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FAKE NEWS AND ITS INFLUENCE ON THE PANDEMIC OF COVID-19

AS FAKE NEWS E A SUA INFLUÊNCIA NA PANDEMIA DA COVID-19

FAKE NEWS Y SU INFLUENCIA EN LA PANDEMIA DE COVID-19

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ABSTRACT

This study aimed to reflect upon the influence of fake news on the COVID-19 pandemic, to identify what were and still are the main types of fake news regarding this disease. The theoretical-reflective method concerning the influence of fake news on the COVID-19 pandemic was employed. To search for articles/texts, the descriptors used in Portuguese and English were the following ones: fake news, COVID-19, coronavirus infections, and health repercussions. The search was carried out in the following databases: Medical Literature Analysis and Retrieval System Online (Medline) via Public Medline or Publisher Medline (PubMed), ScienceDirect, Scientific ElectronicLibrary Online (SciELO), and Scopus, in addition to the Virtual Health Library (BVS). The fake news broadcasted on the COVID-19 pandemic generated the occurrence of varied and concerning news in the media. The information, sometimes true and sometimes false, triggered insecurity in the population; the situation persists today and can lead people to be harmed regarding their own health. Faced with untrue information related to the ongoing pandemic, healthcare providers must remain vigilant to offer the population correct guidance.

Keywords: Coronavirus Infections; COVID-19; Fake News; Health Repercussions.

RESUMO

Esse estudo objetivou tecer reflexões acerca das *fake news* e sua influência na pandemia da COVID-19, com o intuito de identificar quais foram e continuam sendo as principais *fake news* em relação à essa doença. Foi adotado o método teórico-reflexivo acerca das *fake news* e a sua influência na pandemia da COVID-19. Para a busca dos artigos/textos foram utilizados, nos idiomas português e inglês, os descritores *fake news*, COVID-19, infecções por coronavírus, e repercussões à saúde. A busca ocorreu nas seguintes bases e bancos de dados: *Medical Literature Analysis and Retrieval System Online* (Medline) via *Public Medline or Publisher Medline* (PubMed), *ScienceDirect*, *Scientific ElectronicLibrary Online* (SciELO) e *Scopus*, além da Biblioteca Virtual de Saúde (BVS). As *fake news* veiculadas na pandemia da COVID-19 geraram o aparecimento de variadas e preocupantes notícias nos meios de comunicação. As informações, por vezes verdadeiras e por vezes falsas, desencadearam insegurança na população; a situação perdura na atualidade e pode levar as pessoas a serem prejudicadas em relação à sua própria saúde. Diante de informações inverídicas relacionadas à pandemia em curso, os profissionais de saúde devem estar atentos para ofertarem uma correta orientação à população.

Palavras-chave: COVID-19; Fake News; Infecções por Coronavírus; Repercussões à Saúde.

RESUMEN

Este estudio ha pretendido reflexionar sobre las *fake news* y su influencia en en la pandemia del COVID-19, con el fin de identificar cuáles han sido y siguen siendo las principales *fake news* en relación con esta enfermedad. Se adoptó el método teórico-reflexivo sobre *fake news* y su influencia en la pandemia de COVID-19. Para la búsqueda de artículos/textos se utilizaron los descriptores *fake news*, COVID-19, infecciones por coronavirus y repercusiones en la salud en portugués e inglés. La búsqueda se realizó en las siguientes bases de datos: *Medical Literature Analysis and Retrieval System Online* (Medline) via *Public Medline o Publisher Medline* (PubMed), *ScienceDirect*, *Scientific ElectronicLibrary Online* (SciELO) y *Scopus*, además de la *Virtual Health Library* (BVS). Las *fake news* difundidas sobre la pandemia del COVID-19 generaron la aparición de variadas y preocupantes noticias en los medios de comunicación. La información, a veces verdadera y a veces falsa, desencadenó la inseguridad en la población; la situación persiste hoy en día y puede llevar a las personas a verse perjudicadas en relación con su propia salud. Ante la información falsa relacionada con la pandemia en curso, los profesionales sanitarios deben estar atentos para ofrecer una orientación correcta a la población.

Descriptores: COVID-19; Infecciones por Coronavirus; Noticias Falsas; Repercusiones Sanitarias.

INTRODUCTION

Fake news is, as the name suggests, false information or misinformation spread among people, which can result in setbacks regarding certain behaviors among people. They are distributed in printed or online newspapers, television and/or radio broadcasts, or in the various existing social media.

These news stories are written and published with the intention of misleading people, for financial or political gain, often with sensationalist, exaggerated, or blatantly false headlines to attract attention[1]. They lack authenticity and are intended to mislead; they are false information intentionally disseminated to meet the interests of individuals or groups[2].

This expression became popular during the American elections in 2016 and the Brazilian elections in 2018; it is now used both with a derogatory connotation that is critical of the media and journalism, but also as an umbrella term for various forms of misinformation,

misdirection, or fabrication. Fake news, in the latter sense, makes up a broader spectrum ranging from unintentional misinformation (sloppy reporting) to intentional misinformation (advertisements). Examples include factual discrepancies along several dimensions and aspects of the information conveyed, ranging from real content material to meta-information and more contextual aspects, with their possible combinations[3].

Fake news can be understood as fabricated stories, which are not entirely based on facts, but sufficiently based in reality to be misleading. They can even be politically involved, to destabilize existing systems[4].

Although fake news stories have existed for many years, their spread through online social networks and sharing have widened the possibilities for them to reach new heights. This issue has become known for its potential to influence political systems, especially electoral processes, and to accentuate political polarization[5]. Social media was considered years ago to be an entertainment medium for teenagers, but today it has become the primary vehicle through which news is consumed and even assists in the development of political identities; consequently, it is used to influence and manipulate public opinion and even political behavior worldwide[6].

People prone to delusion may find it easy to accept even implausible and irrelevant ideas, due to their tendency to engage in less analytical and open thinking. In this regard, two online studies with more than 900 participants demonstrated that while delusion-prone people were no more likely to believe true news stories, they exhibited an increased belief in fake news headlines, which often feature implausible content. Possibly, the analytic cognitive style may be capable of partially explaining the greater willingness of these people to believe in fake news; analyses also demonstrated that dogmatic and religious fundamentalist individuals were more likely to believe in fake news and that these relationships may be explained by this analytic cognitive style[7].

However, fake news can represent the fruits of individualistic thoughts that gradually reach the collective, deducing that its producers want to attain prestige; by sharing its content, it is assumed the existence of narcissistic intellects, arising from the need to overcome their own frustrations generated by social gatherings and standards followed by society, needing self-affirmation and transforming the information into a vicious cycle, favoring the existence of a cascading effect[8].

In recent years, concern over the perceived increase in the amount of fake news has prevailed in discussions related to media and politics, especially in the United States and Europe. However, debates around this type of news seem to indicate processes that occur not only in these places but also in other regions of the world[9].

In Africa, many fake news or disinformation campaigns have been used to influence political agendas and governments have responded with countermeasures. In Kenya, Nigeria, and South Africa, using data from an online survey (n= 1847) it was found that perceived exposure to misinformation was high and trust in social and national media was low; a significant relationship was also identified between higher levels of perceived exposure to misinformation and lower levels of trust in the media in South Africa[9].

In Brazil, political fake news cascades, designed to spread information on networks, were generated on Twitter related to political trials; activists may have been the main ones responsible for spreading this information, using institutional and leadership accounts as mentions, amplifying the dissemination of the information and giving it credibility, thus increasing the visibility of the cascade[10].

During crises, fake news can increase consumers' negative behavioral responses, such as irrational buying or taking false medical precautions[11]. The behavior of sharing them is determined by different reasons that must be understood in order to develop better solutions to address them[12].

Thus, the term fake news became widely used and spread further during the pandemic caused by SARS-CoV-2, which causes COVID-19. The news received was frequent, especially through social media, with the most varied and inappropriate information regarding this disease, the vaccines, the medication to cure it, the new virus strains, and so on.

Therefore, the goal of this article is to reflect upon the influence of fake news on the COVID-19 pandemic, in order to identify what have been and still are the main fake news stories related to this disease.

METHODS

In the drafting of this article, the theoretical-reflexive method was employed concerning the influence of fake news on the COVID-19 pandemic, and due to this study's characteristics, there was no need for approval by a Research Ethics Committee.

To search for articles/texts, the descriptors used in Portuguese and English were the following ones: fake news, COVID-19, coronavirus infections, and health repercussions, extracted from the Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH). The search was carried out in the following databases: Medical Literature Analysis and Retrieval System Online (Medline) via Public Medline or Publisher Medline (PubMed), Science Direct, Scientific ElectronicLibrary Online (SciELO), and Scopus, in addition to the Virtual Health Library (BVS).

Following the selection of materials that would contribute to the development of this study and the theoretical reflection on this theme, the development of the article was then carried out. This development occurred after a thorough reading of these materials, in order to identify the excerpts and the contents that corresponded to the attributes researched and related to this theme. It received support from national and international literature since this theme has a global reach. With that, three guiding points/categories were elaborated to support the theoretical-reflexive text within this article, namely: the COVID-19 pandemic and the scope of fake news, the fake news related to the COVID-19 disease and its treatment, and the fake news and how to contain it in order to minimize its effects.

THEORETICAL REFLECTION

The COVID-19 pandemic and the scope of fake news

The COVID-19 pandemic, currently ongoing, in addition to generating a serious health emergency found in all countries (by December 14, 2021, the number of cumulative cases worldwide was 270 155 054, and the daily number of cases was 419 050; the number of deaths was 5 305 991, and the daily number of deaths was 4277), favored the emergence of several news items in the media. The information, both true and false, left people unsure of what to do and how to act. And this situation persists today.

It is worth mentioning that the dissemination of incorrect news and the overabundance of information have been and continue to be the main challenges of this pandemic, driven by the ubiquitous social media landscape[11]. The COVID-19 outbreak has resulted in an explosion of fake news on social media platforms and other Internet sites to the detriment of efforts to contain the spread of the disease[13].

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), during the coronavirus pandemic, fake news put lives at risk and ranged from multiple speculations regarding the origin of the virus to unfounded prevention and cures without valid scientific evidence. According to the World Health Organization (WHO), the spread of misinformation related to COVID-19 was characterized as an 'infodemic' phenomenon; with an overabundance of information, both online and offline, including deliberate attempts to disseminate misinformation to undermine the public health response and promote alternative agendas of groups or individuals. WHO, the Centers for Disease Control and Prevention (CDC), and other agencies have created specific web pages to counter key misconceptions concerning the virus and maintain public awareness[14]. According to the WHO, the infodemic can further aggravate the pandemic by making it difficult for the general public, decision-makers, and healthcare providers to find authoritative sources and reliable guidance when needed[15].

The fake news concerning COVID-19 spread quickly among the population, reaching people from the most educated to the least educated spheres, becoming a real pandemic within the pre-existing ongoing pandemic situation. Consequently, this problem has been detected in several countries, making it even more difficult to live in this health emergency.

A study conducted in Brazil has demonstrated that between January 29 and March 31, 2020, in the Ministry of Health database, 70 fake news stories regarding COVID-19 were identified, with 40 of them being information related to speeches performed by health authorities, 17 of them regarding therapeutics, nine referring to prevention measures, two related to the prognosis of the disease, and two regarding vaccination. Although the literature on the theme is still scarce, the speed of production of this type of news proved to be relevant, especially when assuming the social impact it can cause and its diffusion capacity[16].

A study conducted in Germany explored the association between information overload and the sharing of fake news by consumers during the COVID-19 pandemic. By using the stress-tension outcome model, this study provided evidence on the concrete process leading to the sharing of fake news. The results revealed the detrimental effect of perceived

information overload on consumers' psychological stress and their likelihood to share fake news. When stressed by a reasonable load of information, these consumers are less capable of understanding the information in question and are more likely to engage in sharing unconfirmed information[11].

A study conducted in Malaysia interviewed 869 people aged from 18 to 59 and detected the reasons for sharing fake news during the ongoing pandemic. Altruism and ignorance had a moderate effect, while entertainment had a significantly weak effect on the spread[12].

A sample consisting of 509 adolescents and adults aged from 11 to 67 in Romania was investigated for moral disengagement and cyberbullying regarding the spreading of fake news and the relationship of these variables to compulsive Internet use. The indirect effect of this compulsive use on cyberbullying through moral disengagement was significant in adolescents but not in adults; adolescents scored significantly higher than adults on all primary variables. The results emphasize the importance of developing online education programs designed to engage adolescents and adults in critical thinking to support the fake news detection process, especially during the ongoing pandemic[17].

In Nigeria, a survey described the outcome of a sample (n= 385) regarding the proliferation of fake news concerning COVID-19. The fake news phenomenon was studied using the uses and gratifications theory, which was augmented by an altruistic motivation. It was concluded that altruism was the most significant predictor of fake news sharing among Nigerians; information sharing, socializing, information seeking, and spending time all predicated the sharing of fake news; however, entertainment was not found to be associated with sharing this type of news[18].

A study conducted with physicians in Spain demonstrated that they were able to discriminate fake news related to coronavirus 30.7% better than individuals in the general population; the detection of fake news can be predicted and optimized by stimulating critical thinking and skeptical stances. These people's stress levels were clinically higher during the coronavirus crisis and such results cautioned on the need to ensure and protect the professional quality of Spanish physicians; their stances towards knowledge and acceptance of pseudoscience were conservative[19].

Therefore, it has been found that the sharing of this type of news has presented itself and continues to occur worldwide, affecting people of all categories and occupations, according to other studies carried out in France[20], Algeria[21], Italy[22], Brazil[15], China[23], to name a few.

The fake news related to the COVID-19 disease and its treatment

In Brazil and worldwide, countless news stories regarding the COVID-19 disease have circulated and still circulate, especially regarding possible treatments and drugs for prevention and cure – from homemade tea to rectal ozone therapy[15]. The following are some studies that report these fake news stories.

A Brazilian study, which applied quantitative content analysis on the fake news produced and spread regarding COVID-19 through mobile phone applications, including WhatsApp, and identified by the application named "I Supervise", demonstrated that the main types of fake news broadcasted in the media regarding the coronavirus were the following: The use of boiled water with garlic as a treatment for coronavirus; the use of any type of mask prevents the virus from entering the body since it is larger than other viruses; the coronavirus lifespan, which in contact with a metal surface remains alive for 12 hours, and in fabric, for 9 hours and, therefore, when washing clothes, they should be laid out in the sun for two hours to eliminate it; the coronavirus lifespan on the hands (10 minutes); the death of the virus exposed to a temperature above 26°; water exposed to the sun can be consumed without any danger since the virus dies at 26°; the spread of the virus in the air; the need to avoid eating cold or iced food; the need to gargle with warm or salty water to prevent the virus from reaching the lungs; the manufacture of homemade gel rubbing alcohol with only two ingredients[24].

In Morocco, news stories were identified on social networks, many of which were proven false, such as the following: It is possible to contract the coronavirus by receiving a package from China; the coronavirus is more dangerous than the 2002 SARS; criminal networks usurp the identity of doctors and nurses to carry out criminal acts in citizens' homes, under the pretext of being delegated by the medical services specialized in responding to the novel coronavirus; the coronavirus can travel up to 8 m away when sneezing or coughing; the novel coronavirus can be transmitted by mosquito bites; pneumonia vaccines provide protection against the novel coronavirus; a German oncologist has discovered a drug against the coronavirus; the "Wiqaytna" application accesses the user's contact database; the mobile exposure notification application for COVID-19 will be automatically installed or activated on all phones, and so on[25].

In South Africa, it is a historical fact that vaccine hesitancy has been an issue in the face of public health efforts to contain and eradicate infectious diseases. This problem has been amplified with the current pandemic, and investigations since the COVID-19 outbreak have demonstrated the complexity of factors contributing to vaccine hesitancy in the population. The media has carried negative news regarding the COVID-19 vaccine; the South African government has upheld the decision that the vaccine saves lives; however,

the spread of fake news and fallacies on social media concerning the COVID-19 vaccine can severely reduce vaccine confidence. The health and scientific community must determine and address the reasons behind the hesitation, both globally and nationally[26].

In Italy, a study aimed to assess intentions to be vaccinated against COVID-19 in a population of nursing students, identifying factors associated with those intentions. It was an online, anonymous study conducted with 728 nursing students, from the same university, but with faculties in different locations. The questionnaire collected data on demographic and academic characteristics, health status, vaccination stances, and specific reasons as to whether or not they intended to get vaccinated against this disease. A total of 422 students completed the survey; almost 81% wished to be vaccinated against the novel coronavirus; the willingness to join the vaccination program was associated with male gender, previous influenza vaccination, and high school education; the main reason for wishing to be vaccinated was to protect family and friends, and the main opposition was fear of adverse events[22].

In China, a study conducted with 1205 eligible nurses (mean age of 40.79 [years], 90% of whom were female) found that less than two-thirds intended to be vaccinated against COVID-19 when the vaccine would become available, indicating that nurses were not ready to accept it[23]. Although the vaccine against the disease is effective in protecting healthcare personnel, the findings demonstrated that vaccine hesitancy was an obstacle and that this sort of hesitancy was a global threat affecting several countries.

A study conducted in France where several healthcare providers were hesitant to be vaccinated found that lack of knowledge and awareness are the most common reasons leading to vaccine hesitation; lower socioeconomic status and level of education, along with a lack of specific knowledge needed to critically evaluate some media sources and the accuracy of information are also related to this hesitation. Furthermore, healthcare providers should not only be regarded as an extension of the healthcare organization fully aware of medical knowledge, but also as ordinary citizens. When they estimate that risk is tangible and relevant, they behave and act like anyone else, basing their stances on emotions and personal experience rather than on analytical knowledge. Just like the general population, these professionals are exposed to and potentially influenced by the opinions of their families and friends, and sometimes by sensationalist, biased, or even fake news sources[20].

Fake news stories and how to contain them in order to minimize their effects

In India, researchers concerned with fake news related to COVID-19 broadcasted on social media set out to track down such news on Twitter. They collected related tweets from various sources; after human annotations, they built a neural attention model that receives multiple inputs such as tweet text, tweet features, user features, and external knowledge for each tweet. Then, they incorporated this model into Cross-SEAN, which works in a semi-supervised setting, leveraging unlabeled and labeled data with optimal data sharing across multiple tweet inputs. Cross-SEAN has been proven to be effective, in comparisons that have been made with other models. To make real-time use of Cross-SEAN by general users, Chrome-SEAN, a Chrome extension based on Cross-SEAN to flag fake tweets, was developed, which has been found to perform reasonably well, although it has only been tested with users on a small scale[14].

In Algeria, in an attempt to counter fake news, "AraCOVID19-MFH" was presented, which is a hate speech and fake news detection dataset, in Arabic, related to COVID-19 with multiple manually annotated labels. The dataset contains 10 828 tweets in Arabic and each one was annotated with 10 different labels designed to consider some relevant aspects for the fact-checking task, such as tweet verification validity, positivity/negativity, dialect, and factuality. To confirm the practical usefulness of the annotated dataset, it was used to train and evaluate several classification models, and two transformer models were fitted again using data from the COVID-19 pandemic, managing to achieve the best classification results in all the categories tested. The dataset is freely available and can also be used for hate speech detection, opinion/news classification, dialect identification, and several other tasks[21].

In South Africa, a study was conducted using qualitative research methods to establish the contribution of academic libraries in the campaign against fake news. Academic librarians contributed to the campaign against this infodemic phenomenon by trying to raise awareness, disseminating reliable information, developing research support, and sharing best practices at conferences and other forums. The results affirmed the role of libraries in South Africa and elsewhere in the campaign against fake news by providing high-quality information to offset the effects of fake news related to COVID-19, affirming the importance of the role libraries play in counteracting fake news in general and specifically in times of crisis[13].

In France, a study indicated that campaigns for clarification concerning COVID-19 should first target paramedical, administrative, and younger technical healthcare personnel, with written and oral information. Messages should also be designed to increase confidence in vaccination safety, rectify misconceptions, increase people's knowledge and

awareness, and overcome distrust in the authorities. Information channels should be used to deliver these messages, including social media. It is also noteworthy that local stakeholders such as infectious disease specialists, pharmacists, and family medicine doctors can be valuable allies for this kind of mission[20].

In Morocco, it has been found that a considerable amount of shared news incorporates misleading information that negatively affects the cognitive and psychological health of readers. A case study focused on fake news tweeted during the coronavirus pandemic with the objective of misleading the target population. The proposed method consisted of a classification approach that used features of new tweets and was based on natural language processing, machine learning, and deep learning. This method was implemented in tandem with *apache spark* and the experimental results demonstrated that this approach produced highly valuable results as it used the random forest algorithm with an accuracy of 79% in detecting fake news[25].

In Australia, a study that aimed to study the experiences and views of the health science community regarding the spread and prevention of scientific misinformation within and outside the setting of the COVID-19 pandemic used qualitative interviews with those producing, communicating, and studying health science research. The production of low-quality, fraudulent, or biased scientific research; inadequate access to high-quality research; insufficient reading of high-quality studies were some elements considered conducive to misinformation; strategies to reduce or prevent misinformation were discussed, including encouraging standardized study designs, increasing the use of automated quality assessment tools, transparent peer review, promoting wider use of open access, and using newer technologies for target audiences. The scientific community understood that systemic failures may favor the production and dissemination of false or misleading scientific information, both regarding COVID-19 and other themes[27].

Therefore, in light of the aforementioned information, it is possible to identify a great global effort to try to block fake news, which is so damaging to the population's most valuable asset: their health.

CONCLUDING REMARKS

Several anti-scientific stances have been adopted by the population and perceived as true, despite their potential to endanger their own health. Such stances and beliefs supported by misinformation were caused by immeasurable fake news stories concerning COVID-19 worldwide, which allowed several people to believe in unreliable knowledge and to add it to their life habits during this period of the pandemic.

Even when faced with mistaken scenarios generated by misinformation on the part of the population they have to serve, it is up to healthcare providers to face the situation and enlighten people, attempting to teach and advise them to follow the correct information provided by official health organizations, in order to avoid damage to their health in the context of the ongoing pandemic.

Authors' contributions

MR: Study coordination, study design, collection, storage and analysis data, review and discussion of results.
FT: Study design, data analysis, review and discussion of results.
AS: Study design, data analysis, review and discussion of results.
LT: Study design, data analysis, review and discussion of results.
All authors read and agreed with the published version of the manuscript.

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