FAKE NEWS AND INFODEMIA IN TIMES OF COVID-19 IN BRAZIL: MINISTRY OF HEALTH INDICATORS

FAKE NEWS E INFODEMIA EM TEMPOS DE COVID-19 NO BRASIL: INDICADORES DO MINISTÉRIO DA SAÚDE

FALSAS NOTICIAS E INFODEMIA EN TIEMPOS DEL COVID-19 EN BRASIL: INDICADORES DEL MINISTERIO DE SALUD

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ABSTRACT

Objective: to analyze and describe fake news and infodemic disseminated in Brazil in times of pandemic caused by COVID-19. **Materials and methods:** descriptive exploratory study with a quantitative approach, based on the collection of data and information related to the COVID-19 pandemic on the "*Saúde sem* Fake News" platform. Access to the platform was carried out through the official channels of the Ministry of Health and the search totaled 85 records that were forwarded, analyzed, and disseminated, with a view to proving or not the veracity of the data. The analysis and synthesis of the results were carried out in a descriptive way. **Results:** there was the dissemination and dissemination of information on social networks and media. Among the identified records, 94.1% were classified as fake news, involving different categories, such as prevention measures, therapeutic methods, and cure, which stood out for predominating in this investigation. Despite the greater concentration of information in February, the reduction in the number of publications was verified due to the progress of the disease in the country. Other evaluated outcomes involved the origin, transmission mechanisms and relationship with other clinical conditions. **Conclusion:** in view of the uncertain scenario, fake news and infodemia constitute a second pandemic experienced in the Brazilian scenario, capable of negatively impacting COVID-19 prevention and control measures. Therefore, there is a need for investments in technological resources to protect society from the dissemination of false information, as well as for popular awareness in seeking official clarification, before sharing news without verifying the veracity of the news.
Keywords: Coronavirus Infections; Social Media; Communication; Information.

RESUMO

Objetivo: analisar e descrever as fake news e a infodemia divulgadas no Brasil em tempos de pandemia por COVID-19. Materiais e métodos: estudo exploratório descritivo com abordagem quantitativa, realizado a partir do levantamento de dados e de informações relacionadas à pandemia da COVID-19 na plataforma "Saúde sem Fake News". O acesso à plataforma foi realizado por meio dos canais oficiais do Ministério da Saúde e a busca totalizou 85 registros que foram encaminhados, analisados e divulgados, visando à comprovação ou não da veracidade dos dados. A análise e síntese dos resultados foram realizadas de forma descritiva. Resultados: verificou-se a difusão e veiculação de informações em redes e mídias sociais. Dentre os registros identificados, 94,1 % foram classificados como fake news, envolvendo diferentes categorias, como medidas de prevenção, métodos terapêuticos e cura, que se destacaram por predominar nesta investigação. Apesar da maior concentração de informações no mês de fevereiro, a redução do número de publicações foi verificada diante do progresso da doença no país. Outros desfechos avaliados envolveram a origem, os mecanismos de transmissão e a relação com outras condições clínicas. Conclusão: diante do cenário incerto, as fake news e a infodemia constituem uma segunda pandemia vivenciada no cenário brasileiro, capaz de impactar negativamente nas medidas de prevenção e controle da COVID-19. Diante disso, destaca-se a necessidade de investimentos em recursos tecnológicos para proteger a sociedade da disseminação de informações falsas, assim como para a conscientização popular em buscar esclarecimentos oficiais, antes de compartilhar notícias sem verificar a veracidade das notícias.
Palavras-chave: Coronavirus Infections; Social Media; Communication; Information.

RESUMEN

Objetivo: analizar y describir noticias falsas e infodemias difundidas en Brasil en tiempos de pandemia por Covid-19. Materiales y métodos: estudio exploratorio descriptivo con enfoque cuantitativo, realizado a partir de la recolección de datos e información relacionada con la pandemia Covid-19 en la plataforma "Saúde sem Fake News". El acceso a la plataforma se realizó a través de los canales oficiales del Ministerio de Salud y la búsqueda totalizó 85 registros que fueron remitidos, analizados y difundidos, con el objetivo de acreditar o no la veracidad de los datos. El análisis y síntesis de los resultados se realizó de forma descriptiva. Resultados: se verificaron difusión y transmisión de información en medios de comunicación sociales. Entre los registros identificados, el 94,1% fueron clasificados como noticias falsas, involucrando diferentes categorías como medidas de prevención, métodos terapéuticos y curación, que se destacaron por predominar en esta investigación. A pesar de la mayor concentración de información en febrero, la reducción en el número de publicaciones se verificó a la luz del avance de la enfermedad en el país.

*Otros resultados evaluados involucraron origen, mecanismos de transmisión y relación con otras condiciones clínicas. **Conclusión:** ante el escenario incierto, las noticias falsas y la infodemia constituyen una segunda pandemia vivida en el escenario brasileño, capaz de impactar negativamente las medidas de prevención y control de Covid-19. Por tanto, es necesaria la inversión en recursos tecnológicos para proteger a la sociedad de la difusión de información falsa, así como la concienciación popular en la búsqueda de aclaraciones oficiales, antes de compartir una noticia sin verificar la veracidad de la noticia*

Palabras clave: *Infecciones por Coronavirus; Medios de Comunicación Sociales; Comunicación; Información.*

INTRODUCTION

The 21st century marks the rise of a pandemic that has disrupted social, economic, political and health contexts due to its potential for global dissemination and the high incidence and mortality indicators.[1] This is a new pneumonia caused by coronavirus identified for the first time in the city of Wuhan and referred to by the World Health Organization (WHO) as COVID-19, which has become a problem of high magnitude because it requires the restructuring of care in different areas and levels of health care.[2]

Among the main resources and strategies for preventing infection is the dissemination of clear, consistent, and evidence-based information, as well as mass communication, which even in the face of isolation and social distancing measures is configured as one of the main strategies for controlling the disease. Despite its benefits, the dissemination of false news and without scientific proof is expressive, causing serious impacts on the fight against the pandemic and on epidemiological developments.[3]

In the information age, the dissemination of false news, called fake news, has increased considerably with the advent of the internet, networks and social media, becoming a serious global health problem as it favors misinformation, generates insecurity and causes psychosocial repercussions that they involve conflicting feelings, emotions and suffering capable of affecting the different dimensions that constitute the population's health and quality of life.[4,5]

Thus, the phenomenon of infodemia has been referenced by the WHO as a risk and threat to public health, configuring itself as the second pandemic condition experienced by different countries in the world. Considered as a mass dissemination of information, whether false or not, infodemia can compromise the credibility of official explanations by multiplying exponentially in a short period of time, leading to misinformation and the dissemination of ideas with dubious intent, without scientific basis or source reliable data.[6]

In the area of health, the culture of misinformation is nothing new and has already involved the prevention and treatment mechanisms of other clinical conditions such as yellow fever, in which the dissemination of false information resulted in a considerable reduction in vaccination coverage, compromising the goals established by the Brazilian Ministry of Health (*Ministério da Saúde* - MS), since only 55% of the target population joined the campaign.[7] In this sense, the excess of information, most often conflicting, can interfere with the recognition of those considered useful for popular orientation, in addition to hinder the performance and decision-making by managers and health professionals.

Thus, it is considered that information overload, as well as the dissemination of false news about COVID-19, cause immediate and potentially negative effects. This problem has been arousing the interest of different countries and institutions in seeking resources and favorable measures to fight this dual epidemic. WHO, for example, has strengthened ties with owners and managers of large global social media platforms in order to combat negative information, as well as block misleading and inappropriate content.[5]

In Brazil, strategies to combat fake news were also adopted, especially in the case of the COVID-19 pandemic. In this perspective, the MS made available an electronic database exclusively for the dissemination of information that can be configured as fake news and impact on indicators and in the fight against the disease.

Considering the impact of infodemia and misinformation in fighting the pandemic, as well as the need for further investigations to minimize its repercussions on the health of the population, this study posed the following question: what is the profile of fake news and infodemia disseminated in Brazil in pandemic times by COVID-19? The proposed objective was to analyze and describe fake news and infodemic disseminated in Brazil in times of pandemic caused by COVID-19.

MATERIAL AND METHODS

Exploratory-descriptive study with a quantitative approach, carried out from January 29th to June 10th, 2020, from the electronic consultation to the platform "*Saúde sem* Fake News", available on the MS website (https://www.saude. gov.br/fakenews). This design is widely disseminated and relevant to health practices and clinical decision-making, as the results can explore and describe the distribution of diseases or health-related

conditions, as well as the characteristics of a population or of the investigation phenomenon.[8]

Although Brazil does not present confirmed cases of COVID-19 infection in January, the temporal delimitation and beginning of the search considered this period, in view of the identification of the first records of information and fake news about the pandemic that began to be clarified, published, and disseminated on the platform.

The "*Saúde sem* Fake News" program is a channel for popular communication and guidance, created in 2018 by the MS and which is exclusively aimed at clarifying information in a succinct, objective manner and based on scientific evidence. Also, it aims to receive viral information that circulates freely on social media, through WhatsApp, to verify them by the responsible technical area and officially classify them as true or false. The platform is then supplied considering the demands of the population, in which each information received and analyzed receives a stamp that can vary in color, with green being used to confirm the veracity of the message and purple to indicate that it is a fake news. Also, warning messages are disseminated on social networks and media, helping to minimize the impacts related to this problem.[9]

For inclusion, the following criteria were considered: publications published on the consulted portal and that made reference to the COVID-19 pandemic. The exclusion was conditioned to other posts and did not address the investigation scenario.

Data collection was carried out by the researchers through the application of a specific form that included variables related to the period of publication, as well as the information classification group. To define the classification, the title, subtitle, and full text were read, which allowed comparison by semantic similarity, resulting in five groups: origin, transmission, and relationship with other diseases; treatment and cure; prevention and vaccines; statements from scientific and governmental authorities and number of cases and deaths.

Access to the platform was carried out through official MS channels. And to gather the information, the subject COVID-19 and the established period were considered. The search totaled 85 records that were forwarded, analyzed, and released by the MS, aiming at proving or not the veracity of the data. It is noteworthy that there was no sample loss.

Data were entered and processed using the Microsoft Excel for Windows 2016 software. The analysis and synthesis of the results were performed descriptively, being these expressed through relative and abso-

lute frequencies and presented in graphical projections that considered the total number of fake news identified, as well as estimates by category of information and by month of publication.

As this is a research that involved secondary data made publicly available, it was not necessary to review it by the Research Ethics Committee as per Resolution 466 of 2012 of the National Health Council (*Conselho Nacional de Saúde*-CNS).

RESULTS

The search identified 85 news records that were widely disseminated on social networks and media, most often in the format of messages, videos, and audios. Of these, 80 (94.1%) were classified as fake news after the veracity assessment carried out by the technical and scientific team of the MS. It is noteworthy that some posts presented more than one version of the same fake news.

Figure 1 shows the monthly evolution of fake news dissemination in the COVID-19 pandemic scenario in Brazil. There was a reduction in the number of publications as the disease progresses in the country. The month of February stood out as the period that concentrated the highest levels of false news release (34.1%), reducing the frequency in the following month. Until May 10th, the website published the lowest rate of fake news (1.2%).

Figure 2 shows the classification of fake news according to the established thematic groups. Thus, fake news ads related to COVID-19 and evaluated by the MS involved different aspects, such as treatment and cure (26.3%) and the use of homemade methods, including fennel tea, as well. such as the administration of chloroquine and hydroxychloroquine, which concentrated the largest number of records. In sequence, prevention, and cure strategies (20%) stand out. The categories with the lowest occurrences were origin, transmission, and relationship with other diseases, which corresponded to 16.2% of the classification.

DISCUSSION

Given the uncertainties that permeate the mechanisms of transmission, treatment, control and prevention of COVID-19 infection, other events that involve the mass dissemination of information, whether true or not, stand out for having the potential to globally impact epidemiological contexts, social, economic and health.
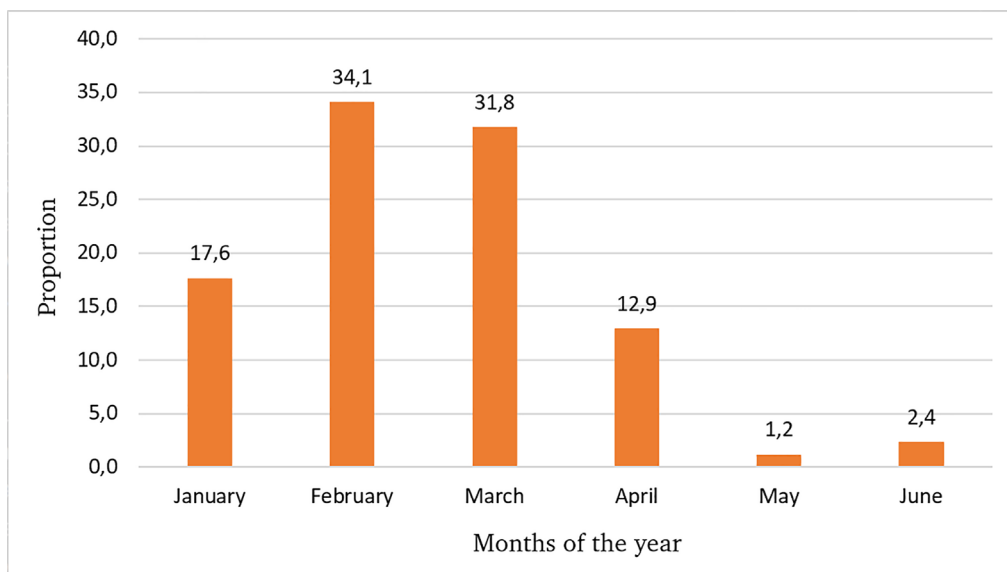
Figure 1 - Proportion of fake news per month of dissemination by the Ministry of Health. Brazil, 2020
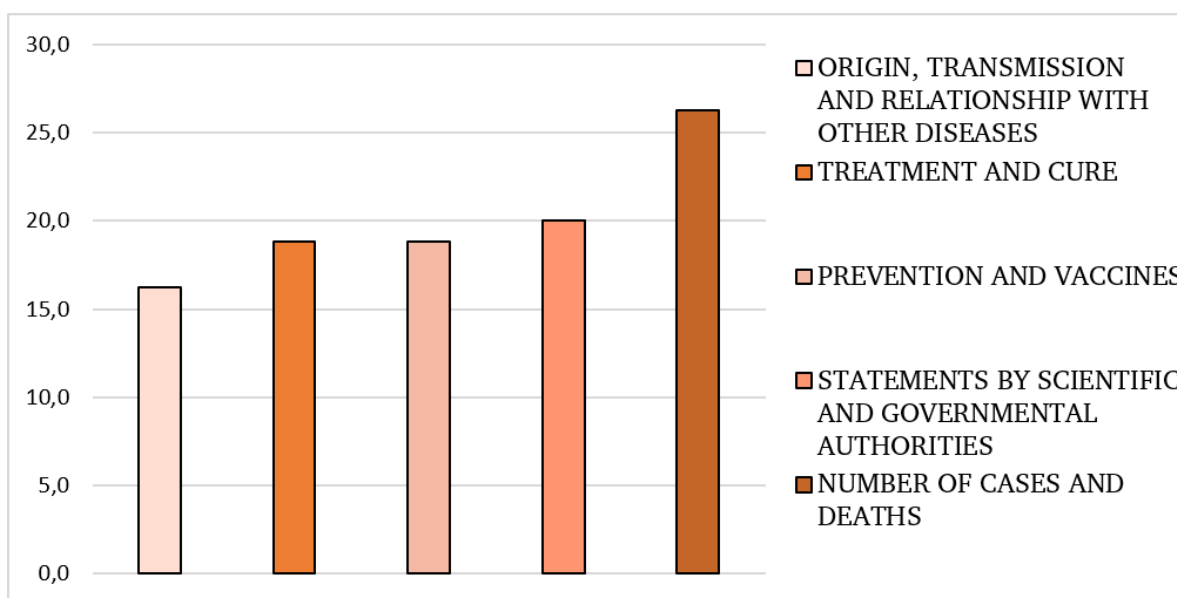Source: Ministry of Health.

Figure 2 - Organization groups of fake news reports published by the Ministry of Health. Brazil, 2020
Source: Ministry of Health.

Despite being allied to isolation and social distancing measures, as well as being one of the main strategies to control the pandemic, the informational resources generally expressed by media and social networks constitute a favorable scenario for the dissemination of fake news, generating disinformation in proportions immeasurable and causing negative emotions and feelings capable of interfering with health behaviors adopted by the global population and jeopardizing adherence to scientifically proven care.[10]

The era of infodemia and fake news propagated progressively and dangerously, constituting a threat to public health and being considered a second pandemic condition experienced in the Brazilian scenario. The data from this study confirm the projection evidenced in other investigations, showing the high prevalence of fake news broadcast on social networks and email applications such as WhatsApp or Facebook.[7]

In this same perspective, research showed that 94% of participants have already received fake news and that

seven out of 10 people believe in the veracity of the information presented.[5,11] Thus, the popular exposure to therapeutic procedures or inappropriate preventive behaviors grew considerably, being influenced directly by public opinion without proven scientific evidence, which can cause serious adverse effects and damage to physical, mental and social health, due to the adoption of risk behaviors that can result in greater exposure to contamination and ineffective coping with the disease.

The highest concentration of fake news comprised the months of February and March 2020 and may be associated with the first confirmed case of COVID-19 infection in Brazil and the recognition of the pandemic condition carried out by the WHO, which raised a global alert for the risks of a disease hitherto unknown, contributing to the mass dissemination of information, including fake news.[2]

The dissemination of fake news has grown considerably in the last year, whose elaboration and massive propagation of false and misleading news aimed to intentionally distort facts, as well as misinform, mislead, mislead, manipulate public opinion, and exalt an institution or person to obtain economic, social, and political advantages.[7]

In other countries, the dissemination of fake news is also frequent and determines popular behavior. In the United Kingdom, different unfounded theories about the relationship between mobile technology and the spread of the new coronavirus were massively shared.[12] In Iran, the belief in alcohol consumption as a protection mechanism against infection led to the death of over 700 people who consumed the substance of unknown origin and contaminated with methanol.[13]

Among the spread of false news, different aspects related to prevention, therapeutic methods and cure stood out for having greater potential for dissemination. Fake news related to the effects of fennel tea for infection prevention were the most identified and the justification for prophylaxis was the presence of the active ingredient oseltamivir phosphate, commonly applied in the treatment of other clinical conditions, such as the flu syndrome, with conditions and risk factors for complications caused only by the influenza A virus H1N1.[14]

It is noteworthy that, since the emergence of COVID-19, randomized clinical trials have been developed and others are nearing completion in several countries, with a view to offering therapies quickly in return for global demands. These studies have focused on testing drugs already used in previous pandemics, such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), swine flu (HIN1), AIDS (HIV) and Ebola. With that, some steps are crossed, thus accelerating the responses about effective treatments.[15]

Other studies have focused on evaluating the effect of other therapies involving the simultaneous administration of chloroquine diphosphate, chloroquine or hydroxychloroquine, azithromycin, and oseltamivir. However, the recommendations for the realization of new randomized clinical trials were evidenced, aiming at the evaluation of prophylactic use, efficacy in the progression of severe forms, use in patients in mild and moderate forms. Despite the recommendations suggesting the therapeutic inefficiency of these medications, it is also observed that the dissemination of false news is expressive in Brazil, leading to the popular use of these medications for the early treatment of COVID-19.[16]

Furthermore, the description, indication and use of micronutrient supplementation as a preventive and priority strategy for the control of COVID-19 were verified. Overall, scientific evidence broadly reveals that vitamin C, D and zinc can reduce the risk of infection by strengthening the immune system. Additional studies, however, are needed in order to demonstrate dosages and their interaction with different nutrients in varied populations, as well as to prove their prevention-related benefits.[17]

Despite the prevalence of recommendations for the prevention and treatment of infection, the literature highlights the lack of therapeutic resources, substances, medications, vitamins and food that have validity, safety and effectiveness capable of preventing contamination or controlling the disease caused by the new coronavirus.[9,10]

Other categories were also targeted by fake news, such as the origin, transmission mechanisms and the relationship between COVID-19 infection and other diseases. It is news that were presented with the aim of explaining and understanding, even in an invalid and without scientific basis, where the disease emerged, its transmission and the prevalence of other diseases as a risk factor for complications and the presentation of clinical conditions that progress with more gravity.

Among the false content published in the media about the origin of the infection, it stood out, even without proof of the initial source of contamination, that the coronavirus was created in a laboratory in China and that its viral presentation is like a flu. However, the most accepted thesis is that it originated in a public market in Wuhan, province of China, occurring naturally after eating contaminated food.[1,18]

The dissemination of false news mostly involves statements from scientific and governmental authorities, as well as being articulated with renowned scientific institutions or governmental authorities. It is quite common to present fake news, with accessible and easy-to-understand language, generally attributed to authorities in the field of knowledge to disclose invalid information and induce a belief in what is being shared.[19]

In the pandemic scenario, this problem takes on more serious characteristics, in view of the results expressed in another study, showing that 110 million Brazilians believe and disseminate false news and without official proof about COVID-19.[11]

Investments in means of communication are necessary, such as the platform provided by the MS, which is an essential resource for confirming the veracity of information and minimizing misinformation indicators. Therefore, the Pan American Health Organization (PAHO) and WHO recommend the following reliable sources on COVID-19: PAHO/WHO exclusive portal on COVID-19; WHO exclusive portal on COVID-19; guidance and latest research on COVID-19 in the Americas (PAHO/WHO); and showcases of knowledge of Bireme/PAHO/WHO on COVID-19.[5]

The results obtained here indicate the need for reflection on the dynamic phenomenon of infodemia, which has the capacity to produce inauthentic news, made possible by the wide access to the internet and social media, frequently adapting to simulate truths. Further research needs to be carried out in order to try to elucidate this problem, since fake news has considerable potential to negatively interfere in the fight against the pandemic, leading to misinformation and the adoption of risky behaviors and behaviors.

The limitation of the study refers to the design adopted, since the descriptive and exploratory approach makes it impossible to establish cause-and-effect relationships. New studies are suggested that aim to assess the impact of infodemia and fake news in dealing with the pandemic, as well as seeking strategies to deal with these conditions that can directly impact misinformation.

CONCLUSION

Fake news and infodemia are widely disseminated on social media and impact the population's behavior, negatively affecting COVID-19's prevention and control measures in Brazil. Despite the reduction in identified records, most were released in February, classified as false information or without scientific proof, involving different aspects related to prevention measures, cure, and therapeutic methods.

Therefore, it is considered that infodemic and fake news constitute a second pandemic experienced in the Brazilian scenario, representing a constant threat, and requiring, for its combat, the planning of strategies and constant investments in technological resources aimed at popular information, as well as to raise awareness in seeking official clarification, whether in public or scientific institutions, before sharing information without verifying the veracity of the facts.

REFERENCES

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, *et al*. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020[cited 2021 Mar 15];382(8):727-33. Available from: doi: 10.1056/NEJMoa2001017

2. World Health Organization (WHO). Coronavirus disease (COVID-19) Pandemic. Coronavirus disease status reports (COVID-2019). 2020[cited 2020 June 4]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/

3. Garcia LP, Duarte E. Infodemia: excesso de quantidade em detrimento da qualidade das informações sobre a COVID-19. Epidemiol Serv Saúde. 2020[citado 2021 Mar 19];29(4):e2020186. Available from: doi: 10.1590/s1679-49742020000400019

4. Martins Filho PR, Santos VS. No evidence supports the use of ether and chloroform inhalation for treating COVID- 19. Rev Panam Salud Publica. 2020[cited 2020 June 3];44(spe):e41. Available from: https://iris.paho.org/handle/10665.2/51972

5. Pan American Health Organization (PAHO). Entenda a infodemia e a desinformação na luta contra a COVID-19. 2020[cited 2020 June 3]. Available from: https://iris.paho.org/bitstream/handle/10665.2/52054/Factsheet-Infodemic_por.pdf?sequence=3

6. Sousa Júnior JH, Soares MRJC, Ribeiro LVHAS. Da desinformação ao caos: uma análise das Fake News frente à pandemia do Coronavírus (COVID-19) no Brasil. Cadernos de Prospecção. 2020[cited 2020 June 4];13(2):331-46. Available from: https://cienciasmedicasbiologicas.ufba.br/index.php/nit/article/view/35978

7. Galhardi CP, Freire NP, Minayo MCS, Fagundes MCM. Fato ou Fake? Uma análise da desinformação frente à pandemia da COVID-19 no Brasil. Ciênc Saúde Colet. 2020[citado 2021 Mar 17];25(2):4201-10. Available from: doi:10.1590/1413-812320202510.2.28922020

8. Polit DF, Beck CT. Fundamentos de Pesquisa em Enfermagemm: avaliação de evidências para a prática da Enfermagemm. 7ª ed. Porto Alegre: Artmed; 2011.

9. Ministério da Saúde (BR). Coronavírus, Painel coronavírus. 2020[cited 2020 Apr 30]. Available from: https://covid.saude.gov.br/

10. Neto M, Gomes TO, Porto FR, Rafael RMR, Fonseca MHS, Nascimento J. Fake news no cenário da pandemia de Covid-19. Cogitare Enferm. 2020[cited 2020 June 15];25(spe):e72627. Available from: http://dx.doi.org/10.5380/ce.v25i0.72627

11. Avaaz. O Brasil está sofrendo uma infodemia de Covid-19. 2020[cited 2020 June 3]. Available from: https://avaazimages.avaaz.org/brasil_infodemia_coronavirus.pdf

12. Jolley D, Jenny P. Pylons ablaze: Examining the role of 5G Covid-19 conspiracy beliefs and support for violence. Br J Soc Psychol. 2020[citado 2021 Mar 17];59:628-40. Available from: https://bpspsychub.onlinelibrary.wiley.com/doi/epdf/10.1111/bjso.12394

13. Shokoohi M, Nasiri N, Sharifi H, Baral S, Stranges S. A syndemic of Covid-19 and methanol poisoning in Iran: Time for Iran to consider alcohol use as a public health challenge? Alcohol. 2020[citado 2021 Mar 17];87:25-7. Available from: 10.1016/j.alcohol.2020.05.006

14. Ministério da Saúde (BR). Protocolo de tratamento de Influenza: 2017. Brasília: Ministério da Saúde; 2018[cited 2020 Apr 30]. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/protocolo_tratamento_influenza_2017.pdf

15. Larson HJ. Blocking information on Covid-19 can fuel the spread of misinformation. Nature. 2020[cited 2020 June 3];580(spe):306. Available from: https://www.nature.com/articles/d41586-020-00920-w

16. Borba MGS, Val FFA, Sampaio VS, Alexandre MAA, Melo GC, Brito M, et al. Effect of High vs Low Doses of Chloroquine Diphosphate as Adjunctive Therapy for Patients Hospitalized With Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection: A Randomized Clinical Trial. JAMA Network Open. 2020[cited 2020 June 3];3(4):e208857. Available from: https://doi.org/10.1001/jamanetworkopen.2020.8857

17. Grant WB, Lahore H, McDonnell SL, Baggerly CA, French CB, ALiano JL, et al. Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and Covid-19 Infections and Deaths. Nutrients. 2020[cited 2020 June 3];12(4):988. Available from: https://doi.org/10.3390/nu12040988

18. Duarte PM. Covid-19: Origem do novo coronavírus. Braz J Hea Rev. 2020[cited 2020 June 3];3(2):3585-90. Available from: http://www.brazilianjournals.com/index.php/BJHR/article/view/9131/7740

19. Matos RC. Fake news frente a pandemia de Covid-19. Vigil Sanit Debate. 2020[cited 2020 May 5];8(3):78-85. Available from: https://visaemdebate.incqs.fiocruz.br/index.php/visaemdebate/article/view/1595