The infodemic transcends the pandemic

Neyson Pinheiro Freire (https://orcid.org/0000-0002-9038-9974) [1]
Isabel Cristina Kowal Olm Cunha (https://orcid.org/0000-0001-6374-5665) [1]
Francisco Rosemiro Guimarães Ximenes Neto (https://orcid.org/0000-0002-7905-9990) [1, 2, 3]
Maria Helena Machado (http://orcid.org/0000-0002-5209-2424) [3]
Maria Cecília de Souza Minayo (https://orcid.org/0000-0001-6187-9301) [3]

Abstract *This paper highlights the advance of science in interpreting pandemics, in contrast to the failure of governments that politicized the approach to the global public health emergency resulting from the COVID-19 pandemic. This study reflects on cognitive dissonance caused by the infodemic. It addresses the need to apply infodemiology to mitigate the deleterious effects of fake news intentionally fabricated to confuse, mislead, manipulate, and deny the reality without losing sight of the fact that the roots of the problem are historical, circumstantial, profound, and challenging. This work reveals the impacts of this situation for health professionals and exposes the fine line between freedom of expression and the fundamental right to life, leading to the conclusion that wrong choices in public health can cause preventable deaths.*

Key words *Pandemic, COVID-19, Misinformation, Infodemic, Health*

[1] Escola Paulista de Enfermagem, Universidade Federal de São Paulo. R. Napoleão de Barros 754, Vila Clementino. 04024-002 São Paulo SP Brasil. neysonfreire@gmail.com
[2] Universidade Estadual Vale do Acaraú. Sobral CE Brasil.
[3] Escola Nacional de Saúde Pública Sergio Arouca, Fundação Oswaldo Cruz. Rio de Janeiro RJ Brasil.

The global public health emergency triggered by COVID-19 virulence evidenced the evolution of the human capacity to understand, conceptualize, react to a pandemic, and seek the best evidence for decision-making. Based on evidence established in Wuhan, China, in December 2019, scientists took an average of just two weeks to perform the genetic sequencing of the Sars-CoV-2 virus identified in infected patients, and effective vaccines against infection caused by this pathogen were available less than a year later. It was a quick and efficient response, above all, when compared to the responses that humanity has managed to rehearse against other pandemics, such as H1N1, the Spanish Flu, and the Black Death[1], keeping the due proportions.

However, the remarkable scientific advance achieved in understanding the new coronavirus did not prevent the failure of the resounding strategies of nations such as Brazil, India, and the United States to face the COVID-19 pandemic, which is confirmed by the significant volume of confirmed cases, admissions of severe cases in Intensive Care Units (ICU), and preventable deaths recorded in these countries[2]. Besides mistaken public health policies, such as herd immunity and adopting medicines without scientific evidence, this outcome derives from the exacerbated valuation of miracle cures, conspiracy theories, spectacular news, and sedition against vaccines, to the detriment of simple and proven sanitary measures, such as the use of masks, hand hygiene, social distancing, and the acquisition of immunizing agents in a timely and specific manner[3].

These contradictions led a considerable part of the population to cognitive dissonance, characterized by the exponential volume of content available on the world wide web about the pandemic. As a result, the World Health Organization (WHO) started to employ the term *infodemic* to designate *excess information (accurate or not), hindering finding reputable sources and reliable guidance when needed*[4]. According to the WHO, only in March 2020, when the public health emergency resulting from the new coronavirus pandemic was officially declared, it was possible to compute the publication of 361 million videos, 19,200 papers, and 550 million tweets with the terms *coronavirus*, *covid19*, *covid-19*, or *covid_19*.

In this infodemic context, the spread of false or fanciful news can occur as a *confirmation bias*[5], which leads individuals to seek information that confirms their beliefs. Nevertheless, considering the polarized discussion on COVID-19 in Brazil, the large-scale production of fake news about the

pandemic is notable, in a deliberate, intentional, and criminal manner, to deceive, manipulate, mislead, and deny reality for political, economic, and ideological reasons. This problem was greatly aggravated from the moment that government officials from several countries started to broadcast news without a reliable source and guide the use of medications without proven efficacy for the treatment of COVID-19[6].

Unfortunately, the fake news resource has served as a motto for racism and xenophobia against the Chinese people, whose government has been accused, without evidence, of promoting the leak of the Sars-CoV-2 virus from a laboratory intentionally. In Brazil, the U.S., and Europe, the use of expressions such as *Chinese virus* and *comunavirus* gained strength among conspirators, who despise any prudence in the manifestation of discriminatory behavior, and which were already introjected and found fertile ground to proliferate in an infodemic context. In neighboring Japan, the bioterrorism accusation against the Chinese government and the prominence of hashtags like *#ChineseDon'tComeToJapan* show the public's willingness to develop unacceptable behavior[7].

In a strict sense, it is providential to discuss objective ways to appease the deliberate production of fake news about public health and identify criminal conduct that interferes with efficient public policies and, consequently, causes lack of care and chaos and deaths. However, it is prudent and necessary to seek to engender this initiative without harming the right to an opinion and individual freedom and invading citizens' privacy. In this context, it is essential not to allow for censorship[8], as this would be even more harmful to society and democracy than the infodemic itself. On the other hand, it is crucial to consider that the right to an opinion does not confer the prerogative of basing it on falsehoods, that individual freedom cannot override the public interest, and that subject's privacy is no more important than the fundamental right to life.

The misinformation pandemic triggered by social networks and instant messaging applications demands a globally integrated and coordinated response by institutions and experts. Infodemiology[9] can be used to alleviate the deleterious effects of the infodemic. It is a branch of communication science dedicated to delving deep into the internet, looking for public health content provided by common users, analyzing it to improve communication and delivering public health services. In practice, this means monitor-

ing information, encouraging health and science literacy, news improvement processes, translating scientific knowledge, and carrying out systematic checks and reviews to minimize distortion and misinformation factors.

The use of infodemiology is imperative since it directly affects health professionals. A considerable portion of the population addresses the category inhumanely as if health professionals were hosts of diseases and should be segregated from social and family life. According to data from the survey Working Conditions of Health Professionals in the COVID-9 Context, carried out by the Oswaldo Cruz Foundation (Fiocruz), 40% of these workers have already experienced episodes of violence and discrimination in the workplace, 33.7% have already been victims of discrimination in their neighborhood, 27.6% report prejudice on public transport, and 90% of them believe that fake news is an obstacle in the fight against COVID-19, since, according to the health professionals themselves, 76% of patients arrive at health facilities with some belief based on fake news.

Practical efforts are being deployed globally to contain the adverse effects of the infodemic arising from the COVID-19 pandemic. Shortly after the global public health emergency decree arising from COVID-19, the WHO launched a new information platform called WHO Information Network for Epidemics (EPI-WIN)[11] to disseminate, share, and broaden correct messages to specific audiences. This measure proves that a global epidemic of misinformation, spreading rapidly through social networks and instant communication applications, is a relevant public health concern. In this sense, although it is not a definitive solution, the permanent contribution of public health institutions is essential to encourage people to be informed and encouraged to act appropriately.

However, the task is far from simple. Fighting the epidemic of fake news, especially those affecting the credibility of vaccines and the efficiency of health measures, involves structural issues that transcend the security weaknesses of communication applications and the criminal activity of misinformation gangs. The prelude to the easy penetration of fake news in a given society essentially involves the quality of education, the level of cognitive development of individuals, and the sanity of the political debate, among other social, cultural, political, and economic factors. That is why it is so difficult to solve the problem promptly, as the phenomenon occurs.

In the worst case, considering the volume of contracted vaccines for the second half of 2021, the advance of research on new drugs, and the domain of accumulated scientific knowledge about the Sars-CoV-2 virus, the current pandemic can be defeated and left behind in 2022: unlike the infodemic, for which the spread of a fully effective vaccine or a definitive remedy within a specified period is not foreseeable. With no end date yet, the fake news epidemic will continue to harm society, even after the end of the pandemic.

Collaborations

NP Freire, ICKO Cunha, FRG Ximenes Neto, MH Machado, and MCS Minayo participated in the conception and design of the study and writing and reviewing the intellectual content until the final version of the manuscript.

References

1. It Fórum. Matsu C. *Yuval Harari: pandemia mostrou sucesso da ciência e o fracasso de governos* [Internet]. 2021 [acessado 2021 Maio 26]. Disponível em: https://itforum.com.br/noticias/yuval-harari-pandemia-mostrou-sucesso-da-ciencia-e-o-fracasso-de-governos/.

2. Johns Hopkins University & Medicine. Covid-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) [Internet]. 2021 [cited 2021 Maio 30]. Available from: https://coronavirus.jhu.edu/map.html

3. Gil T. *Coronavírus: como os EUA, com mais de 245 mil casos, se tornaram epicentro de epidemia* [Internet]. BBC News Mundo. 2020 [acessado em 2021 Maio 30]. Disponível em: https://www.bbc.com/portuguese/internacional-52153503

4. Organização Mundial da Saúde (OMS). *Coronavirus disease 2019 (COVID-19): Situation Report - 82* [Internet]. Brasília: OMS;2020 [acessado 2021 Maio 25]. Disponível em: https://apps.who.int/iris/bitstream/handle/10665/331780/nCoVsitrep11Apr2020-eng.pdf.

5. Van Bavel JJ, Pereira A. *The Partisan Brain: An Identity-Based Model of Political Belief* [Internet]. Trends Cogn Sci 2018 [cited 2021 Maio 24]. Available from: https://pubmed.ncbi.nlm.nih.gov/29475636/.

6. Rômani I. *'Gripezinha', cloroquina, fim de pandemia: 10 informações falsas ditas por Bolsonaro sobre a Covid-19 em 2020* [Internet]. Agência Lupa. 2020 [acessado 2021 Maio 30]. Disponível em: https://piaui.folha.uol.com.br/lupa/2020/12/30/informacoes-falsas-bolsonaro-covid-19/

7. Shimizu K. *2019-nCoV, fake news, and racismo* [Internet]. *The Lancet* 2020 [acessado 2021 Maio 30]. 395:685-686. Disponível em: https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2930357-3

8. Galhardi CP, Freire NP, Minayo MCS, Fagundes MCM. *Fato ou Fake? Uma análise da desinformação frente à pandemia da Covid-19 no Brasil* [Internet]. *Cien Saude Colet* 2020; 25(Supl. 2):4.201-4.210.

9. Eysenbach G. *Infodemiology: The epidemiology of (mis)information* [Internet]. *Am J Medicine* 2002; 113(9):763-765.

10. Agência Fiocruz de Notícias. Leonel F. *Covid-19: Estudo avalia condições de trabalho na Saúde* [Internet]. 2021 [acessado 2021 Maio 20]. Disponível em: https://agencia.fiocruz.br/covid-19-estudo-avalia-condicoes-de-trabalho-na-saude.

11. Zaracostas J. *How to fight an infodemic* [Internet]. *The Lancet* 2020 [cited 2021 Maio 29]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7133615/pdf/main.pdf

Chief editors: Romeu Gomes, Antônio Augusto Moura da Silva