fake news sobre Covid-19* [Internet]. 2020 [acessado 2020 Jul 05]. Disponível em: <https://coletiva.net/noticias/pesquisa-alerta-que-sete-em-cada-dez-brasileiros-acreditam-em-fake-news-sobre-covid-19,358082.jhtml>
30. Revista VEJA. *Casos de intoxicação por desinfetantes crescem em NY após sugestão de Trump* [Internet]. 2020 [acessado 2020 Jul 22]. Disponível em: <https://veja.abril.com.br/mundo/casos-de-intoxicacao-por-desinfetante-crescem-em-ny-apos-sugestao-de-trump/>
31. Delmazo C, Valente CLJ. Fake news nas redes sociais online: propagação e reações à desinformação em busca de cliques. *Média Jornalismo* 2018; 1:155-169.
32. Agência LUPA. *Na pandemia, criminosos usam falsas ofertas e benefícios para aplicar golpes* [Internet]. 2020 [acessado 2020 Jul 10]. Disponível em: <https://piaui.folha.uol.com.br/lupa/2020/07/21/coronaverificado-golpes-pandemia/>
33. Empresa Kaspersky. *62% dos brasileiros não sabem reconhecer uma notícia falsa* [Internet]. 2020 [acessado 2020 Jul 18]. Disponível em: https://www.kaspersky.com.br/about/press-releases/2020_62-dos-brasileiros-nao-sabem-reconhecer-uma-noticia-falsa
34. Informe ENSP. *Pesquisa revela dados sobre fake news relacionadas ao novo coronavírus* [Internet]. [acessado 2020 Jul 21]. Disponível em: <http://www.ensp.fiocruz.br/portal-ensp/informe/site/materia/detalhe/48662>
35. NUJOC Checagem. *Perdeu a linha: afirmações do deputado estadual (PSL-CE), André Fernandes, sobre as mortes por COVID 19 são falsas* [Internet]. 2020 [acessado 2020 Jul 02]. Disponível em: <https://nujocchecagem.wordpress.com/2020/06/25/perdeu-a-linha-afirmacoes-do-deputado-estadual-psl-ce-andre-fernandes-sobre-as-mortes-por-covid-19-sao-falsas/>
36. Vosoughi S, Roy D, Aralet S. The spread of true and false news online. *Science* 2018; 359(6380):1146-1151.
37. Van Bavel JJ, Pereira A. The Partisan Brain: An Identity-Based Model of Political Belief. *Trends Cognitive Sci* 2018; 22(3):213-224.
38. BBC Brasil. 'É como usar drogas': por que as pessoas acreditam e compartilham notícias falsas? [Internet]. São Paulo; 2018 [acessado 2020 Jul 02]. Disponível em: <https://www.bbc.com/portuguese/brasil-45767478>
39. Souza OD. A pandemia de COVID-19 para além das Ciências da Saúde: reflexões sobre sua determinação social. *Cien Saude Colet* 2020; 25(Supl. 1):2469-2477.

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