False News Around COVID-19 Circulated Less On Sina Weibo Than On Twitter. How To Overcome False Information?

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Untold False News Around COVID-19 Circulated Less On Sina Weibo Than On Twitter. How To Overcome False Information?

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Abstract

Since the Coronavirus health emergency was declared, many are the fake news that have circulated around this topic, including rumors, conspiracy theories and myths. According to the World Economic Forum, fake news is one of the threats in today's societies, since this type of information circulates fast and is often inaccurate and misleading. Moreover, fake-news are far more shared than evidence-based news among social media users and thus, this can potentially lead to decisions that do not consider the individual's best interest. Drawing from this evidence, the present study aims at comparing the type of tweets and Sina Weibo posts regarding COVID-19 that contain either false or scientific veracious information from February 6 and 7 of 2020. To that end 1923 messages from each social media were retrieved, classified and compared. Results from this analysis show that there is more false news published and shared on Twitter than in Sina Weibo, at the same time science-based evidence is more shared on Twitter than in Weibo but less than false news. This stresses the need to find effective practices to limit the circulation of false information.

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Resumen

Desde que se declaró la emergencia de salud de Coronavirus, muchas son las noticias falsas que han circulado sobre este tema, incluidos rumores, teorías de conspiración y mitos. Según el Foro Económico Mundial, las noticias falsas son una de las amenazas en las sociedades actuales, ya que este tipo de información circula rápidamente y a menudo es inexacta y engañosa. Además, las informaciones falsas se comparten más que las informaciones basadas en evidencia entre los usuarios de las redes sociales y, por lo tanto, esto puede conducir a decisiones que no consideran el mejor interés del individuo. A partir de esta evidencia, el presente estudio tiene como objetivo comparar el tipo de tweets y publicaciones de Sina Weibo con respecto a COVID-19 que contienen información veraz falsa o científica durante el período del 6 y 7 de febrero de 2020. Para ese fin, se recuperaron 1923 mensajes de cada red social, clasificados y comparados. Los resultados de este análisis muestran que hay más noticias falsas publicadas y compartidas en Twitter que en Sina Weibo, al mismo tiempo, la evidencia basada en la ciencia se comparte más en Twitter que en Weibo, pero menos que las noticias falsas. Esto enfatiza la necesidad de encontrar prácticas efectivas para limitar la circulación de información falsa.

Palabras clave: información falsa, información basada en evidencias científicas, impacto social, redes sociales, COVID-19

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R ecently, attention has risen on the COVID-19 health emergency. On December 31, 2019, the first case of the disease was reported in Wuhan, China. On April 9th, more than four months later, there are 1436198 confirmed cases worldwide, with over 170 affected countries from all continents, except from Antarctica (World Health Organization, 2020a). Due to its rapid worldwide spread and affectation, on March 11th, 2020, the World Health Organization labelled the situation as of "pandemic" (World Health Organization, 2020b). However, beyond the health emergency, the World Health Organization (WHO) also flagged the existence of an *Infodemic* (World Health Organization, 2020c), due to the large amount of information being produced and shared on this topic and the difficulty to sort truth from falsehood. Even if the diffusion of false information is not something new, it certainly is an increasing phenomenon worldwide (Vosoughi, Roy & Aral, 2018). Being exposed to falsehood increases the likelihood of individuals to believe the information they encounter (Del Vicario et al., 2016).

For this reason, the circulation of false information has become a social threat. Indeed, the World Economic Forum made such a remark in 2013 in a report entitled "Digital wildfires in a hyperconnected world" (Howel, 2013). This fact is of special concern when false information refers to health since the behavior of misinformed citizens, practitioners or public leaders can have severe consequences for public health (Scheufele & Krause, 2019). In this scenario, the present paper aims at exploring and comparing how false information and science-based information circulated on Twitter and Sinia Weibo, two social media platforms, over a two-day period during the coronavirus disease outbreak, specifically 6 and 7 February of 2020.

Twitter is an international network with 152 million daily active users worldwide (Clement, 2020). It is most popular in the United States, where it counts on 59.35 million users as of January 2020, followed by Japan and the United Kingdom (Clement, 2020). In China, Iran, and North Korea the platform has been blocked by the government (Wikipedia contributors, 2020). On Twitter, 140-character messages, called Tweets, are shared, and users can post messages (Tweet) and repost (Retweet) or like (Like). Users can keep track of the posts of others (follow) and are tracked by other users (followers). They can register with their real names or with nicknames.

These features make this network highly interactive and allow rapid and broad dissemination of information.

Sinia Weibo is the one biggest social media platform in China similar to Twitter, although it now has many other functionalities found in other social networks, such as Instagram or Reddit, and no longer has the 140-character limit (Statista Research Department, 2019). In mid-2019, the platform reached over 480 million monthly active users and it has been estimated that, in 2018, 42.3% of Chinese Internet users were present on this platform (Statista Research Department, 2019). More specifically, most users of Weibo are located in China, even though the platform is now available in some other countries. Users in Sina Weibo need to use their real names due to government requests. The social network is also under strict government surveillance and censorship (Zhu et al., 2013). Both Twitter and Sina Weibo are popularly used to share novel information online, allowing users both to access and disseminate their content of choice.

However, even if the Internet has democratized access to knowledge, contributing to the "demonopolization of the expert knowledge" (Giddens, Beck & Lash, 1994), the diffusion of false information is a challenge to democratic values (Allcott, Gentzkow & Yu, 2019). In our modern societies, social media, blogs, and other online sites have become one of the main platforms for the fabrication and diffusion of false information (Lazer et al., 2018). Internet platforms lack the conventional forms of quality assessment and reliability (Lewandowsky et al., 2012), so in these online contexts false information, including myths, hoaxes and fake news (i.e. fabricated news that do not respond to reality (Lazer et al., 2018)), circulate more freely and often uncontested. Research has shown that people tend to accept without questioning ideas and information that are in accordance with their system of beliefs (Lazer et al., 2018). Indeed, individuals tend to have a preference for this kind of information (Lewandowsky et al., 2012), while ignoring or rejecting other inputs that question it (Lazer et al., 2018). Thus, when individuals and institutions base their choices and actions on information that is false, these can backfire and turn against their best interest (Merino, 2014). In addition, social media do not only influence our relationship with news and informative content but also with relevant others (Lazer et al., 2018). Media users often get together by interest, which fosters

"confirmation bias, segregation, and polarization" (Del Vicario et al., 2016, p. 558) and leads to an echo chamber effect (Shu et al., 2017).

Public relevant issues that trigger polarized opinions, such as the US presidential election (Bovet & Makse, 2019) or climate change (Farrell, McConnell & Brulle, 2019), have mobilized different sorts of misinformation. For instance, both beliefs in conspiracy theories and the need for cognitive closure (i.e. resistance to scrutiny of acquired beliefs before other evidence) have shown to play a key role in the diffusion of false information (Bessi et al., 2015). As well, the circulation of false information is often associated with novelty, time-critical events, and emergencies, due to the rising number of emerging issues in such events, and the difficulty to verify these against existing evidence-based knowledge (Shu et al., 2017). Indeed, false information is often more novel than true information and novelty is more likely to be retweeted than information which has circulated for a while (Vosoughi, Roy and Aral, 2018). Thus, the COVID-19 health emergency creates a favourable context for the flourishing of false information.

Regarding the circulation of scientific vs. conspiracy-based information, a study showed that polarized consumers of conspiracy content then tend to consult information that agrees with their system of beliefs and are more likely to share such conspiracy content (Bessi et al., 2015). Conversely, consumers of science-based information are less likely to share such content and more likely to comment on conspiracy theories to debunk them. Similarly, other research which focused on the dissemination of information online found that science news is disseminated in a higher degree and more quickly, but that a longer lifetime does not correlate with the interest such content attracts. Conversely, conspiracy content takes longer to be disseminated, but there is a correlation, in this case, between lifetime and attired interest (Del Vicario et al., 2016). However, these two studies were conducted on Facebook, and the trends on Twitter seem to be different. A research which investigated how true, false, and mixed (i.e. information containing veracious and false facts) diffused on Twitter, from its inception to 2017, found that false information had circulated "significantly farther, faster, deeper, and more broadly than the truth in all categories of information" (Vosoughi, Roy and Aral, 2018). Indeed, such information had

reached a greater number of unique users and had been 70% more likely to be retweeted than the truth (Vosoughi, Roy and Aral, 2018).

Nevertheless, the circulation of information during health emergencies seems to present a different trend. A research (Fung et al., 2016) that analyzed the circulation of misinformation on Twitter and Sina Weibo during the Ebola crisis in 2014–2015 found that only 2% of posts on Twitter and Sina Weibo contained Ebola-related misinformation. Indeed, most posts contained information related to news (36%–58% of the posts) and science-based health information (19%–24% of the posts). Nevertheless, Fung and colleagues (2016) specifically highlighted the fact that China's Internet market is government-controlled as an explanation to why posts related to misinformation were scarce among Sina Weibo posts, while these were freely distributed on Twitter. They also alleged Twitter's diversity of topics of discussion to this same reason.

Considering the difference between both networks, and the infodemic situation flagged by WHO, the present paper aims at shedding new light on the circulation of fake-news and science-based information in these two social media platforms, Twitter & Sina Weibo. This will allow unveiling the trends in the production and sharing of both types of information in the event of a health emergency. It will also open up the discussion on how each platform set up mechanisms to limit the circulation of fake information and fostering the spread of evidence-based information.

The research questions that oriented this research are; RQ1 What percentage of tweets and Weibo posts contain false news? What percentage of retweets and Weibo reposts do these get? RQ2 What percentage of tweets are based on scientific base evidence? What percentage of retweets and Weibo reposts do these get?

Method

The methodology used is social media analysis under the Communicative Content Analysis (Pulido et al., in press), through which is based on dialogic co-creation of knowledge between researchers and citizens. That way researchers offer the scientific evidence currently. This methodology is aligned with the demand of European Programs of UE, through which this

dialogue between science and citizenship is requested (Redondo-Sama et al., 2020). This methodology is based on the contributions of the Communicative Methodology that is addressed to identify exclusionary and transformative dimensions of the research topic selected.

Data Collection

To develop this study, the first step was to select the sample of social media data to analyze. The selection is composed by the following criteria:

Criterion 1. The first criterion was to select a social media source from Western countries (Twitter) and one from China (Weibo). Both are social media where information about COVID-19 is constantly being posted and shared.

Criterion 2. Selection of the keyword. In this case, we have selected the keyword "coronavirus" for searching tweets and Weibo posts and capturing those messages. At the time of retrieval, the disease was commonly called "coronavirus" or "novel coronavirus" and the term "COVID-19" had not yet been created by WHO.

Criterion 3. The period in which tweets and Weibo posts were published. We have selected tweets and Weibo posts published on February 6th and 7th, 2020. The seventh of February coincides with the death day of Dr. Li Wenliang at Wuhan Central Hospital.

Criterion 4. Software used. The extraction of the messages from the two social media selected (Twitter and Weibo) has been carried out through Python programming language, promoted by non-profit corporation Python Software Foundation (PSF). This python software extracts information from social media through the application programming interface (API).

Criterion 5. Selection number of messages. Given the limited information on Weibo, we extracted the information offered by this social media. More precisely, it was 957 posts on February 6th and 966 posts on February 7th. Then, we extracted the tweets published on those two days choosing the same amount of Weibo posts starting with the last published tweets of the corresponding day.

The total amount of tweets and Weibo posts is 3,846, specifically, 1,923 Weibo posts and 1,923 tweets. This sample was processed through an Excel sheet.

Ethical Requirements

The collection of data during the COVID-19 outbreak was approved and supervised by the ethics committee of the research centre to which the authors belong. This committee has a long and wide experience on ethical evaluation for international top research projects, publications and universities. Only data publicly shared online was the focus of the data collection, and the data set made available has been fully anonymized to prevent the identification of the author of a specific message, as explained under the "data availability" section.

Dialogic Codebook

The dialogic codebook was defined by researchers who are experts in social media data and the detection of false information and evidence-based tweets. Moreover, the research team is also composed by diverse scientists, both western and Chinese, which guarantees intercultural dialogue and the correct understanding of the messages published in Weibo.

The unit of the analysis includes the text and the information provided in the link if it is included in the tweet or Weibo post. The elaboration of the codebook was dialogic, combining predefined categories with those categories that emerged during the analysis. The categories used were those of a previous study (Pulido et al., in press): 1) *False news*, 2) *Science-based evidenc*e, 3) *Fact-checking tweets* and 4) *Mixed Information*, 5) *Facts*, 6) *Other*, 7) *Not valid.* But a new category emerged in this study 8) *Emerging science*, since we detected messages that contained information of studies under development, but that had not yet been published in scientific journals. This new category – emerging science allows to detect what are the new evidence founded in primary stages of the research to be updated of the new advances to overcome COVID-19. Meantime the scientific journals are

doing a great effort to publish quickly the new knowledge aimed to accelerate the discoveries.

Table 1.
Dialogic codebook

N	Category	Description
1	False news	Tweets or Weibo posts containing false information, including rumours, conspiracy ideas, myths, hoaxes, etc., that are false and have a negative impact in the public sphere.
2	Science-based evidence	Tweets or Weibo posts containing science-based information ensuring the content's reliability. This content is checked with evidence published in scientific sources such as international scientific journals.
3	Fact-checking tweets/Weibo posts	Tweets or Weibo posts containing veracious information aimed at debunking false information. These messages aimed to reply false information published and overcome it.
4	Mixed	Tweets or Weibo posts containing information that is partially true and partially false, The same message combines some facts with false information but aimed to confuse and not to show the true information.
5	Facts	Tweets or Weibo posts containing facts contrasted with reliable information sources.
6	Other	Tweets or Weibo posts mainly containing opinions (some of them are solidarity expressions, other racists' messages, etc), jokes or unrelated information. All the messages that did not belong in the previous categories were classified in this one.
7	Not Valid	Tweets or Weibo posts in which is not possible to verify if the information is true or false are valid for the analysis. Only those that could be checked were included in the final sample for elaborating the results.
8	Emerging science	Tweets or Weibo posts referring to research being carried out by expert institutions but not yet published on scientific journals. Although the communication of the primary results are done with scientific approach.

In-depth Dialogic Data Analysis

The team of researchers responsible for analyzing the messages of the two social media was composed of a Chinese person and European researchers with knowledge about fact-checking and science-based evidence. Two people have maintained a constant dialogue to confirm or not a category of analysis for each of the publications. This multicultural and multidisciplinary team thus secured one of the barriers of Weibo (Zhu et al., 2013). Researchers checked all the messages (tweets and Weibo posts), comparing them with their original publications. For this verification, the whole unit of analysis was analyzed (including text, link information, and audio-visual content if it is). In order to check each of the publications, researchers used various fact-checking programs such as Fake News Detector, Maldito Bulo, Google Image, Tineye and/or InVID. In addition, researchers consulted reliable original sources, scientific articles, publications of the WHO website. After being checked, each of the posts was categorized. Subsequently, a second review was done to correct any mistakes. For instance, an example of fact is those messages that contain the official numbers of people infected by COVID-19 provided by WHO, an example of mixed is those messages that combine numbers of cases of flu victims with a real number but integrating false information about the victims of COVID-19 aimed to show that it is no so bad this new virus, and example of fake new for instance are information published as true under conspiracy approach without evidence.

Once all tweets from the dataset we analyzed, we elaborated the quantitative and qualitative evidence found. The analysis of results combined both, under the communicative methodology analysis, which allows detecting transformative and exclusionary dimensions. In this study, the transformative dimension includes all the tweets and Weibo posts that contain true information (science-based evidence, fact-checking tweets/Weibo posts, facts and emerging science) and the exclusionary dimension refers to tweets and Weibo posts that contain false information, as well as mixed information.

Dialogic Reliability

The dialogic reliability consists in a dialogue among researchers based on scientific evidence and facts for contrasting the information selected in the sample. The in-depth dialogic analysis also includes the cultural dimension in the verification process of the retrieved information. The tweets or Weibo posts that could be contrasted directly were coded as "not valid" for the final analysis.

Results

The 3846 messages (tweets and Weibo posts) extracted were classified in the eight categories defined; False news (1), Science-based evidence (2), Fact-checking (3), Mixed (4), Facts (5), Other (6), Not Valid (7) and Emerging Science (8), as displayed in Table 1.

Regarding extracted posts, on Weibo, the majority belonged under the category of "Facts" (20.54%), followed by "Mixed" (5.04%), "False News" (3.69%), "Science based evidence" (2.13%), "Fact Checking" (1.66%) and "Emerging evidence" (1.30%). On Twitter, most posts belonged under the category of "Facts" (27.20%), followed by "False news" (9.20%), "Science based evidence" (3.85%), "Mixed" (1.51%), "Fact Checking" (0.99%) and "Emerging evidence" (0.05%).

Regarding shared messages from the dataset, those which were more shared in Weibo were coded as "Mixed" (74.52%). This high result is due to the fact that one of the Mixed Weibo posts coded obtained 22,971 Weibo reposts. This was an infographic about 30 truths of COVID-19, containing information that is verified and true, together with other information that could not be contrasted. For this reason, it was coded as "mixed". The other most popular categories were "Facts" (12.84%), followed by "Fact-checking" (0.48%), "Science-based evidence" (0.31%), "False news" (0.09%) and "Emerging science" (0.06%).

Most shared posts retrieved from Twitter were coded as "False news" (52.31%), followed by "Science-based evidence" (20.77%), "Fact-checking" (9.74%), "Mixed" (7.18%), "Facts" (3.08%) and "Emerging evidence" (1.79%).

Table 2.

Frequency and percentage of retrieved messages (tweets and Weibo posts) and corresponding RT and WR*

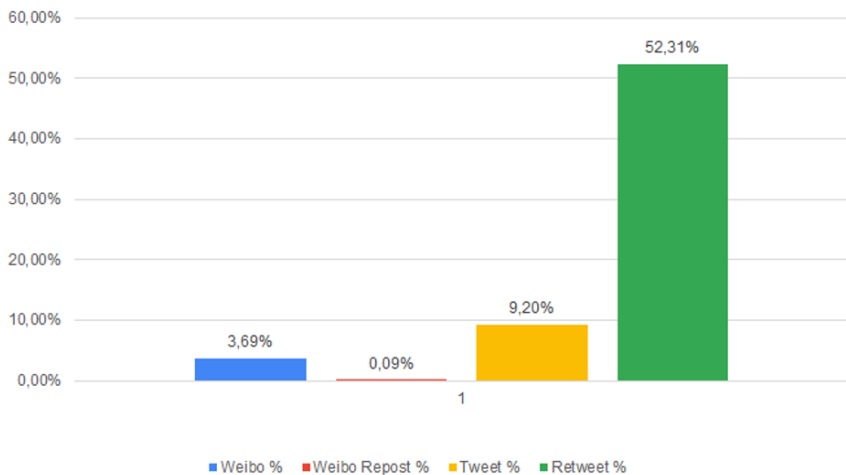|		Weibo				Twitter			
		Weibo posts		Weibo repost		Tweets		Retweets	
Code	Name	Freq	Percent.	Freq.	Percent.	Freq	Percent.	Freq	Percent.
1	False news	71	3,69%	28	0,09%	177	9,20%	204	52,31%
2	Science-based evidence	41	2,13%	97	0,31%	74	3,85%	81	20,77%
3	Fact-checking	32	1,66%	148	0,48%	19	0,99%	38	9,74%
4	Mixed	97	5,04%	2310	74,52%	29	1,51%	28	7,18%
5	Facts	395	20,54%	3981	12,84%	523	27,20%	12	3,08%
6	Other	787	40,93%	1827	5,89%	784	40,77%	10	2,56%
7	Not valid	475	24,70%	1800	5,80%	316	16,43%	10	2,56%
8	Emerging evidence	25	1,30%	19	0,06%	1	0,05%	7	1,79%
	TOTAL	1923	100%	31009	100%	1923	100%	390	100%

* For the analysis, the categories of "not valid" and "other" were excluded.

For the obtained dataset, the following sections develop in detail the results obtained regarding the presence of false news and science-based

evidence in the two social media selected, as well as the comparison between them both.

False News Were Less Frequent and Less Shared On Weibo Than On Twitter

Regarding RQ1, in the analyzed sample, 9,20% of tweets were coded as false news, before 3.69% of Weibo posts. When we explored the number of retweets and Weibo reposts shared, the result were similar. There were more retweets of false-information on Twitter (52.31%) than Weibo reposts (0.09%) coded under this category. Figure 1 shows this comparison.

Figure 1. Comparison of false news in Weibo and Twitter

In the Weibo batch, posts that contained false news mainly referred to the reporting of effective medicines and treatments against COVID-19 (i.e. from drinking herbal tea, conventional flu vaccines, treatments to eliminate malignant free radicals). A biochemical war between China and the United States is also commented. In the Twitter batch, the main tweets coded as false news reported COVID-19 as a bioweapon, different medications and

actions to prevent or cure it (i.e. Lysol spray, the flu vaccine or HIV medications), the discrediting of official information through personal opinions and subjective theories, COVID-19 as a result of pharmaceutical interests, and false accounts of infection cases and cured individuals.

For instance, the tweet containing false information with more RT (119) did a false comparison between the conditions of the Wuhan hospital with the hospital conditions of the Spanish flu case in 1918 (through images), with the aim to say that both are unsanitary and worst numbers could be expected, taking into account the magnitude of the Spanish flu case, thus the false information is to say that conditions of Wuhan Hospitals were the same that Hospital during the Spanish flu case. This false information reinforces racist prejudices and not facts, which does not help citizens. Regarding the most reposted Weibo post containing falsehood (14 shares), it focused on spreading false information about the difference between COVID-19, flu and common cold, the information provided is not contrasted with evidence-based science. This leads to mistakes in the understanding of this new virus with potential negative consequences.

Science Based Evidence Was More Frequent And More Shared On Twitter Than On Weibo

Regarding RQ2, 3.85% of tweets in the Twitter batch contained science-based evidence, while 2,13% of Weibo posts were coded under this category. When we explored the number of retweets and Weibo reposts shared, the result was similar. 20,77% of retweets contained science-based information, whereas only 0.31% of the Weibo reposts shared such information. Figure 2 shows this comparison.

Users of both selected social media published messages coded as science-based evidence. However, we found 1.72% more messages with scientific publications on Twitter than on Weibo. We found messages linked to scientific articles indexed in international databases, press articles, and Audiovisual content that links to these scientific articles. Other information found linked to WHO reports, as well as scientific testimonials that share science evidence in press conferences.
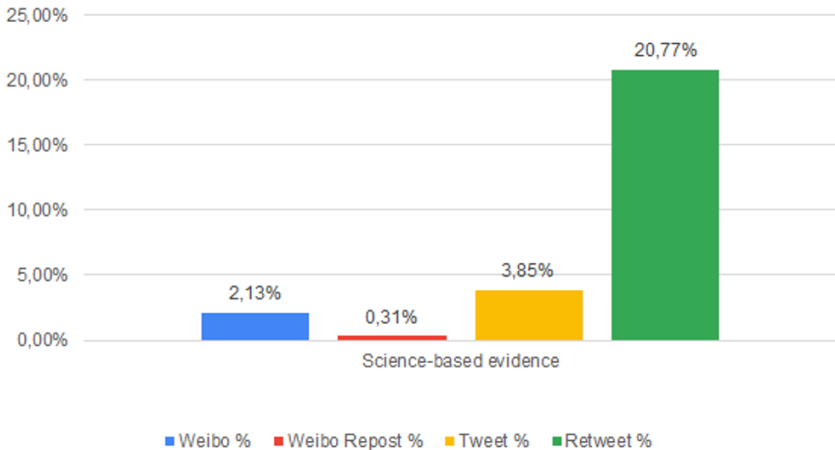
Figure 2. Comparison of science-based evidence in Weibo and Twitter

The evidence-based tweet with more RT (66) in the Twitter batch contained an infographic done by the Canadian government. This image included key prevention messages with scientific-based evidence in order "to protect yourself and others", highlighting the relevance to wash hands often; elbow sneeze; avoid touching eyes, mouth, nose with hands; cough in tissue and throw away; and avoiding contact with sick people. On Weibo, the most reposted science-based post (94) contained the scientific analysis of the disinfectants that are effective and a list of non-effective ones.

Discussion

The analysis of the results extracted from the selected sample on Twitter and Sina Weibo show some crucial differences and similarities concerning false news and science-based evidence published from their corresponding users. This comparison between the two social media platforms enables to reflect on new improvement measures to be taken by citizens, social media platforms, and the scientific community together for overcoming the circulation of false information.

A limitation in this study was the fact that, on Sina Weibo, messages are available at the Weibo web response, but the information on how the web response is sampled or ranked is not provided, as described in another article (Hu et al., 2020). For this reason, we decided to extract the same number of tweets than Weibo posts. We did not have the possibility to choose the most shared of the day, and we had to limit our sample to this availability. Regardless, the results analysed are an example of which type of information is published and shared in these two social media platforms, and of how results obtained for each platform compare to one another.

On the one hand, regarding to the exclusionary dimension some published tweets and Weibo posts contained false news concerning COVID-19. This result is in line with previous results on how false news is spread in social media (Howel, 2013). False news is present in social media platforms of democratic countries as well as social media platforms controlled by the government, and such is the case of China. However, it is observed that the Twitter batch contained 5.51% more false news than Weibo batch. This result indicates that users from international social media (Twitter) were more exposed to false news and shared it more (Del Vicario et al., 2016) than those on Weibo. The false information is a negative consequence for the online public sphere, considering the negative effects that could have to the public health of the citizens, for this reason false information is a exclusionary dimension of the messages spread in social media platforms, and for this reason is crucial to detect successful strategies to overcome it.

On the other hand, the results on the number of retweets and Weibo reposts is even more alarming. In the case of Twitter, false news comprised 52.31% of retweets in relation to the sample selected. This result is in line with previous research, such as that led by Vosoughi and colleagues (2018), according to which false content is more shared. In line with this, research also shows that people have more probability to believe this false information as they prefer information confirming their preexisting attitudes and beliefs (Galarza Molina, 2019). In contrast, the Weibo reposts of false news only represented 0.09% of the Weibo batch. This result shows that over the two-day period covered by the sample, Chinese users on Weibo relied less on false news, and avoided spreading it. In this sense, they did better than Twitter users. The reason that explains why Weibo users share

less false information than Twitter users could be deeply analyzed in future research. In any case, the decision to share false information is an exclusionary decision. That affects not only their health. In this case, public health is affected due to sharing this false information, and more responsibility needs to be assumed by social media users to avoid the free circulation of false information around the globe.

Regarding transformative dimension, Twitter and Weibo users published and shared science-based evidence, which shows the existence of a worldwide interest for the evidence found on the COVID-19. However, in both, the Twitter batch and the Weibo batch, science-based evidence appeared less than false news. Consumers of scientific literature tend to share less information and take action against fake post news (Merino, 2014). In the analysed sample, Twitter users were more proactive in sharing scientific evidence to overcome false news in the online public sphere, and one possible explanation is because, on Twitter, there are more false news shared than on Weibo. Thus, it is more urgent to debunk this false information. However, more science-based publications and sharing are needed. Public health also depends on the information circulating and overcoming the infodemic situation is key, according to WHO. To promote and share more messages of science-based evidence is a crucial way to overcome false information. Citizens that share this type of information are engaged to overcome false information and prevent the negative consequences of this into the public sphere. In this sense, researchers, agencies, institutions should be more committed to sharing this type of information to deliver it to citizens that are willing to share scientific evidence.

A novel result observed is how emerging scientific information is shared. We found that the authors of the messages in our sample were alert to the emerging evidence shared by scientists before being published in international journals. This fact shows how some people are willing to know the latest evidence found. This emerging science category was more present on Weibo than on Twitter, and one possible explanation is that in the moment of the social media data extraction, China was the most affected zone by COVID-19, and Chinese citizens paid more attention to the new evidence found.

False information was present in both social media analysed. However, Twitter had more false information published and shared with more frequency than Weibo did. In this sense on the one hand. Sina Weibo has a greater control over the platform, and the other hand, Chinese citizens shared less false information than Twitter users over the two-day timeframe chosen for the data extraction. Regardless, for the same time period, the need to share science-based evidence is more present on Twitter than on Weibo, which is one of the strategies to overcome false information. In the case of Twitter, more responsibility within the platform should be taken in order to limit the amount of false information published. However, the most secure way to overcome this type of information is that citizens become more actively engaged in limiting the circulation of such information, as Weibo users do in the sample analysed, while keeping up the diffusion of science-based evidence The reason of the difference why Twitter users spread more false information than Weibo users in the sample analysed could be a topic for future research, further studies will clarify the reasons of this difference. In this scenario, researchers should also be more committed to disseminating the latest evidence with social impact in social media through different channels, enabling a constant dialogue science-society.

Data Availability

The dataset and calculation done is available in the supplementary files. The raw Twitter data cannot be directly shared as it would infringe the Twitter Developer Terms as well as the General Data Protection Regulation (GDPR). Although, we can share the tweet ID, time and number of RT obtained. In the case of Weibo there are limitations also. We were limited to the messages available from the Weibo web response, and we do not have information from Sina.com regarding how the web response is sampled or ranked, as described in previous articles (Hu et al., 2020). We shared the Weibo post ID, time and number of Weibo Repost obtained in order to respect the legal terms.

Competing interests

Authors declare no competing interests in the submitted manuscript

Supplementary information

We have added the dataset analysed as well as the calculation done in excel file considering the criteria explained in the data availability.

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