

(DIS)INFORMATION IN TWITTER ECHO CHAMBERS: disputes over chloroquine during the Covid-19 pandemic

(DES)INFORMAÇÃO EM CÂMARAS DE ECO DO TWITTER: disputas sobre a cloroquina na pandemia da Covid-19

(DES)INFORMACIÓN EN LAS CÁMARAS DE ECO DE TWITTER: disputas sobre la cloroquina en la pandemia de Covid-19


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ABSTRACT:

In view of the large flow of information circulating on Twitter regarding the Covid-19 pandemic, this paper analyzes the polarization of the debate around the effectiveness of the use of chloroquine and hydroxychloroquine in the treatment of the disease, based on different reference systems, in addition to identifying the signs of disinformation present in the links that most circulated between March 23 and April 13, based on a base of 21,076 tweets. The analysis finds the formation of echo chambers, in a clear opposition between the use of traditional communication vehicles and sites of explicitly ideological content as sources of reference to defend a drug without proven scientific efficacy.

KEYWORDS: Disinformation Disorder; Echo Chambers; Covid-19; Twitter; Social Networks.

Introduction

Since the World Health Organization (WHO) declared pandemic status for Covid-19, a disease caused by the new Coronavirus SARS-CoV-2, on March 11, 2020, the circulation of information on the subject has grown dramatically throughout the world. According to Google¹, the number of searches for terms related to the new pandemic skyrocketed during that period.

The increase in public interest in the subject soon brought with it an avalanche of information spread over the internet, both by traditional vehicles and institutions, as well as by users and personalities. Also, this scenario has also become marked by the

¹ Retrieved from: <<https://trends.google.com.br/trends/explore?geo=BR&q=Covid-19>>. Accessed on: July 7, 2020.

politicization of the fight against the disease by politicians such as Donald Trump, in the United States, Boris Johnson, in the United Kingdom, and Jair Bolsonaro, in Brazil.

It did not take long for WHO Director-General Tedros Ghebreyesus to alert to the existence of an informational problem parallel to the growth of infection cases. Called Infodemia, the rapid dissemination of information about the new coronavirus has come to worry as much as the pandemic. In addition to the excess of information, there is a complex phenomenon that, for lack of a better name, has been called *disinformation* - the circulation of out-of-context, distorted, or completely manufactured information.

During the pandemic, journalists and researchers worked in real-time to disprove and catalog rumors - often made intending to distort the debate about the disease. A survey by the Comprova Project found that "the rise of rumors followed the public agenda for the evolution of cases abroad, the incorporation of restriction measures, in addition to being driven by the politicization of the pandemic" (Uol, 2020).

In Brazil, these three aspects - case evolution, physical distancing measures, and politicization of the pandemic - converged on rumors and pieces of disinformation that tried to suggest easy solutions, such as prescriptions and medicines, for the installed health crisis. One specific drug took over the public and political debate about the pandemic: chloroquine - and its derivative, hydroxychloroquine. Used in the treatment of diseases such as malaria and lupus, the substances are inexpensive and have started to be applied in the treatment of Covid-19. At first, they showed apparently promising results when combined with other drugs, causing the euphoria of world leaders like Donald Trump and Jair Bolsonaro, both contrary to the recommendations of physical distancing defended by the WHO. However, subsequent studies² indicated that the risks involved in using the drugs outweighed the potential benefits, so that, after more than four months of the pandemic, conclusive scientific evidence³ that chloroquine could contribute to the treatment of the disease has not been reached. Bolsonaro, however, continued to defend chloroquine whenever he had the chance.

The controversy surrounding the drug was behind two replacements in the head of the Ministry of Health - Luiz Henrique Mandetta (DEM) left his position on April 16 and his substitute, Nelson Teich, on May 15, less than a month after taking office, who

² Retrieved from: <<https://piaui.folha.uol.com.br/lupa/2020/06/10/lupa-na-ciencia-cloroquina-lancet/>> Acesso em: July 11, 2020;

³ Retrieved from: <<https://piaui.folha.uol.com.br/lupa/2020/05/15/lupa-na-ciencia-cloroquina-novos-estudos/>> Accessed on: July 11, 2020;

refused to authorize a protocol for expanding the use of chloroquine in Covid-19 patients.

Due to the strong political load around the theme, a dispute of narratives found a fertile environment in digital social networks. True information was mixed with a flood of uninformative pieces, which used different strategies to distort the public debate, despite scientific evidence.

As people start to consume information and interact through digital platforms, these spaces become part of a networked public sphere, where public opinion is formed (Dahlgren, 2005). Sumpter (2019) warns of the limits of the network's impacts when denouncing the existence of an architecture that privileges the exchange between users who share the same values and beliefs. Thus, users are at risk of being restricted to filter bubbles and echo chambers (Pariser, 2012), enhancing disinformation strategies that, in turn, act as mechanisms that reinforce a belief system anchored in references that are not supported in the verifiable world.

This study analyzes the debate over chloroquine and hydroxychloroquine on Twitter, from March 23 to April 13, 2020, when Bolsonaro made several public statements on national radio and television - specifically on 24 and 31 March, and April 8 - defending the drug and publicizing the increase in chloroquine production in Brazil.

For this study, we are specifically interested in analyzing which were the main sources of information cited by users to endorse their positions against or in favor of the use of the medication for treating Covid-19. Thus, from a database of 227,607 tweets, we extracted all those that contained web addresses (21,076) for an analysis that sought to understand how different reference systems are associated with certain political and ideological positions.

We hypothesize that the chloroquine narrative was captured by the political dispute and, therefore, users who defend different positions tend not to share the same sources of information - implying the formation of echo chambers. We also seek to extract insights about the types and disinformation strategies present in the corpus, from the most shared links.

Misinformation and fake news: thorny concepts

Since the election of Donald Trump in 2016, the term fake news has gained notoriety (Quandt et al, 2019) in public discourse and scientific research (Tandoc Jr; Wei Lim Ling, 2017; Salaverría et al, 2020). Almost five years after its popularization, its use still raises intense discussions, being criticized for simplifying the framing of various

uninformative strategies. Alemanno (2018) considers that there are several definitions for the term fake news, most of which emphasize the breadth of the term so that there is no universal agreement on the problem and how to delimit it.

Thus, the concept of fake news is still a shifting ground for scholars, who focus on mapping the different types of camouflage they adopt (Salaverria et al., 2020). Institutions such as Unesco (Ireton & Posetti, 2018) and First Draft News (Wardle, 2019) prefer to avoid the expression, opting for the more generic term “informational disorder”. This would be subdivided into dis-information: propagation of deliberately false information, disseminated for economic or ideological reasons; mis-information: false information, but widespread because it is believed to be true; mal-information: information based on reality, but put into circulation intending to harm another person, institution or country (Salaverria et al., 2020).

Claire Wardle (2019) also defined seven types of content normally observed in the context of informational disorder: 1) Satire/Parody, which was not created to harm, but which can mislead unsuspecting actors; 2) False connection, where contents do not match the title/headline that attracted attention; 3) Misleading content, where the true information is used misleadingly, to frame someone or something within a specific narrative, leading to false conclusions; 4) False context; when true information is removed from its original context and placed in a different context; 5) Imposter content, created to pass for a real and credible source, like websites that imitate real newspapers; 6) Manipulated content, when genuine content is modified/distorted to create a new narrative; 7) Fabricated content, totally designed to deceive. For the journalist, these types of content range from the smallest to the greatest intention of harming other people.

According to Christofolletti (2018), the discussion on the falsification of information refers to what society commonly calls manipulation. The researcher points out that it is necessary to be careful with what is meant by manipulation of information since there are situations where the interference is undue, “but there are also cases where the manipulation is more the result of not meeting expectations of content or form rather than distortion, deviation or artificial construction of a report” (Christofolletti, 2018, p. 60).

Thus, to determine that a news item has been manipulated, the criterion should not be that of divergence in its content, but the finding that it has been deliberately interfered to benefit or harm someone. Christofolletti (2018) warns that the subjectivism

of doing journalism, that is, the ordinary act of selecting what will be said and what will be left out, could perhaps be understood as manipulation. However, he claims that

[...] manipulating is associated with cunning, trickery, persuasion techniques, and convincing. It would meet the desire to dominate individuals or populations, guiding their conduct. Thus, manipulation is a complex of social control that contributes to the massification of societies and to the emergence of individuals who move through wills unrelated to theirs. (Christofoletti, 2018, p. 60-61).

To address misinformation, Christofoletti (2016) uses the classic text by Abramo (2016), *Patterns of manipulation in the mainstream press*, which signals operations practiced by newspapers that can lead their audiences to error, such as concealment, fragmentation, inversion, induction, and global pattern. According to Christofoletti (2018), the first four concepts are relevant to think about the contemporary context of information disorder. To Abramo's concepts, he also adds the patterns of softening, "a set of discursive or enunciation strategies that attenuate titles or texts, emptying part of the force of facts or statements" (Christofoletti, 2018, p. 70), the pattern of concealment, "omitting data, characters or other details that are more sensitive or inconvenient, but which are also minimally important for the understanding of that report" (p. 71) and the pattern of scrambling, "which is characterized by a set of editorial, narrative, or aesthetic strategies that aim to confuse and disorient, leading to other understandings and meanings, distant from the originals" (p. 72).

The types of discursive operations pointed out by Wardle (2019) and Christofoletti (2018) are complex and involve a wide variety of content. Fact-checking agencies like Lupa and Aos Fatos also assign various classifications to the content they check, going beyond the dichotomy between "true" and "false". The disputes over chloroquine and hydroxychloroquine, as we will show later, bring examples of these, sometimes very subtle, disinformation operations.

In this sense, the terms "disorder of information" and "disinformation" for now, are more appropriate than "fake news" to discuss the contents that have the intention to build false narratives about the reality. Thus, disinformation can be defined as the sharing of false, decontextualized, or purposely distorted information (Stahl, 2006). Such content, often, makes use of emotional, political, and ideological issues, or mix false and true information, confusing the audience. In digital social networks, they find a fertile environment to circulate.

Digital environment as fertile ground for misinformation

The use of false information as a guerrilla strategy to confuse the population dates back to very distant times. According to Bloch (1921), in his essay *Reflections by a historian on the false news of the war*, false reports have always been part of human life (Bloch, 1921). The question that arises is how the internet helped to potentialize this phenomenon, creating a favorable environment for the rapid dissemination of these messages. The explanation can be found in the logic on which connections are established (Han, 2011).

The current disinformation process has as main characteristic the strategic use of digital architecture, based on algorithms, and participatory culture (Jenkins, 2009). The sharing of incorrect information by actors who have no prior knowledge of its falsity or imprecision becomes part of the logic of this distribution chain. Although essential to expanding the reach of these contents, this is already configured as a result of this strategic use.

Along with the increase in the potential for interaction through the internet, we started to generate a large amount of data for each action we take on our devices, opening up possibilities for new business models, based on the exploration of this information and the directing of content that corresponds to the user interests (Sumpter, 2019).

To understand how content reaches different groups, it is necessary to know how these audiences behave. This process comes in the wake of a growing personalization of the content that users usually have access to via the web. Seen as one of the defining characteristics of web journalism by Lorenz (2014), as it enables greater public engagement with the news, personalization has consequences in the construction of public debate. Gradim (2016) warns of the need to deepen our understanding of the interpretive diversity accessible to users in this context. According to Pariser (2012), "At the end of the day, advocates of personalization offer us a tailor-made world, perfectly adapted for each of us" (Pariser, 2012, p. 16).

Two movements act in the personalization of content: the algorithms used by search engines and social media platforms, such as Facebook and Twitter, and the active selection of the subject about which sites are accessed and whom to follow. This leads to the existence of complementary phenomena that help to understand how the internet is constituted as a fertile environment for the circulation of pieces of disinformation - the filter bubbles and the echo chambers. In the first case, the limitation of access to different sources of information occurs by the indication of

publications based on algorithms, which tend to offer content that corresponds to previously captured patterns of navigation and interest (Pariser, 2012). In the case of echo chambers (Guess, Nyhan & Reifler, 2018), users create artificial environments of discursive cohesion from their choices, selecting subjects that please their beliefs and values through confirmation bias, in which pre-established positions are usually reinforced by new information that gives validity to what is believed to be real.

Disinformation in the health area

The disinformation industry feeds on the most varied subjects, following the public agenda. In addition to politics, a type of disinformation with far-reaching and direct impacts are those related to health (Péres-Dasilva, Meso-Ayerdu & Mendiguren-Galdospín, 2020). According to a report released by the Ministry of Health (2019), over a year of checking suspicious news published on digital media, the loss of credibility about immunization appeared as one of the main themes. Among the more than 12,000 questions received by the ministry through the WhatsApp app, most were vaccine-related content. According to the WHO, this news, together with anti-vaccine movements, influenced the fall in immunization rates in Brazil (Estadão Saúde Summit, 2019). The decrease in the number of vaccinees brought back diseases considered eradicated in the country, including measles, which has already registered outbreaks in Brazilian cities.

In the new Coronavirus pandemic, the dissemination of uninformative pieces (Salaverria et al, 2020) took on an even more challenging aspect, since they can put groups at risk of contamination, in addition to advocating the use of medicines that, if administered without medical prescription, can lead to death. Among the content shared on digital social networks, conspiracy theories that the virus was created artificially in China stand out, in addition to homemade recipes and publications that question the number of cases of Covid-19, suggesting that the disease would not be so severe (Ribeiro, 2020; Uol, 2020).

A study by the Oswaldo Cruz Foundation (Fiocruz), which mapped the uninformative content about Covid-19 received between April 11 and May 13 by an application of the entity, points out that 24.6% affirm that the disease is a political strategy; 10.1% teach homemade methods to prevent contagion; 10.1% defend the use of chloroquine and hydroxychloroquine; and 7.2% are against measures of social distancing (Fiocruz, 2020).

In Brazil, the president's defense regarding the use of chloroquine in patients with Covid-19, even without any conclusive study, boosted the production of related content, according to a study by Aos Fatos (Libório & Fávero, 2020). On digital social networks, news and research on chloroquine were cited as a way to support the position of users in favor of or against the release of the drug for the treatment of the disease. In the following section, we analyze the main referral systems used by each pole involved in this dispute, as well as the role of disinformation.

Discursive disputes over chloroquine on Twitter

Methodology

For this study, we consider Twitter as a proper space for research since it is a platform for virtual sociability "where conversations take place at the macro level, that is, they develop on a social level and have public characteristics of discussion" (Soares et al., 2019, p. 4). Despite limitations, such as the content fragmentation and the low quality of many of the messages, it is an appropriate platform for the rapid circulation of information, with multimedia and hypertextual resources, as well as tools such as retweet (RT) and the reply, facilitating the spread of content to heterogeneous networks. It is also widely used to discuss political issues.

Thus, the present study uses Content Analysis (CA) as an analysis methodology due to its hybrid characteristic of allowing systematic crossings between quantitative and qualitative data. According to Krippendorff (2003, p. 18), CA is a research technique that allows inferring from texts and other collectible materials. Likewise, Herscovitz (2007) argues that Content Analysis enables the detection of trends and models, also serving to evaluate the characteristics of products generated by individuals, groups and organizations "to identify typical elements, representative examples, and discrepancies, and to compare the journalistic content of different media in different cultures (p. 123).

We collected 227,607 mentions published on Twitter by 95,733 unique users, between March 23 and April 13, 2020⁴, containing the keywords "chloroquine" or "hydroxychloroquine", in Portuguese. The vast majority of these contents did not include any external references (links) - they were mainly retweets and testimonials without information or sources that could be verified. A considerable number (about 10%) referred to sources external to Twitter, with at least one hyperlink to endorse their

⁴ The collected volume does not indicate the totality of tweets published in the period, but the amount that was available in the Twitter API.

point of view. This indicator is of interest to us, as it allows us to demonstrate which sources of information were most used by groups that discussed the topic on the network. After cleaning the data, it was grouped into a subset of tweets that contained at least one hyperlink, in a total of 21,076 messages published by 14,356 profiles. Table 1 summarizes the main information regarding these steps.

Table 1 Database and sample of tweets collected for analysis⁵

	General database	Sample (only tweets containing hyperlinks)
<i>Tweets</i>	227,607	21,076
Unique profiles	95,733	14,366
Period	March 23 to April 13, 2020	
Keywords	chloroquine OR hydroxychloroquine (language: Portuguese)	

Source: The authors

Then, we extract the domain of each mentioned URL, as well as the title of each mentioned page, to verify its relevance in discussions about chloroquine. In total, 819 different domains were found. Then, using Social Network Analysis principles (Recuero, Bastos & Zago, 2015), the data were processed to investigate the formation of communities (clusters) of users connected to the same sites and to verify the referral system used to defend or delegitimize the use of chloroquine. The news with the highest number of shares were subjected to qualitative analysis to verify the degree of misinformation present in the content, as well as the main strategies for manipulating the public debate.

Referenced sources and shared connections

In a first analysis, we verified that a great diversity of sources was present in the debate about chloroquine on Twitter. In general, the hyperlinks led to sites or profiles of the traditional press (such as Folha de São Paulo, Globo, Estado de São Paulo);

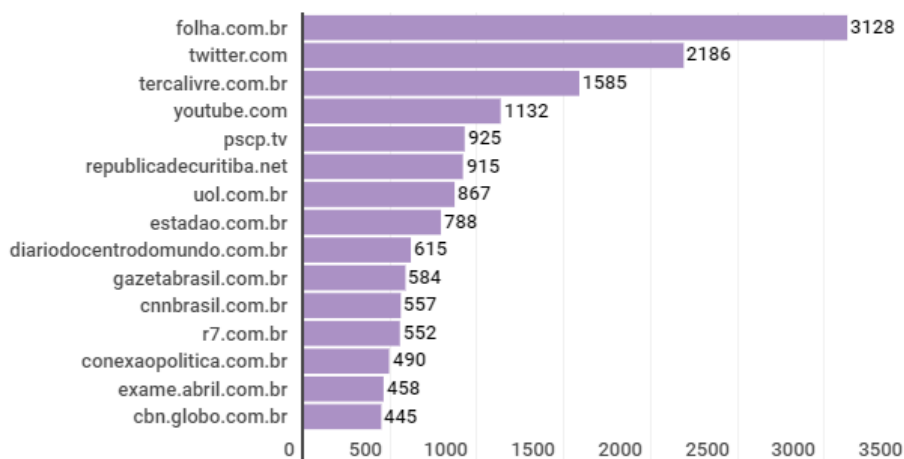
⁵ The data collection was carried out with the support of the TAGS 6.0 tool; while data cleaning and processing was carried out with the development of Python scripts. Data visualization was produced on software such as Gephi.

Explicitly ideological portals, blogs, and profiles (focused on the discussion of political issues, clearly positioned on the right, like Terça Livre, or on the left, like the Diário do Centro do Mundo); Independent online press (generalist journalistic sites, without association with large business groups, such as Nexo or Agência Pública); Scientific bases (health journals and articles available in databases such as ClinicalTrials); Personal profiles (for example, the YouTube channel of journalist Alexandre Garcia, President Jair Bolsonaro, physicians, etc.); International press (New York Times, The Guardian, Le Monde, BBC, among others); Institutional profiles (government or health authorities like WHO); Fact-checking agencies or rumors-fighting websites (Aos Fatos, Lupa, Projeto Comprova, Boatos.org); Humorous/satirical sites (such as the Sensacionalista website or the deep-fakes producer Bruno Sartori YouTube channel), among others.

In future work, we plan to quantify the presence of these sources. Difficulties in this type of analysis are due to the diversity of platforms that participate in this information flow, which makes the immediate identification of the source responsible for the content more complex. To get a clearer idea of how this multiplatform operation occurs, we have listed the 15 domains or subdomains⁶ that appeared most frequently in our link database:

Graph 1 Ranking of 15 most referenced addresses in the sample

Endereços mais referenciados



Source: The authors [**Most cited internet domains**]

⁶ The domain is the name of the website, while a subdomain refers to a specific area within it. For example, Revista Piauí has a digital presence as a subdomain of Folha de São Paulo (<http://piaui.folha.com.br>). Classification by subdomain allows you to see the relevance of targeted sites, blogs or specific sections within larger domains.

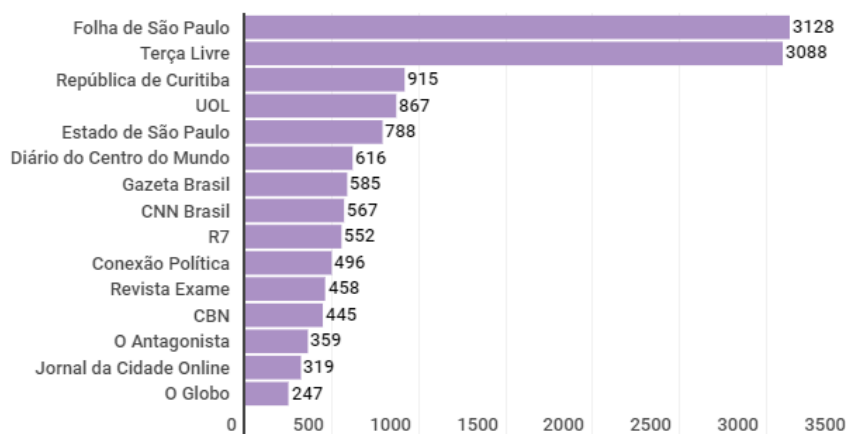
The list allows us to observe some trends in the consumption of information concerning social media: among the five websites most referenced by users, Twitter itself appears in second place, with 10% of links (we consider these links to be equivalent to RTs, so we will not consider them in next results). Fourth is YouTube, which accounts for 6% of links. Periscope (pscp.tv), a live video streaming tool, received 4% of citations. Other platforms like Instagram and Facebook also appear in the sample, although not among the 15 most cited. This indicates that sources are using multiple channels of contact with their audience, especially video platforms, as environments for consuming information and forming opinions.

The presence of countless sites/channels with a clear ideological content stands out, either on the right or left of the political spectrum. In general, these sites do not have a staff box, reproducing information from other sources or producing opinionated, analytical, or interpretive content. Among the most referenced ones there are *Terça Livre*, *República de Curitiba*, *Diário do Centro do Mundo*, *Gazeta Brasil*, and *Conexão Política*, which share the ranking with traditional media outlets, such as *Folha de São Paulo*, *Estadão*, *UOL*, *CNN Brasil*, *R7*, *Revista Exame* and *CBN*.

Given the relevance of YouTube and Periscope in the sample, with more than 2,000 links in the period, we submitted the database of links to these sites to a second treatment, extracting the titles of videos and the channel responsible for each publication. Thus, we identified who “signs” the videos and we were able to draw more precise conclusions about the set of information sources that appear in the dispute between defenders of the unrestricted release of chloroquine/hydroxychloroquine in the treatment of Covid-19 and the critics of this measure. After this processing, we repeated the procedure of ranking the 15 most referenced sources, discarding Twitter, and consolidating the information from YouTube and Periscope.

Graph 2 Ranking of the 15 most referenced information sources in the sample (consolidating information from channels on YouTube and Periscope)

Fontes mais referenciadas



Source: The Authors [Most cited sources]

Of these 15, at least three were previously identified as propagating disinformation about Covid-19 by Brazilian fact-checking initiatives. Gazeta Brasil, Conexão Política, and Jornal da Cidade Online appear in a survey by the fact-checking agency Aos Fatos that reveals sites that profited from advertising by publishing “misinformation about, for example, the effectiveness of chloroquine in the treatment of Covid-19” (Nailon & Ribeiro, 2020, electronic information). The other sites identified in this investigation (Notícias Brasil Online, Senso Incomum, Agora Paraná, and Jornal 21 Brasil) also appeared in our sample, although they are not among the 15 most referenced ones.

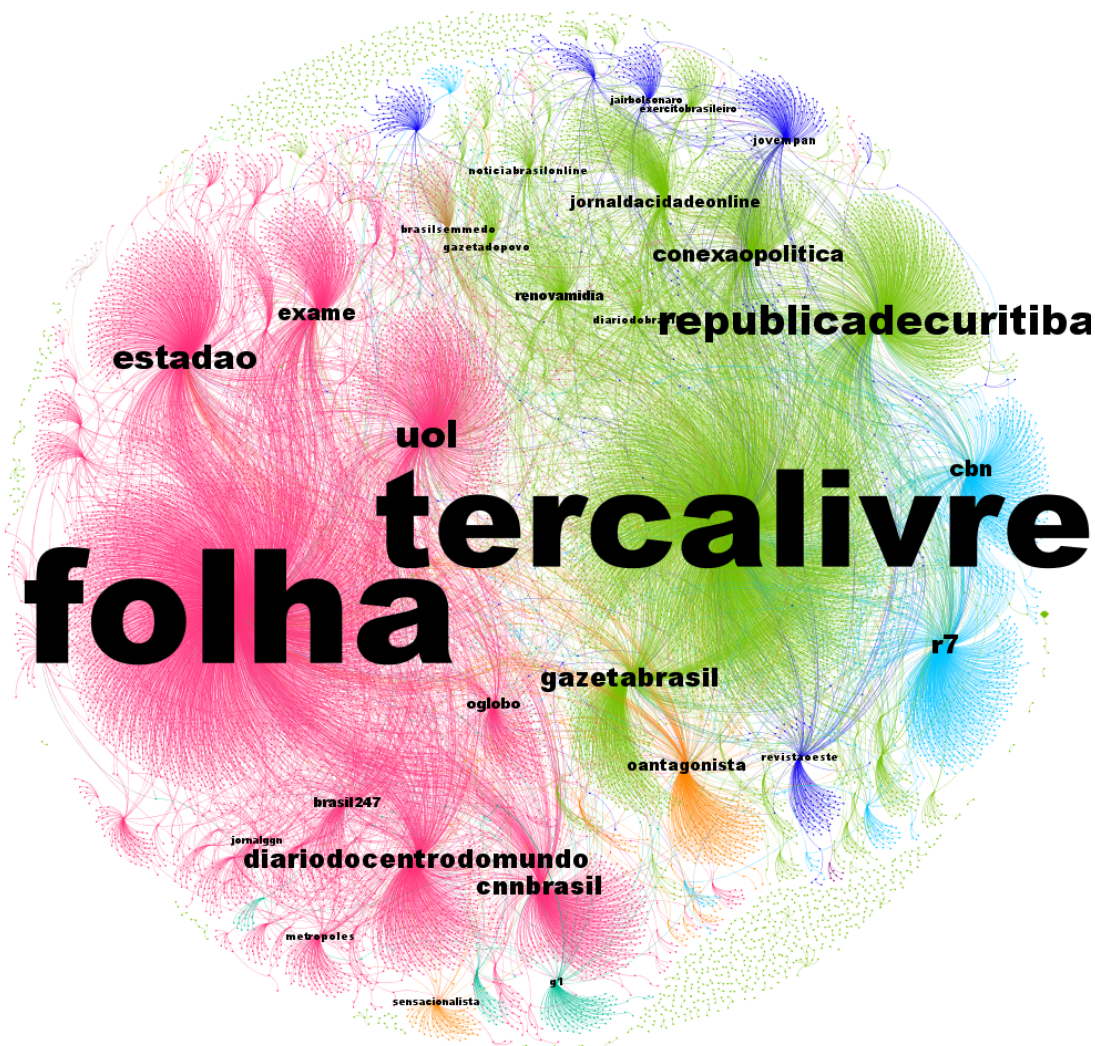
After consolidating this data, we analyzed the networks formed around these sites on Twitter, to identify which references are most shared in the context of disputes over chloroquine and hydroxychloroquine as treatments for Covid-19. To this end, we generated the visualization of a graph that allows us to demonstrate how different users on Twitter connect with the sources of information, and how groups of different ideological position share these sources.

The map below uses Social Networks Analysis metrics (Recuero, Bastos & Zago, 2015) indegree⁷, and modularity⁸. The 30 profiles with the highest indegree were highlighted.

⁷ It represents the number of connections that a given node receives (Recuero, Bastos & Zago, 2015). In the graph, the larger the name font size, the greater the number of citations received on the network

⁸ Metric that identifies groups underlying the network structure. Groups that cite common sources appear more connected to each other and in different colors.

Figure 1 Graph around information sources with indegree corresponding to the size of node labels



To the left of the graph, we see a large mass of connections in red, where the main name is the Folha de São Paulo website. In addition to Folha, other newspapers and portals of the traditional press, such as O Globo, UOL, Estadão, Revista Exame and CNN Brasil share space with news sites more associated with the left, such as Diário do Centro do Mundo and Brasil 247, giving a “clue” of the ideological positioning of users who use links from these sources: people contrary to Bolsonaro government and the unrestricted use of chloroquine. Reports published by the mainstream press, especially Folha de São Paulo, served as an argument to show that chloroquine and hydroxychloroquine have no scientific evidence against SARS-CoV-2.

The article with the greatest repercussion at the database, “Chloroquine is being seen as a savior, but it is not”, says the physician at INCOR” (Folha de São Paulo⁹), appeared 2,068 times in the sample. In it, the opinion of a health specialist - the physician Ludhmila Abrahão Hajjar - is turned into a statement that suggests that the drug is not the answer to the installed public health crisis. Published by Folha on April 12, 2020, the news was also reproduced by websites such as Conexão Política, GauchaZH (formerly Jornal Zero Hora), and Polêmica Paraíba. The title reflects a position against chloroquine and uses as a credibility strategy the interviewee’s speech, her profession, and the place where she works - the Heart Institute (INCOR). In the body of the text, the reader identifies that, in addition to being a physician, Hajjar is part of a group of researchers who study the effectiveness of chloroquine, giving more authority to her speech.

Other contents such as “WHO tests chloroquine in the laboratory, but states that it still has no proven efficacy” (Uol)¹⁰ and “Academies condemn the indiscriminate use of chloroquine and hydroxychloroquine against Covid-19” (Estadão)¹¹ had wide circulation in the period, based on the authority of scientific and health institutions to offer arguments against the widespread use of chloroquine.

Most of the sources shared by the group in red used the same approach: based on the opinion of health experts and the progress of the published studies, they show the risk potential of chloroquine/hydroxychloroquine, its side effects, and other factors that interfere with treatment safety.

Figure 2 Examples of headlines that spread the most in the red cluster

⁹ Retrieved from:

<https://www1.folha.uol.com.br/equilibrioesaude/2020/04/cloroquina-esta-sendo-vista-como-salvadora-mas-nao-e-diz-medica-do-incor.shtml?utm_source=twitter&utm_medium=social&utm_campaign=twfolha>. Accessed on: July 13, 2020.

¹⁰ Retrieved from:

<https://noticias.uol.com.br/colunas/jamil-chade/2020/04/13/oms-testa-cloroquina-em-laboratorio-mas-diz-ainda-nao-ter-eficacia-provada.htm?cmpid=copiaecola>. Accessed on: July 13, 2020.

¹¹ Retrieved from: https://saude.estadao.com.br/noticias/geral,associacoes-condenam-uso-indiscriminado-da-cloroquina-e-da-hidroxicloroquina-contra-a-Covid-19,70003268612?utm_source=twitter:newsfeed&utm_medium=social-organic&utm_campaign=redes-sociais:042020:e&utm_content=:::&utm_term=. Accessed on: July 13, 2020.

'Cloroquina está sendo vista como salvadora, mas não é', diz médica do Incor

Ludhmila Abrahão Hajjar diz que o principal gargalo da pandemia de Covid-19 é falta de estrutura nas UTIs

Academias condenam uso indiscriminado da cloroquina e da hidroxicloroquina contra a covid-19

Nota conjunta foi assinada pelos presidentes da Academia Brasileira de Ciências e da Academia Nacional de Medicina

Roberta Jansen, O Estado de S.Paulo
12 de abril de 2020 | 17h48

Still in Figure 1, further to the right of the graph, another cluster appears, in green, with the prominence of the far-right portal Tuesday Free. Almost all of the sources that stand out on this side of the spectrum are ideological portals aligned to the right, such as Gazeta Brasil, República de Curitiba, Conexão Política, Jornal da Cidade Online, Renova Mídia, Brasil Sem Medo, Notícia Brasil Online, and Diário do Brasil. The Curitiba-based Gazeta do Povo is the only press vehicle that appears among the main ones mentioned in this network, showing a characteristic of this cluster of avoiding traditional voices of the professional press.

The discourse of criticism/rejection of the press is confirmed by the content of one of the main contents shared in the period: a video from the website Terça Livre with the headline "ESTADÃO: CLOROQUINA NÃO, MACONHA SIM". In the more than 2-hour video, the channel's presenters comment on articles published by Brazilian newspapers and point out reasons for not trusting them - based on the allegation that they were vehicles equipped by left-wing parties.

Direct criticisms of the press and other institutions appear in other content, such as "Gusttavo Lima defends the use of chloroquine and criticizes the press for hiding the substance's effects" (Conexão Política)¹² and "CHINA AND WHO HID HYDROXYCHLOROQUINE FROM YOU" (Terça Livre)¹³. In the latter, there is a clear attempt from the headline to build a feeling of doubt in the reader and nurture a kind of paranoia with the subjects who, according to the conveyed content, have information that is being hidden from the general public.

¹² Retrieved from: <https://conexaopolitica.com.br/politica/gusttavo-lima-defende-uso-da-cloroquina-e-critica-imprensa-por-esconder-efeitos-da-substancia/>. Accessed on: July 13, 2020.

¹³ This video was later removed by YouTube for violating the platform's content guidelines and is no longer available.

Figure 3 Examples of content with greater repercussion on the green cluster



We note that to defend their interests concerning chloroquine, the green cluster also sought support in scientific arguments - but, in its majority, users cited still preliminary studies and isolated opinions of physicians, which do not represent the consensus of the main health entities in the country. In addition to defending the effectiveness of chloroquine, the links cited by this group also sought to stir up the dispute between state and federal governments.

The preference for different sources between the two clusters points to the construction of echo chambers, through a discursive reinforcement perpetuated by reference networks that serve as a basis for the cohesion of these communities. In these cases, the active choice of users to share certain content at the expense of others is noteworthy. "Twitter is, in a way, a hose of small news, where users can decide what to choose from this flow" (Lorenz, 2014, p. 153).

In the following section, we will discuss some characteristics of the content that had the highest number of sharing in the sample and that can be considered uninformative, from Wardle (2019), Abramo (2016), and Christofolletti (2019).

Evidence of disinformation

As mentioned, the use of chloroquine/hydroxychloroquine in the treatment of Covid-19 has divided opinions in the public debate. In the defense and attack regarding the use of the medication, several arguments have appeared, but not all of these

arguments are based on scientific or even factual evidence. Among the 10 most shared links from each of the main sources, we did not find cases of completely manufactured content (Wardle, 2019), but several examples have signs of disinformation mixed with real information, in a scramble (Christofoletti, 2019) between fiction and reality that disorients the reader.

Without pretending to serve as an exhaustive classification, we point out some strategies that contribute to the informational disorder about chloroquine: 1) Establishing false cause/effect relationships between fragmented or decontextualized data; 2) Propagating personal opinions as if they were objective facts; 3) Attacking the credibility of press institutions, health authorities and scientific entities; 4) Using rhetorical traps, such as false symmetries and appeal to moral values. The identified signs of misinformation can be operated simultaneously so that the same piece can use more than one strategy at the same time.

It is important to highlight that there is no attempt to quantify the occurrence of these practices in the sample. Below, we present a qualitative analysis of the contents that had the greatest repercussion in the period, mapping some of the disinformation strategies during the Covid-19 pandemic that had the greatest reach on the network.

The tactic of establishing a **false cause and effect relationship** was used to promote chloroquine as a cure, although there is no scientific evidence to support this hypothesis. One example is how the healing of a person named Gina Dal Coletto was reported. She is a 97-year-old woman who was treated in a private hospital in São Paulo and recovered from Covid-19 after a series of procedures and a treatment that involved the use of antibiotics, diuretics, corticosteroids, and chloroquine. On April 12, Dal Coletto's story was published on the G1 website, of the Globo group, with the following headline: "97-year-old woman is discharged from hospital after curing the coronavirus"¹⁴. So far, information on the use of chloroquine as part of the patient's treatment is found in the news body text, but it is not part of the title. Shortly after being published in G1, the same information was reproduced in full by websites such as República de Curitiba, Renova Mídia, Pleno News, and Gazeta Conservadora, with titles such as: "Treated with Chloroquine, 97-year-old woman is cured in São Paulo"¹⁵

¹⁴ Available in: <<https://g1.globo.com/sp/sao-paulo/noticia/2020/04/12/idosa-de-97-anos-se-cura-de-Covid-19-em-sao-paulo.ghtml>>. Accessed on July 14, 2020.

¹⁵ Available in: <https://republicadecuritiba.net/2020/04/12/tratada-com-cloroquina-idosa-de-97-anos-e-curada-em-sao-paulo/>. Accessed on July 13, 2020.

or “In SP, a 97-year-old woman is discharged after healing with chloroquine”¹⁶. In our database, the news appeared 1,490 times with the headlines modified to highlight chloroquine. The appeal establishes a false causal relationship between two true, yet isolated facts: the use of chloroquine in the treatment and the recovery of the patient. However, the relationship is false because chloroquine was not the only medicine used in the treatment and there are not enough scientific elements to claim that it was responsible for the cure of Dal Coletto.

Something similar happened with Record’s R7 website, published on April 8. In the title, a quote attributed to physician Roberto Kalil, head of cardiology at Hospital Sírio-Libanês, was treated for Covid-19 with a set of drugs that included hydroxychloroquine: “‘It prevented my going to the ICU’, says Roberto Kalil about chloroquine”¹⁷. Reading the text, we see that Kalil’s full statement refers to the treatment he received as a whole - and not specifically to hydroxychloroquine. Other articles on the same case offer counterpoints but did not circulate in the same networks in which this one, from R7, circulated. In Folha de São Paulo, the news “Kalil’s physician says he cannot claim if it was chloroquine that cured him of coronavirus”¹⁸ explains that it is not possible to determine the effectiveness of the drug based on that individual experience. In the same vein, the Diário do Centro do Mundo published content emphasizing the political aspect of the drug, with the title: “Kalil’s physician, quoted by Bolsonaro on TV, says that studies do not prove chloroquine’s effectiveness”¹⁹.

Still within this strategy, although it is not directly related to chloroquine, we repeatedly found the use of the expression “Chinese virus” in the body of the articles on Bolsonarist sites referenced in the sample. Although the first outbreak of the virus occurred in Wuhan, China, the term “Chinese virus” proposes a false “ownership” relationship between the country and the virus, in line with the hypothesis, already refuted by several checking agencies in various parts of the world, that the new Coronavirus would have been created in a Chinese laboratory and intentionally released to harm the international economy.

¹⁶ Retrieved from: <https://gazetabrasil.com.br/brasil/sao-paulo/Covid-19-em-sp-idosa-de-97-anos-recebe-alta-apos-se-curar-com-cloroquina/>. Accessed on July 14, 2020.

¹⁷ Retrieved from: <https://noticias.r7.com/saude/impediu-minha-ida-para-a-uti-diz-roberto-kalil-sobre-cloroquina-08042020>. Accessed on July 13, 2020.

¹⁸ Retrieved from: <http://zpr.io/tLAac>. Accessed on July 13, 2020.

¹⁹ Retrieved from: <https://www.diariodocentrodomundo.com.br/medico-de-kalil-citado-por-bolsonaro-na-tv-diz-que-estudos-nao-comprovam-eficacia-da-cloroquina/>. Accessed on July 13, 2020.

At the other pole of the dispute, we can also cite examples of a false cause and effect relationship. There have been cases where chloroquine has been deployed to report the death of patients undergoing Covid-19 treatment. This is the case of: "Women die in SP after taking chloroquine, antibiotics, and antivirals"²⁰ (Folha de São Paulo). By the headline, the woman's death appears to have been a direct result of taking the drugs - when, in fact, she was using the drugs as part of the treatment for the disease. Note that the antibiotic and antiviral used in that text do not appear named in the title, while chloroquine does. Only in the body of the text does the reader identify which were the other drugs prescribed in this case and, even so, it is not possible to attribute to the treatment the cause of the victim's death. By citing chloroquine right in the title, Folha induces the reader to an inadequate conclusion about the responsibility of the drug in this death. In the article itself, there is the excerpt:

Prevent Senior states that "categorically, it is not possible to affirm or associate the treatment with the occurrence of the cause of death". "The patient had been without medication for six days. Any claim is reckless and bad faith," says lawyer Nelson Wilians, who represents the health plan operator

This strategy (of false causality) can be associated with the *fragmentation* manipulation pattern, in which, according to Abramo (2016), the facts are disconnected from each other, "stripped of their ties to the general, disconnected from their antecedents and from its consequences in the process in which they occur, or reconnected and relinked in an arbitrary manner and which does not correspond to the real bonds [...] "(p. 42). The fragmentation pattern presupposes two operations, the selection of aspects and the decontextualization. We can also associate these examples with content that establishes "false connections" in the typology of First Draft News (Wardle, 2019), in which the title does not exactly match the content, and with "misleading content", where facts are framed from specific interests.

Such a strategy finds in echo chambers the ideal environment to potentiate its impacts, from the selective exposure²¹ of users to certain contents, because in these spaces the

²⁰ Retrieved from: https://www1.folha.uol.com.br/colunas/monicabergamo/2020/04/mulher-morre-em-sp-quatro-dias-apos-fazer-tratamento-com-cloroquina.shtml?utm_source=twitter&utm_medium=social&utm_campaign=comptw%3Flogge-dpaywall&origin=folha. Accessed on July 13, 2020.

²¹ Subject's predisposition to consume information that confirms his beliefs to the detriment of those that generate questions, causing discomfort and the need for reflection (Spohr, 2017).

contradictory rarely appears. Thus, the decontextualization and the selection of certain aspects act as practices that help sustain the fragmentation of the debate on chloroquine.

The second indication that we can point out as being disinformative is the **spread of opinions as facts**. This aspect is also related to the misleading contents (Wardle, 2019), and can be associated with the manipulation pattern of inversion, according to Abramo (2016); more specifically, the inversion of opinion by information. In this pattern, the author states that

The value judgment is unscrupulously used as if it were a reality judgment, when not as if it were the mere narrative/descriptive exposition of reality. The reader/viewer no longer has before him the thing as it exists or happens, but a certain appreciation that the organ wants him to have of something he does not know, because his knowledge was hidden, denied, and concealed by the organ (p. 45).

The video "Chloroquine: Doria wants to be the child's father" (Terça Livre) is a criticism to the governor of São Paulo, João Doria (PSDB), after he declared that the coordinator of the São Paulo Coronavirus Contingency Center, David Uip, indicated the use of chloroquine to the then Minister of Health, Luiz Henrique Mandetta. In the video title, a personal impression of the governor's attitude is stated in the third person singular, as if it were an objective journalistic fact - "Doria wants to be the child's father".

The same type of operation took place at the opposite pole, in the content published by the website Diário do Centro do Mundo: "Robots of the Bolsonaro militia sell the miracles of chloroquine without mercy on Twitter". The text reports the multiplication of repeated content on Twitter to promote chloroquine, which would be an indication of the coordinated performance of robots or inauthentic accounts. The article also states that the activity would be led by Carlos Bolsonaro, the president's son, to manipulate the opinion of the population on social networks. However, although there are indications of the use of robots in the reported case, there is no evidence that Carlos was behind the operation. It is an opinion of those who wrote the text, published as fact.

The video "China and WHO hid hydroxychloroquine from you", published by the far-right channel Terça Livre, uses a statement given by its interviewee, the philosopher Olavo de Carvalho, without citing the source directly. Only by watching the video is it

possible to recover the context of the statement. Thus, *Terça Livre* turns a personal opinion into fact, by making it explicit in the title without further information. The video, which was later removed from YouTube for violating the platform's content guidelines, also implies the participation of the Chinese government and WHO itself in a plot to harm the population.

In this sense, besides the relationship with the inversion manipulation pattern, it is possible to note that this content tries to **disseminate doubt** in the viewer, driving him to distrust the World Health Organization and, consequently, its basic recommendations for preventing the virus (social distancing, hygiene, wearing masks etc.). To build its credibility, the disinformation industry attacks the confidence of other institutions that deal with the registration or explanation of observable phenomena - such as science, history, or the press. The defense of chloroquine itself, despite all the scientific evidence that has emerged since the beginning of the pandemic, suggests that the discourse propagated by these entities must be questioned. By inferring that something is being "hidden", the website places itself as being aware of a secret, holder of a truth that is being denied to society to defend vested interests.

The video "ESTADÃO: CLOROQUINA NÃO, MAS MACONHA SIM", one of the most replicated ones in the analyzed period, is also an example of this indication. In it, the presenters suggest that Brazilian institutions, such as the Order of Attorneys of Brazil (OAB) are being operated by infiltrated communists, who would use the titles of these entities to obtain credibility. For this reason, they discredit the position of renowned institutions of health, law, education, among others.

This video also illustrates the fourth disinformative feature that we found in the sample: the **use of rhetorical traps**, such as false symmetries and appeal to moral values. The video title itself is an example of this indication. The title quotes a great representative of the traditional press - the newspaper *O Estado de São Paulo* - suggesting the use of "double standards" when dealing with controversial drugs (in this case, chloroquine and marijuana). One needs to look no further to conclude that this comparison is based on false symmetry - the controversies surrounding the two substances cannot be placed on an equal footing, since the medicinal potential of *Cannabis Sativa* has been systematically studied at least since the 1960s; while chloroquine/hydroxychloroquine had been tested to fight SARS-CoV-2 only a few months ago when the video was published. In this false debate, marijuana is used as a keyword to provoke the indignation of a conservative audience.

Throughout the video, in a reading of reports from vehicles such as Revista Exame, Rede Globo, and the aforementioned Estadão, the presenters accuse the newspapers of hiding the truth about chloroquine, to harm President Jair Bolsonaro. In this sense, the video cites examples that would prove the alleged accusation, such as a report in the 2016 Jornal Nacional (during the Dilma/Temer government), in which chloroquine was cited as a possible way to treat Zika. The content is covered by an aesthetic that appropriates classic elements of the television news language (commentators appear well dressed, sitting on a bench and interacting with screens), while criticizing the press, appealing to questions of a moral nature. In this sense, it misinforms because it is based on fallacious arguments that do not resist further analysis, but which attract attention and reverberate due to their controversial content.

Final remarks

Throughout the analysis, we observed patterns in the dissemination of disinformative content. This observation leads us to believe that the origin of false news is tied to political and ideological interests. The analysis points to signs of disinformation that show that each day the design of these contents becomes more professional and credible.

This refinement in the creation and dissemination of misleading news ends up creating a smokescreen between the public and journalism committed to the truth, which suffers from accusations from both poles of the divided population, which discredits traditional vehicles accusing them of hiding the truth to the detriment of political or economic interests.

In this context, we can affirm that the polarization of the debate about chloroquine demonstrates mechanisms by which the confrontation of misleading news through traditional sources is insufficient to face disinformation strategies. With little intersection between the sources of references used by both sides of the debate, verifiable information can hardly break through the barriers imposed by echo chambers and algorithmic filters.

This work aimed to contribute to the observation and analysis of news content that brought with it forms of disinformation, to show how they circulate and how they echo in virtual environments.

This work did not address the possible use of robots to boost content, since the analysis focused on qualitative aspects and the description of the main disinformation strategies verified on the websites themselves. However, we cannot ignore that

automation is an important factor in the disinformation industry and can be used as a mean to mask public opinion, a gap to be further explored in future works, in which we intend to complement the qualitative analysis with quantitative data on the mapped strategies and a proposal to classify the most used source types in the context of echo chambers.

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RESUMO:

Diante do grande fluxo de informações que circulam pelo Twitter a respeito da pandemia da Covid-19, o presente artigo analisa a polarização do debate em torno da eficácia do uso da cloroquina e hidroxicloroquina no tratamento da doença, a partir de sistemas de referências distintos, além de identificar os indícios de desinformação presentes nos links que mais circularam entre 23 de março e 13 de abril, a partir de uma base de 21.076 tweets. A análise constata a formação de câmaras de eco, numa clara oposição entre o uso de veículos tradicionais de comunicação e sites de teor explicitamente ideológico como fontes de referência para defender um medicamento sem eficácia científica comprovada.

PALAVRAS-CHAVES: Desinformação; Câmaras de Eco; Covid-19; Twitter; Redes sociais.

RESUMEN:

En vista del gran flujo de información que circula en Twitter sobre la pandemia de Covid-19, este artículo analiza la polarización del debate sobre la efectividad del uso de cloroquina e hidroxicloroquina en el tratamiento de la enfermedad, basado en diferentes sistemas de referencia, además de identificar los signos de desinformación presentes en los links que más circularon entre el 23 de marzo y el 13 de abril, en base a una base de 21.076 tweets. El análisis encuentra la formación de cámaras de eco, en una clara oposición entre el uso de vehículos de comunicación tradicionales y sitios de contenido ideológico explícito como fuentes de referencia para defender una droga sin eficacia científica comprobada.

PALABRAS-CLAVES: Desinformación; Câmaras de eco; Covid-19; Twitter; Redes sociales.