Revista de Comunicación y Salud, 2022 Vol. 12, 59-76
Editado por Cátedra de Comunicación y Salud
ISSN: 2173-1675

Enviado 21/12/2021
Aprobado 09/03/2022
Publicado 28/03/2022

REDES SOCIALES Y EL INTERÉS POR LA INFORMACIÓN OFICIAL EN TIEMPOS DE PANDEMIA: ANÁLISIS DE LA COMUNICACIÓN DE LOS MINISTERIOS DE SALUD EUROPEOS EN FACEBOOK DURANTE LA COVID-19

Social media and interest in official information in times of pandemic: analysis of the communication of the european ministries of health on Facebook during COVID-19

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Cómo citar el artículo

Abuín-Penas, J. y Abuín-Penas, R. (2023). Redes sociales y el interés por la información oficial en tiempos de pandemia: análisis de la comunicación de los ministerios de salud europeos en Facebook durante la COVID-19. *Revista de Comunicación y Salud*, 12, 59-76. http://doi.org/10.35669/rcys.2022.12.e303

Resumen

Durante las crisis de salud pública como la actual pandemia provocada por la COVID-19, los gobiernos y las autoridades sanitarias necesitan métodos rápidos y precisos para comunicarse con los ciudadanos. Si bien las redes sociales pueden servir como una herramienta útil para una comunicación eficaz durante los brotes de enfermedades, pocos estudios han abordado cómo los Ministerios de Salud utilizan estas plataformas. Este estudio pretende explorar el uso de Facebook por parte de los Ministerios de Salud de los países más poblados de la Unión Europea y la respuesta del público en términos de interacción y seguimiento durante las diferentes etapas de la pandemia a lo largo del año 2020. Se ha trabajado con la totalidad de las publicaciones realizaras por los 10 países más poblados de la Unión Europea en el año 2020, utilizando la herramienta

Crowdtangle para la generación de la base de datos. Los resultados muestran la agilidad que estos países han tenido para dar respuesta a la comunicación exigida por los ciudadanos durante situaciones excepcionales como la pandemia generada por el coronavirus y también el gran aumento en el seguimiento de las fuentes oficiales de sanidad por parte de la población. Así, esta investigación proporciona unos primeros

Palabras clave: Comunicación de crisis, comunicación institucional, redes sociales, Facebook, COVID-19, coronavirus.

Abstract

During a public health crisis like the current COVID-19 pandemic, governments and health authorities need quick and accurate methods to communicate with citizens. While social media can serve as a useful tool for effective communication during disease outbreaks, few studies have addressed how Ministries of Health use these platforms. This study will seek to explore the use of Facebook by the Ministries of Health of the most populated countries of the European Union and the public response in terms of interaction and monitoring during the different stages of the COVID-19 pandemic throughout the Year 2020. We have worked with all the publications made by the 10 most populated countries of the European Union in 2020, using the Crowdtangle tool to generate the database. The results show the agility that these countries have had to respond to the communication demanded by citizens during exceptional situations such as the pandemic generated by the coronavirus and also the great increase in the monitoring of official health sources by the population. Thus, this research provides some first indications about the communication strategy followed by the main Ministries of Health in Europe during the COVID-19 pandemic. These results have implications for researchers, governments, health organizations, and professionals regarding their communication practices during pandemics.

Keywords: Crisis communication, institutional communication, social media, Facebook, COVID-19, coronavirus.

1. INTRODUCTION

The SARS-CoV-2 pandemic was first identified in Wuhan, China, in December 2019. Since then, a total of 271,340,834 infected and 5,332,521 deaths have been identified, reported by 222 countries as of 14 December 2021 (Worldometer, 2021). The World Health Organization (WHO) declared this disease a pandemic on 11 March 2020 (WHO, 2020), since then, the health crisis has not ceased to highlight public commitment and governmental response capacity at the international level (Liao et al., 2020).

The world is experiencing an unprecedented situation that breaks with the communication management models of previous crises (Xifra, 2020). Against this backdrop, it is necessary for the parties involved to develop specific communication actions to disseminate reliable information and curb the spread of medical misinformation that has been spread about COVID-19 (Kouzy et al., 2020).

In this regard, the Spanish government has been an active player since the beginning of the pandemic, continuously updating relevant information on its websites and holding numerous press conferences or giving interviews to decision-makers in national and international media (Castillo-Esparcia et al., 2020).

Developing effective communication strategies in health crisis situations becomes essential. In this way, it is possible to adopt certain desired behaviours, such as social distancing and good hygiene habits, which are essential in pandemics such as the one caused by COVID-19. Transparent and consistent communication in the face of uncertainty is essential to maintain public trust (Holmes, 2008; Vaughan and Tinker, 2009). Traditionally, governments and health authorities used their websites, the media, the press and television as the main tools for disseminating news and information. The emergence of social networking sites such as Facebook and Twitter presents a new scenario...

> Social media has added a new plane to broaden the view of crises. Managers are very sensitive to the fact that crisis threats, especially those that damage reputations, can emerge and grow rapidly online (...). There is a growing need to monitor social media and decide how to integrate it into crisis responses. (Coombs, 2015 p. 15).

1.1. Institutional communication in crisis situations

During a health crisis, communication aims to minimise and manage health impacts by disseminating useful information to citizens about risks and, consequently, about behaviours to avoid them (Wirtz et al., 2021). Public sector organisations have an important responsibility in the management of public health crises, which means that they must be empowered to enhance citizens' resilience (Coombs, 2020).

The literature in the field of health risk communication is growing in recent years, proposing some integrative models such as Crisis and Emergency Risk Communication (CERC) (Reynolds et al., 2002; Reynolds and Seeger, 2005). In fact, previous studies applied the binomial "risk communication - CERC model" to investigate in depth the effectiveness of communication strategies in social networks (Lachlan et al., 2016; Lwin et al., 2018; Panagiotopoulos et al., 2016). Powell (2021) and Reyes et al. (2021) highlighted the difficulties of public institutions in communicating effectively during a sudden crisis, such as the one generated by COVID-19.

In this sense, with specific reference to this pandemic, governments must build new relationships with citizens to increase engagement and develop new governance solutions aimed at achieving consensus on laws and regulations related to public health (Ansell et al., 2021). Kim and Kreps (2020) also point out that, for effective communication during pandemics, governments must publish relevant information about the health crisis to present the most important risks and best response strategies to their citizens.

1.2. Using social media in times of pandemics

With the widespread use of social media, public institutions need to understand that health risk communication has changed. Citizens can now express their opinion, feelings or comments on actions taken by the government as pandemic-related events unfold (Vijaykumar and Nowak, 2015). In addition, users are also involved in creating content and disseminating information of all kinds on their social networks (Raamkumar et al., 2020).

Previous research has explored the role of social networks in previous epidemics and pandemics such as those caused by Zika virus, H1N1 (Vijaykumar et al., 2015) and Ebola (Calleja-Reina and Becerra-Muñoz, 2017 or Suau-Gomila, et al., 2017). Calleja-Reina and Becerra-Muñoz (2017) analysed the communication management of the Ebola crisis by the Spanish government, concluding that the media, and especially social networks, amplified the negative effects of this crisis due to poor crisis management. In other public health cases, such as the Ebola virus infection, it was observed that media profiles were more involved in the distribution of information about the emergency than the institutional actors themselves and that the conversation on Twitter was not informative, but rather eminently emotional (Suau-Gomila, et al., 2017).

Several authors agree that social networks are a fundamental tool for health risk communication (Heldman et al., 2013), becoming a widespread communication channel (Al-Saggaf and Simmons, 2015) also during epidemics and pandemics (Liu and Kim, 2011; Lwin et al., 2018). Recent studies highlighted that social networks have been fully implemented as information media during the pandemic caused by COVID-19 (Wang et al., 2021). However, Li et al. (2020) pointed out that academic research studies on the use of social media during the health emergency are limited. This paucity of studies on this topic contrasts with the development of documentation by the WHO, which provides a set of guidelines for emergency risk communication during epidemics (WHO, 2018). Nevertheless, countries have the power to adopt different strategies when reporting health risks through social media.

The health crisis caused by COVID-19 poses a significant challenge on the role of public administration and its relationship with citizens that researchers should explore further (O'Flynn, 2021). In this regard, it is crucial to measure the volume of interaction and the type of messages published by governments (Powell, 2021).

On government communication during the health crisis caused by COVID-19 in Spain, Losada Díaz et al. (2020), after analysing a survey of 1823 people, found that official organisations and authorities were the most widely used sources for cross-checking information (70.8%). Castillo-Esparcia et al. (2020) verified the value of Facebook and Twitter as the social networks of reference for the Spanish government when deploying the online communication strategy on the management of this crisis.

Within the current panorama of social networks, Facebook is the platform with the largest number of users in the world (2,853 million), followed by Youtube and Whatsapp, with 2,291 and 2,000 million users respectively (We are social and Hootsuite 2021).

Taking these figures into account, Facebook becomes a priority object of study when analysing the communication efforts of all types of organisations, and is even more important in health crisis situations such as the one caused by COVID-19.

2. OBJECTIVES

In the midst of the uncertainty generated by a health threat such as the health crisis caused by COVID-19, society demands more truthful information. In such situations, public institutions run the risk of losing centralised control of communication if they do not act quickly in the face of public opinion, trying to combat falsehoods and misinformation (Vaughan and Tinker, 2009; Glik, 2007).

Societal misinformation could lead to undesirable behaviour in emergency situations such as that caused by the coronavirus (Raamkumar et al., 2020). Therefore, it is interesting to know how health-related public institutions reacted on their official accounts and how the public perceived this reaction. This will allow public health organisations to observe how society behaves in times of pandemics.

Therefore, this research aims to characterise the use of Facebook by ministries of health in Europe's most populous countries during 2020 and to understand the behaviour of their online communities. This year includes the onset and development of the pandemic caused by COVID-19, which will make it possible to observe the evolution of these accounts over a sufficiently long period of time. To this end, four objectives related to the use of Facebook by the official bodies responsible for health in each country during the pandemic are proposed:

- Objective 1 (O1): To determine the evolution and temporality of the publications of the official Facebook pages of the Ministries of Health of the main European countries.
- Objective 2 (O2): To analyse the evolution of the following of the official Facebook pages of the Ministries of Health of the main European countries, in relation to the number of inhabitants of each country.
- Objective 3 (O3): To observe how the inhabitants of each country have responded to the publications made by the official Facebook pages of the Ministries of Health of the main European countries in terms of interaction.
- Objective 4 (O4): To make a comparison of the similarities and differences between the main European countries in terms of the relationship with their inhabitants in communicating about health through Facebook.

3. METHODOLOGY

This study focuses on the communication activity of the official bodies in charge of managing the health of each country within the European Union. Although there are

several studies that deal with the phenomenon of communication during the pandemic caused by COVID-19 (Masip, et al., 2020; Moreno et al., 2020; Xifra, 2020), there are few initiatives that study and compare the communication activity of different official bodies in such a specific context. These include the study by Castillo-Esparcia et al. (2020) on the communication strategies of the Spanish government during the pandemic, the study by Poch Butler and Puebla Martínez (2021) who analysed the Twitter accounts of the Spanish government and the Spanish Ministry of Health or, outside Spain, Raamkumar et al. (2020) who analysed the public health authorities' outreach efforts and public response on Facebook in Singapore, the United States and England.

Following this last line, the selection of the countries with the largest number of inhabitants in the European Union allows us to compare the relevance of official communication on health, both in terms of economic and social power. According to Statista data (2021), these countries are, in order from the largest to the smallest, Germany, France, Italy, Spain, Poland, Romania, the Netherlands, Belgium, the Czech Republic and Greece.

Based on this approach, this study carries out an in-depth descriptive analysis of the presence, activity and impact of the official Facebook pages of the ministries of health of the 10 most populated countries in the European Union from a quantitative perspective. In this sense, the research will make it possible to assess the impact of the messages issued by these institutions, as well as their repercussion among the inhabitants of each country, with the aim of contributing to professional practice and to the benefit of society as a whole.

The study sample is made up of the publications made by the official Facebook accounts of the health ministries of the 10 most populated countries of the European Union from 1 January to 31 December 2020. Thus, after excluding the Netherlands because it does not have an official Facebook page for its health ministry, the sample is made up of the nine countries presented in Table 1.

Table 1. *Official websites of the ministries of health of European countries*

Country	**Ministry of Health Facebook page**
Germany	Bundesministerium für Gesundheit
France	Ministère des solidarités et de la santé
Italy	Ministero della Salute
Spain	Ministerio de Sanidad
Poland	Ministerstwo Zdrowia
Rumania	Ministerul Sănătăţii - România
Belgium	-
Bélgica	SPF Santé publique, Sécurité de la Chaîne alimentaire et Environnemen
Czech Republic	Ministerstvo zdravotnictví České republiky
Greece	Υπουργείο Υγείας

Source: *own elaboration*

CrowdTangle was used to obtain the data. This is a public information tool, belonging to the Meta group and integrated within the Facebook ecosystem, which facilitates the monitoring and quantitative analysis of content published on social networks. It also allows the extraction of these publications and their metadata, generating a file in CSV format (comma-separated values) that can be opened and viewed using programmes such as Microsoft Excel.

Thus, through CrowdTangle, the following analysis variables have been downloaded from Facebook for all publications:

- Name of the page.
- Followers at the time of publication.
- Date and time of publication.
- Text accompanying the post.
- Type of post.
- Number of "likes" of the post at the time it was made.
- Number of comments on the post at the time it was made.
- Number of times the post was shared at the current time.
- Number of reactions ("Haha", "Wow", "Care", "Angry", "Sad" and "Love") to the post at the current time.

The research was carried out using the technique of content analysis with a quantitative approach. By cross-referencing the variables listed above and observing the differences or similarities between each country, the aim is to respond to the previously stated objectives.

4. RESULTS

This section presents the results of the research in three large blocks that analyse. Firstly, the total volume of publications, then the response of users measured through interaction and, finally, the overall evolution in terms of followers in relation to the number of inhabitants in each country.

4.1. Analysis of the volume of publications

A temporal X-ray of the publications made throughout 2020 shows that in March and April 2020 the number of posts on Facebook increased considerably, reaching a fourfold increase in March compared to January (Figure 1).

This increase in posts decreases again in the period after May, stabilising during the remaining months of 2020. The most notable case is that of Greece, which starts the

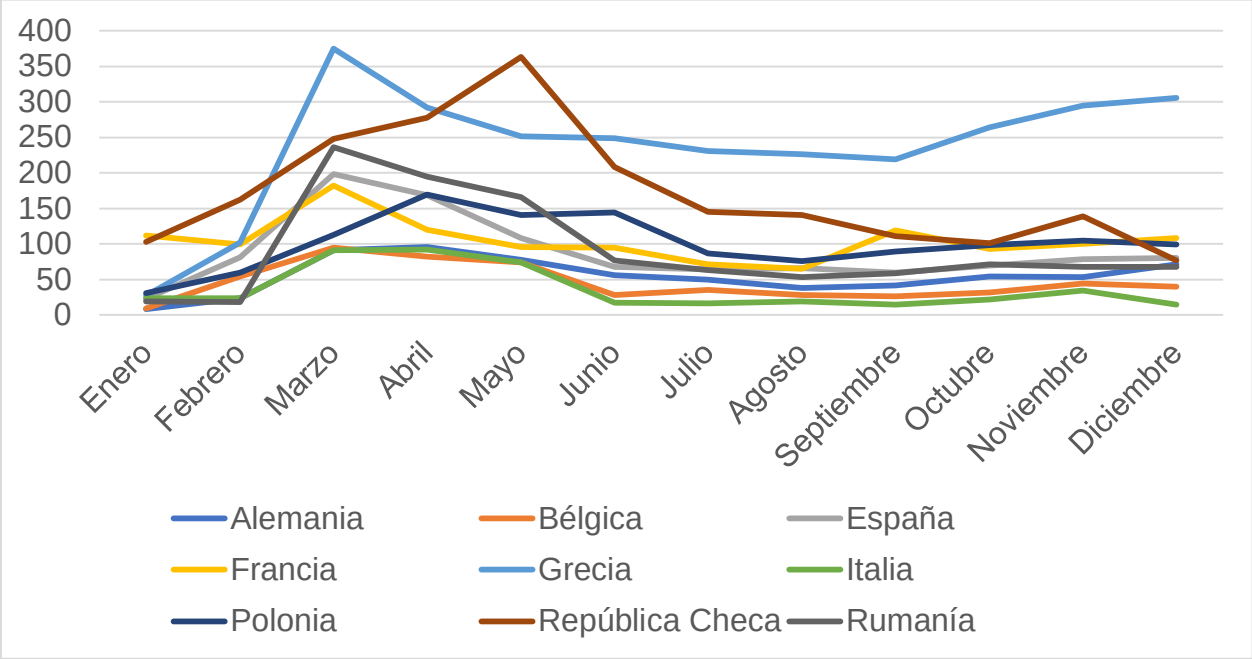
year with 27 publications in January, reaching 375 in March (Table 2). A general increase in the volume of publications can be seen in the countries in the sample, with an average of less than 40 publications in January and an average of 181 in March, which is the month in which they reach their maximum value, as shown in Table 2.

Table 2. *Volume of publications by country*

	Germany	Belgium	Spain	France	Greece	Italy	Polond	Czech Republic	Romania
January	8	9	23	112	27	24	31	103	19
February	24	54	81	99	102	24	60	162	18
March	91	95	198	182	375	91	113	248	236
April	96	82	169	120	292	92	170	278	195
May	78	74	108	96	252	74	141	363	166
June	56	28	68	95	249	17	144	208	77
July	50	35	64	71	231	16	87	145	63
August	38	28	66	65	226	19	76	141	53
September	42	26	60	119	219	15	89	111	59
October	54	32	70	93	264	22	98	101	71
November	53	44	79	100	295	34	105	139	68
December	71	40	80	108	306	15	99	77	68

Source: *own elaboration*

Figure 1. *Evolution of the volume of publications*



Source: *own elaboration*

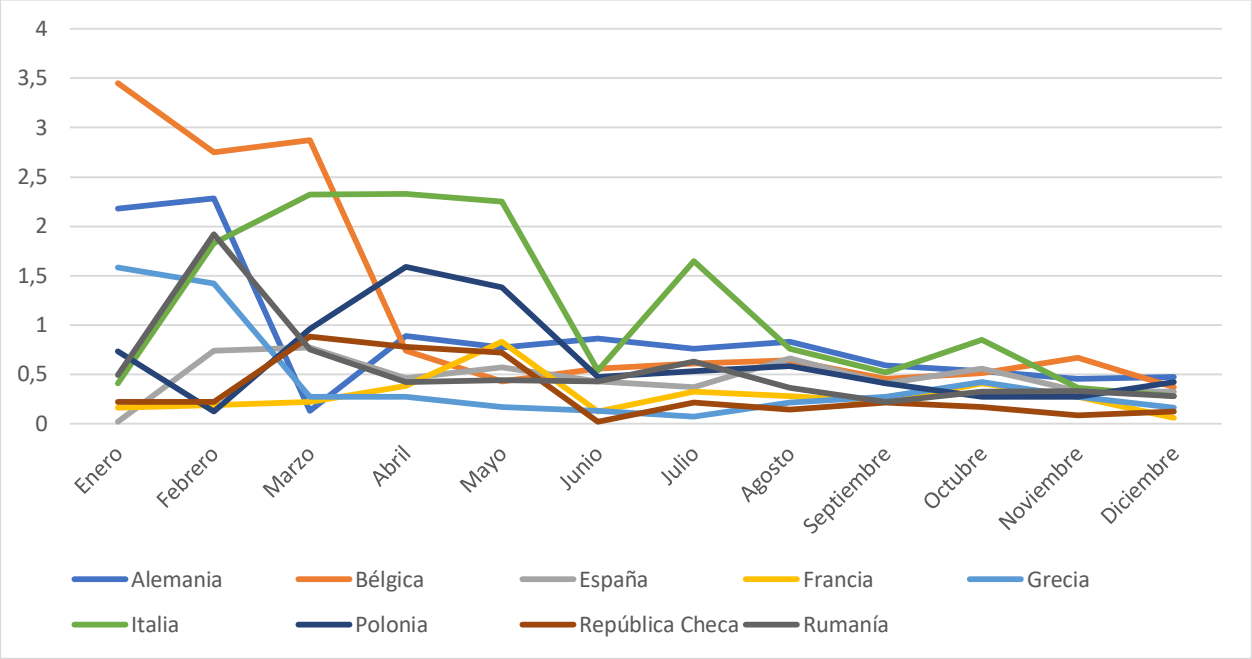
4.2. Analysis of the level of interaction

In terms of interaction levels, there are small differences compared to what was previously observed in the volume of posts. The highest levels of interaction are obtained in the first part of the year, where in the months of January, February and March the average interaction of Facebook posts is 1.03, 1.27 and 1.02, respectively (Table 3). These first three months of the year show levels more than twice as high as the last ones, which would obtain levels of 0.45, 0.34 and 0.28 in the months of October, November and December, as shown in Table 3.

At the individual level, it can be seen that all countries obtain their peak interaction during the first 4 months of the year, except in the case of France, which receives its maximum interaction level in May (Figure 2).

For practical purposes, it has been observed that there is a high positive correlation between the average number of publications per month and the average number of interactions (r=0.59).

Figure 2. *Evolution of the level of interaction*



Source: *own elaboration*

Table 3. *Average interaction per follower for each country*

	Germany	Belgium	Spain	France	Greece	Italy	Polond	Czech Republic	Romania
January	2,18	3,45	0,02	0,16	1,58	0,41	0,73	0,22	0,49
February	2,28	2,75	0,74	0,19	1,42	1,83	0,12	0,22	1,92
March	0,13	2,87	0,77	0,22	0,27	2,32	0,96	0,88	0,75
April	0,89	0,74	0,46	0,38	0,27	2,33	1,59	0,78	0,42
May	0,77	0,43	0,57	0,83	0,17	2,25	1,38	0,72	0,44
June	0,86	0,56	0,43	0,12	0,13	0,54	0,47	0,02	0,43
July	0,76	0,61	0,37	0,32	0,07	1,65	0,53	0,21	0,63
August	0,83	0,64	0,66	0,28	0,21	0,76	0,58	0,14	0,36
September	0,59	0,45	0,41	0,22	0,27	0,52	0,41	0,21	0,22
October	0,53	0,51	0,56	0,41	0,42	0,85	0,27	0,17	0,32
November	0,45	0,67	0,33	0,27	0,27	0,36	0,27	0,08	0,33
December	0,47	0,37	0,32	0,06	0,16	0,28	0,42	0,12	0,28

Source: *own elaboration*

4.3. Evolution of the Facebook page following

The final section of the research results provides an overview of the data on what 2020 has been like for the official Facebook pages of the health ministries of the main European countries, in terms of community.

Looking at the data for the beginning of 2020 shows that these pages vary widely: from just 2,500 followers in Poland to over 135,000 followers in Italy (number of followers of the latest posts in January 2020). The ratio of followers per number of inhabitants also differs from country to country. In this case, Italy also receives the best percentage at 0.23%, while in Poland, this ratio is 0.01%.

When focusing on the year-end data, the results are similar. Italy continues to be the country with the highest number of followers on its health ministry page with 1,456,502, although Greece is now the country with the lowest number of followers with 60,133. The ratio of followers per number of inhabitants continues to be better in Italy, rising to 2.46% of followers per inhabitant, while the worst figure is also in Greece with 0.56% (Table 4).

Table 4. *Evolution of followers per inhabitant*

País	No. of inhabitants	Followers (January 2020)	Followers / inhabitants	Followers (December 2020)	Followers / inhabitants
Germany	83.155.031	69.643	0,08%	722.452	0,87%
France	67.439.599	83.782	0,12%	1.405.065	2,08%
Italy	59.257.566	136.502	0,23%	1.456.502	2,46%
Spain	47.394.233	90.912	0,19%	860.177	1,81%
Poland	37.840.001	5.360	0,01%	837.472	2,21%
Rumania	19.186.201	38.945	0,20%	385.219	2,01%
Belgium	11.566.041	2.568	0,02%	159.782	1,38%
Bélgica	10.701.777	4.008	0,04%	70.861	0,66%
Czech Republic	10.682.547	3.664	0,03%	60.133	0,56%

Source: *own elaboration*

In this section, the increase in the following of the Facebook pages of the European health ministries stands out. The average growth of all the accounts was 1268.37%, the most notable case being that of Poland with 15524.48% and the lowest in Spain with 846.16%. These increases have meant that in 4 countries (France, Italy, Poland and Romania) the percentage of followers of the Facebook accounts of the ministries of health is higher than 2%.

As was observed in the levels of posts and interaction, the percentage growth of the Facebook communities of European health ministries peaks in the first months of 2020. Specifically, from February to March, the average growth rate is more than 400%. Although it can be seen that the number of followers never stops growing, it is particularly during the month of February when this growth is at its highest.

5. CONCLUSIONS

Public institutions have a significant responsibility in the management of public health crises and effective communication is necessary to better cope with health emergencies

that may arise. This means that they must be able to carry out risk communication to improve citizens' response during health crises (Coombs, 2020).

With regard to the first objective set out in this research (O1), it has been found that the volume of messages posted increases according to the timeline of the health emergency. The Facebook pages of European health ministries went from posting an average of 39.56 posts in January to 181 in March, the peak of COVID-19 in Europe. These results are consistent with those presented by Kim and Kreps (2020), who consider it crucial to use direct communication channels with citizens to avoid confusion, fear or misunderstanding during the pandemic.

This increase in communication activity by ministries of health on Facebook has led to considerable growth in their communities. This study shows the reaction of citizens in seeking and following official information about a health emergency, an aspect already noted by other research such as (Lwin et al., 2018). Observing increases in the number of followers ranging from 846.16%, in the case of Spain, to 15,524.48%, in Poland, shows the interest that the pandemic has aroused in citizens, leading them to follow the information published by official sources, corresponding to their health institutions, thus responding to what was stated in the second objective of the research (O2).

Regarding the interaction and participation of citizens in the messages published on Facebook, the importance of temporality has been verified. With regard to the third objective (O3), it can be seen that the months of January, February and March, i.e. the beginning of the pandemic, are the period of greatest interaction. This could be due to the fact that in the initial periods of the crisis citizens are more interested in participating in this official communication, although a certain positive correlation has also been observed between the average number of publications and the number of interactions ($r=0.59$), which could mean that citizens participate more because they have more information.

With regard to the similarities and differences in the quantitative data on Facebook communication in the Ministries of Health of the most populated countries of the European Union (O4), small differences were observed that may be due to the intrinsic characteristics of the countries themselves. These disparities could also be due to the different stages of penetration of the coronavirus in each of the countries, which have taken different measures at different times. Overall, however, there are many quantitative similarities that may reflect the penetration of the crisis at similar times and in similar dimensions.

These results show the relevance of the use of social networks in European countries and their potential as information dissemination tools during health crises. Therefore, the mere observation of the efforts already being made by some organisations in this field, as well as the comparison of their activity with entities in other countries, is valuable for opening up new avenues of research. Although this is a preliminary study that only delves into quantitative aspects, so future research is needed to corroborate these

results, it has been observed that these institutions have been able to offer a greater volume of content on social networks, which has fostered growth in the volume and participation of the audience.

Among the limitations of this research is the fact that it only analysed the social network Facebook. Health authorities may have used other platforms such as Twitter, Instagram or Youtube to disseminate public health information to their citizens. In addition, these institutions continue to use traditional media to convey informative messages, pandemic updates and guidance measures to citizens (Castillo-Esparcia et al., 2020). Therefore, the communication efforts of health authorities on social media are complementary, considering these platforms as an additional resource to provide additional information or to reach people who no longer follow traditional news channels (Raamkumar et al., 2020).

Another limitation of the study lies in the very fact of the communicative analysis of the pandemic caused by COVID-19. The interest of citizens in obtaining information from official sources in times of pandemic (Castillo-Esparcia et al., 2020) has directly influenced both the increase in the volume of posts on Facebook by health authorities and the high growth of their communities. In this sense, it would be of interest to replicate the study by taking another sample year to properly assess this impact.

On the other hand, it is suggested as a future line of research the thematic analysis of the content published on social networks in the field of public health by official bodies. The qualitative study of this aspect could provide a deeper insight into the characterisation of the messages and detect the possible existence of patterns related to the subject matter, format or language. In addition, this would help public institutions to improve their communication on social media in order to provide the most appropriate response to future health crises.

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AUTHOR CONTRIBUTIONS, FUNDING AND ACKNOWLEDGEMENTS

Authors' contributions: Conceptualisation, Abuín-Penas, Javier; methodology, Abuín-Penas, Javier; software, not applicable; validation, Abuín-Penas, Javier; formal analysis, not applicable; research, Abuín-Penas, Javier; memories, not applicable; data curation, Abuín-Penas, Javier; writing, Abuín-Penas, Rocío; -preparation of the original draft, Abuín-Penas, Rocío; writing-revision and editing, Abuín-Penas, Javier; visualisation, Abuín-Penas, Rocío; supervision, Abuín-Penas, Javier; project management, Abuín-Penas, Javier. All authors have read and accepted the published version of the manuscript.

Funding: This research is co-financed with funds from the "Programa de axudas á etapa posdoutoral da Xunta de Galicia" (Consellería de Educación, Universidade e Formación Profesional).

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