

Crisis communication in audiovisual format: information from Spain's *National Health System* on *YouTube* in 2020

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Abstract

The Covid-19 pandemic has clearly represented an unprecedented health crisis throughout 2020 that has implied great changes at both the informational and media levels. Audiovisual content has increased considerably, and health institutions have been interested in demonstrating their position as reliable and first-rate information sources. Indeed, the amount of content disseminated in just 2 months after the declaration of the pandemic exceeded that produced throughout 2019. This study describes the response to this health crisis by the *Spanish National Health System* on *YouTube*. To achieve this, the 1,035 audiovisual pieces published by official channels in 2020 were analyzed. To carry out this analysis, each piece was classified into one of seven types (from press conferences to tutorials, recommendations, informative pieces, or testimonials), while the topic covered, the format, as well as the number of views and user comments were determined. The period of greatest production corresponded to the first wave and subsequent deescalation, and the health institution that emitted most messages was the *Ministry of Health* with 603 videos, 170 animations, and 262 hybrid pieces combining pure video, text, and icons. Animations and hybrid pieces were the most successful messages, being used primarily as guidance to disseminate recommendations and healthy habits. The results of this study highlight the use of animations as a suitable informative resource for education and health promotion. In addition, it identifies the main weaknesses, threats, strengths, and opportunities presented by health audiovisual information on *YouTube*.

Keywords

Health information; Institutional information; Crisis communication; Covid-19; Coronavirus; Pandemics; Public institutions; Audiovisual communication; *National Health System*; Social media; Social networks; *YouTube*.

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1. Introduction

The SARS-Cov2 virus, which causes Covid-19, is one of the largest pandemics in history and has rocked the world. This crisis has resulted in both an informational and media transformation by altering communication via traditional media and that of health institutions. The fundamental role of health services as authorized information sources has become more visible in the face of less reliable content and fake news (Larson, 2018; Downing *et al.*, 2020; Nguyen; Catalán-Matamoros, 2020). During this crisis, 31% of Spaniards used public health institutions to stay informed (Negredo *et al.*, 2020), and 69% of them trusted the information they disseminate (Nielsen *et al.*, 2020). The great social reach of this outreach work is evident, but one may wonder whether these messages are adequate to communicate in a clear, precise, and understandable way, and are well adapted to new communication channels such as *YouTube*.

1.1. Health crisis communication

Public institutions have a fundamental duty regarding health education and to transmit this information to society. This is an obligatory public function because it addresses a fundamental right described in article 43 of the *Spanish Constitution*. Indeed, *General Health Law 14/1986* states that

“the promotion of health (...) through adequate health education of the population” [“*la promoción de la salud (...) mediante la adecuada educación sanitaria de la población*”] (Spain, 1986, p. 13)

is part of their functions. On the other hand, *General Public Health Law 33/2011* goes further, specifying that

“the health administrations (...) will ensure that the information is adapted socially, culturally, and linguistically to the targeted sectors of the population” [“*las administraciones sanitarias (...) velarán por que la información esté adaptada social, cultural y lingüísticamente a aquellos sectores de la población destinatarios de la misma*”] (Spain, 2011, p. 16).

In addition, institutional information is essential to safeguard the security and control of society in any emergency situation, representing one of the pillars of the response to such situations through a communication plan that guarantees adequate management of the information supplied to the population and media (Ibáñez-Peiró, 2020, p. 305). For any institution, “communicating is a professional and ethical requirement” [“*comunicar resulta una exigencia profesional y ética*”] (Rodríguez-Andrés, 2017, p. 367), and in the event of a health crisis its importance becomes even greater. Such information must always be presented in a sensitive and relevant fashion, since it can influence the understanding and acceptance of the problem, or generate concern and social alarm, depending on its presentation (Quinn, 2008).

Crisis communication is an area of great academic interest where the importance of establishing an adequate information strategy has been demonstrated (Coombs; Holladay, 2012; Coombs, 2014), as well as the use of multiple channels via adapted content (Seeger; Reynolds, 2008; Costa-Sánchez, 2010; Fernández-De-la-Hoz, 2014). Many of these approaches are based on studies of the treatment of information and institutional communication during previous epidemics such as Ebola (Costa-Sánchez; Rodríguez-Vázquez; López-García, 2015; Micalletto-Belda; Gallardo-Vera, 2015; Percastre-Mendizábal; Pont-Sorribes; Suau-Gomila, 2019) and influenza A, among others (Costa-Sánchez, 2011; Mestre-Ortega *et al.*, 2018).

The Covid-19 pandemic has directly influenced the production of articles and other scientific texts, from case studies focused on specific geographical areas (Farhana; Mannan, 2020; Salva *et al.*, 2020), contributions on educational and university issues (Bernat, 2020; Casajús;

Public institutions have a fundamental duty regarding health education and in transmitting this information to society

Giorgi, 2020; Montacute, 2020), analyses related to other health problems (Ky; Mann, 2020; Pakpour; Griffiths; Lin, 2020; Stein, 2020), and even questions about inequality, hatred, and racism (Garzaniti; Díaz-Ledesma; Navarro-Martínez, 2020; Ziems *et al.*, 2020). The presentation of information about the pandemic has been studied as it relates to both the media (Fusté-Forné, 2020; Manrique-Grisales, 2020; Masip *et al.*, 2020) and institutional public communication (Ibáñez-Peiró, 2020; Lagneaux, 2020; Peñafiel-Saiz; Ronco-López; Castañeda-Zumeta, 2020), corporate communication and public relations (Costa-Sánchez; López-García, 2020; Xifra, 2020), and social networks (Cinelli *et al.*, 2020; Peña-Lillo, 2020; Thelwall; Thelwall, 2020). Note that many of these scientific contributions have focused on reflections regarding the spread of false news or hoaxes, which has become such a concern that their spread related to the new coronavirus has given rise to a new concept: the infodemic (Andreu-Sánchez; Martín-Pascual, 2020; Ramón-Fernández, 2020; Salaverría *et al.*, 2020; Sánchez-Duarte; Magallón-Rosa, 2020; Singh *et al.*, 2020), although many other contributions have also sought to determine the what, who, and how of information dissemination via new media (Cui; Lee, 2020; González-Romo; Iriarte-Aguirre, 2020).

It seems clear that all public institutions or organizations in general, but those responsible for healthcare in particular, require

“Professional communication management that enables them to interact effectively with the media and transfer their messages to the public consciousness” [*una gestión profesional de la comunicación que le[s] permita relacionarse eficazmente con los medios y trasladar sus mensajes a la opinión pública*] (Rodríguez-Andrés, 2017, p. 368).

This requirement should not only occur via traditional media (press, television, and radio) as institutions can now also achieve this (Jardón, 2017, p. 581) via social networks (*Twitter*, *Facebook*, *YouTube*, etc.) as well as their official websites, enabling them to interact and collaborate with citizens directly. Regarding information on health crises, these new trends were already noticed in 2014 with the Ebola outbreaks, and Nespereira-García (2015, p. 230) already admitted that that

“health and communication crisis (...) has shown the limitations of the traditional models of health risk communication”. [*crisis sanitaria y de comunicación (...) ha evidenciado las limitaciones de los modelos tradicionales de la comunicación del riesgo sanitario*]

This observation has become more evident in the case of Covid-19, and the media and institutions have been forced to change both their communication strategies and policies at all scales, including in the audiovisual field.

1.2. *YouTube* as an institutional communication channel during the coronavirus pandemic

In recent years, the use and presence of online social networks have increased because of the relevance that information and communication technologies have acquired in daily life (Cantor-Silva; Pérez-Suárez; Carrillo-Sierra, 2018). The quick and easy circulation of messages favors their dissemination, repercussion, impact, and reactions among the public (Picazo-Sánchez, 2016, p. 314). More than half of the population with Internet access actively use social networks, representing 3,800 million people, and in 2020, the number of users increased by 9.2% compared with the previous year (Kemp, 2020). In the case of Spain, there are 25.9 million active users, representing 87% of Internet users aged 16–65 years, and 66% use social networks to stay informed (*IAB Spain*, 2020). We are currently immersed in a multiscreen and multiplatform world where the relationship between institutions and society has been completely altered by new habits of information consumption, since online media have become “common information channels” [*canales de información al uso*] (Flores-Vivar, 2017, p. 64), surpassing traditional routes for the first time (Negredo et al., 2020).

It is thus necessary for institutions to adapt their communication to the informational needs of today's society. They must develop innovative strategies and test new communication formats to guarantee their presence in an environment that is as competitive as the digital world. The use of animations, infographics, and videos to present facts in a more attractive and striking way is increasingly common (Costa, 2014, p. 91). Indeed, the use of new formats and innovation to capture attention and encourage user participation

“has guaranteed the success, from the informational point of view, of platforms such as *Vimeo*, *Blip.tv*, *Viddler*, and above all, *YouTube*” [*ha[n] garantizado el éxito, desde el punto de vista informativo, de plataformas como Vimeo, Blip.tv, Viddler y, sobre todo, YouTube*] (Ruivo-Manzano; Gomes-Franco-e-Silva, 2019, pp. 37-38).

YouTube is the second most widely used social network, with 2,000 million users, and in the case of Spain, it is the most highly valued, with 8.4 points out of 10 (*IAB Spain*, 2020), having 30 million followers (Kemp, 2020). Although it remains a “pending challenge for most journalists” [*reto pendiente para la mayoría de periodistas*] (Blanco; Palomo, 2019, p. 8), it has become a fundamental channel for their documentation work (Lope-Salvador; Gabelas-Barroso; Bernad, 2018, p. 55), for the creation, presentation, and diffusion of new genres (Paredes-Otero, 2019, p. 56), and to promote the interactivity and personalization of content (Marfil-Carmona; Osuna-Acedo; Ortiz-Sobrino, 2018, p. 196). Our starting point is that *YouTube* should be considered to be a social network as well as a channel because, although it is used primarily as an audiovisual broadcasting and viewing platform, it also allows user interaction to a lesser or greater extent.

Although other social networks such as *WhatsApp*, *Facebook*, and *Twitter* are used more widely, 26% of Spanish Internet users have used *YouTube* to find news, developments, or explanations about Covid-19 (Negredo et al., 2020). Articles have been published on audiovisual communication via *YouTube* (Nascimento-Junior et al., 2020; Orduña-Malea; Font-Julián; Ontalba-Ruipérez, 2020), but there is no information regarding what and how this has been carried out by health institutions in Spain.

1.3. Objectives and study sample

The aim of this study is to describe the response to this health crisis by the Spanish *National Health System* on *YouTube*. To achieve this, the following specific objectives are defined:

- To quantify and perform a metric analysis of the audiovisual pieces disseminated by public health institutions during 2020.
- To identify and characterize their format.
- To establish a typology of all the published content.
- To determine the degree of participation and interaction of users.

This work thus aims to describe the what, when, and how of the reporting of the *National Health System* via its official *YouTube* channels in 2020, and the degree of acceptance and interest that this content received. To construct the list of channels, we used those explicitly identified on the websites of the institutions. In addition, to obtain a more exhaustive list, a specific search was also carried out on *YouTube*. As a result, all the audiovisual content on 17 channels –that of the *Ministry of Health* and the 16 regional health services with an official channel– were analyzed, from the report of the first case in Spain on 31 January until 31 December 2020.

Table 1. Subscriptions, views, and content broadcast on the official channels of the Spanish *National Health System* on *YouTube* (2020)

YouTube channels of the <i>National Health System</i>	Total in 2020		
	Subscribers	Views	Covid 19 pieces
Andalusian Health Service	26,518	6,162	2
Rioja Health	23,200	8,738	6
Ministry of Health	11,300	4,907,608	301
Osakidetza-Basque Health Service	8,340	783,689	31
Catalan Health Service	7,050	1,126,231	228
Sergas-Galician Health Service	6,940	44,470	41
Madrid Health Service	6,680	564,095	87
Navarra Health	6,600	58,126	72
Murcia Health	966	107,983	189
Castilla-La Mancha Health Service	270	75	2
Aragon Health Service	233	42	1
Balearic Islands Health Service	168	15,328	34
Canary Islands Health Service	Not visible	78,846	28
Department of Universal Health and Public Health of the Valencian Community	Not visible	24,189	12
Cantabria Health Services	Does not report on Covid 19		0
Castilla and Leon Health Service	Does not report on Covid 19		0
Extremadura Health Service	Does not report on Covid 19		0
Astursalud-Health Portal of the Principality of Asturias	Does not have a channel		0
Ceuta Health Area	Does not have a channel		0
Melilla health area	Does not have a channel		0

2. Methodology

This work approaches the study of the health information emitted by the official channels of the Spanish *National Health System* on *YouTube* through a descriptive quantitative method, which seeks to characterize and specify the properties of this phenomenon by recording, measuring, and evaluating various aspects of it (Batthyány; Cabrera, 2011, p. 33). To achieve this, a methodological form was prepared with the aim of identifying and cataloging the pieces published by Spanish health institutions during the new coronavirus pandemic. Tabulation of these data enables a comparison of how the format of this content is related to the type of information shared (Berganza-Conde; García-Galera, 2005). This makes it possible to identify both the strengths and weaknesses of the audiovisual content emitted by the *National Health System*.

2.1. Method and analysis form

Many studies have presented proposals for how to adapt information to the audiovisual format of *YouTube*; for example, Costa (2014, p. 87 *et seq.*) takes as a reference some of the most successful channels and lists the characteristics that videos must have to be more effective and generate more views:

- Short duration.
- Be subtitled.
- Encourage interactivity on both *YouTube* and other social networks.
- Include keywords, labels, or tags.
- Encourage user participation through innovation and the use of new formats such as animations, infographics, and moving images.

On the other hand, to address the question of content analysis, the methodological proposals presented in the works of Arévalo-Salinas (2017, pp. 27-30) and Paredes-Otero (2019, pp. 61-63) have been very useful: the former describes discursive strategies as part of the object of study, while the latter gives special prominence to the theme and typology of the videos. However, these contributions focus on very diverse topics that are not directly related to the present investigation. The former deals with the audiovisual production of social movements, while the latter talks about content

disseminated via specialized media in video games, meaning that both their thematic classification and the typology presented are limited to those works.

For this reason, to prepare the analysis form for this research, the categories of document number, title, date, and duration were included, along with the topic, the language of the video, and the source organization. To study their consumption and user interaction, the numbers of views, reactions (likes and dislikes), comments, and subscribers were collected as variables, as used previously in other studies (Tur-Viñes; González-Río, 2020, p. 8).

However, to adapt this research to the analysis of institutional health information, a series of categories was created to study the descriptive dimension of the content.

To provide a complete overview of the types of videos offered by the studied channels, after an initial inspection of the pieces broadcast, the classic genres of the journalistic world were included (news, reports, and interviews) as well as those from other areas of communication such as public relations, advertising (press conferences and spots), or the academic and musical world (scientific communication and songs). We also included those that, although they cannot be considered exclusive to new media, are common on channels such as *YouTube*: informative pieces that do not necessarily correspond to traditional journalistic genres, which we call information; tutorials, recommendations, and advice; and mixed pieces that combine different types. In addition, we include those that, although traditionally part of the journalistic genres, are now presented independently and explicitly: testimonies and acknowledgments. In this way, a content classification consisting of 13 categories was created.

With regard to format, although in traditional media there is a tendency to classify audiovisual content into two main types (videos and animations), an initial inspection forced us to distinguish and qualify the meaning of the former by distinguishing between hybrid pieces (where pure video is combined with graphical elements such as texts and icons) and pure videos (unedited and made up exclusively of real images). Thus, three formats were differentiated for this study: videos, hybrid pieces, and animations.

Finally, the target audience was classified into four categories that correspond to the classic profiles: internal (professionals) and external (patients) institutional health communication, users, and citizens. The latter three differ in that a patient has a direct relationship and personal need, a user is not really a patient but has a direct relationship resulting from the needs of others (whether due to care or family responsibilities), while a citizen has an indirect relationship with the health system but needs information regarding health promotion and disease prevention. We thus understand that, if the pieces are not explicitly addressed towards a specific audience (patients, users, or professionals), they are by definition aimed at the whole of society (citizens).

Thus, a methodological form was designed with 20 descriptive variables, divided into three main blocks, as presented in Table 2.

2.2. Data collection

The data from the 17 official channels, previously encoded using the mentioned variables for statistical analysis, were collected and analyzed using the SPSS program for three phases: June and October 2020, and January 2021. This enables an exhaustive study by analyzing both single variables and their frequencies, as well as the relations between variables via contingency tables. Note that all the correlations achieve a confidence level of 95% with a chi-squared estimation of the probability of association between variables of ≤ 0.05 , representing statistical significance (Babbie; Wagner; Zaino, 2018, pp. 274-282).

Table 2. Analysis form for audiovisual content emitted by Spanish health institutions on *YouTube*

<p>1. Identifying elements</p> <p>1.1. <i>Health System</i> [list of 20 categories]</p> <p>1.2. URL address</p> <p>1.3. Language [free-text variable]</p> <p>1.4. Title [free-text variable]</p> <p>1.5. Date [dd/mm/yyyy]</p> <p>1.6. Duration [mm, ss]</p> <p>2. Consumption of and interactions with the pieces</p> <p>2.1. Views [numerical value]</p> <p>2.2. Reactions [numerical value]</p> <p>2.2.1. Number of likes</p> <p>2.2.2. Number of dislikes</p> <p>2.3. Comments [numerical value]</p> <p>3. Description of content</p> <p>3.1. Format [list of 3 categories]</p> <p>1. Video</p> <p>2. Animation</p> <p>3. Hybrid piece</p> <p>3.2. Typology [list of 13 categories]</p> <p>1. Press conference</p> <p>2. Recommendations</p> <p>3. Information</p> <p>4. Mixed pieces</p> <p>5. Tutorials</p> <p>6. Testimonials</p> <p>7. Acknowledgements</p> <p>8. Advertising</p> <p>9. Scientific communication</p> <p>10. Interviews</p> <p>11. Songs</p> <p>12. Appearances</p> <p>13. Reports</p> <p>3.3. Topic [free-text variable]</p> <p>3.4. Target audience [patient, user, citizen, or healthcare professional]</p>
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3. Results: audiovisual treatment of the pandemic by the Spanish National Health System on YouTube in 2020

Since the first positive case was announced in Spain, on 31 January, until the end of the year, 1,035 audiovisual pieces about Covid-19 were published by the 17 official channels of the *National Health System* on *YouTube*. Of all the channels, the one that emitted most content was that belonging to the *Ministry of Health, Consumption, and Social Welfare* (29%), while the most active regional health services included those of Catalonia (22%) and Murcia (18%). Note that the health services of three autonomous communities (Cantabria, Castilla and Leon, and Extremadura) did not report on the new coronavirus on *YouTube*. Therefore, a total of 14 health institutions published some content on the pandemic on this social network (Figure 1).

Likewise, it is during the first four-month period (coinciding with the so-called first wave) when the greatest amount of information was emitted by health institutions. Note that April was the month in which the highest number of audiovisual pieces on Covid-19 was shared (25%), and that the institutions produced and disseminated most of the information from March to June, a period that corresponded to 68% of all audiovisual content emitted in 2020 (Figure 2).

3.1. Descriptive characteristics of the audiovisual content presented by health institutions

3.1.1. Format and content types

Of the 1,035 audiovisual pieces broadcast during 2020, 603 were pure videos (without editing), representing 58% of the total, while 170 (17%) were animations (synthetic content in motion), and 262 (25%) were hybrid pieces in which pure video, text, and icons are combined (Figure 3).

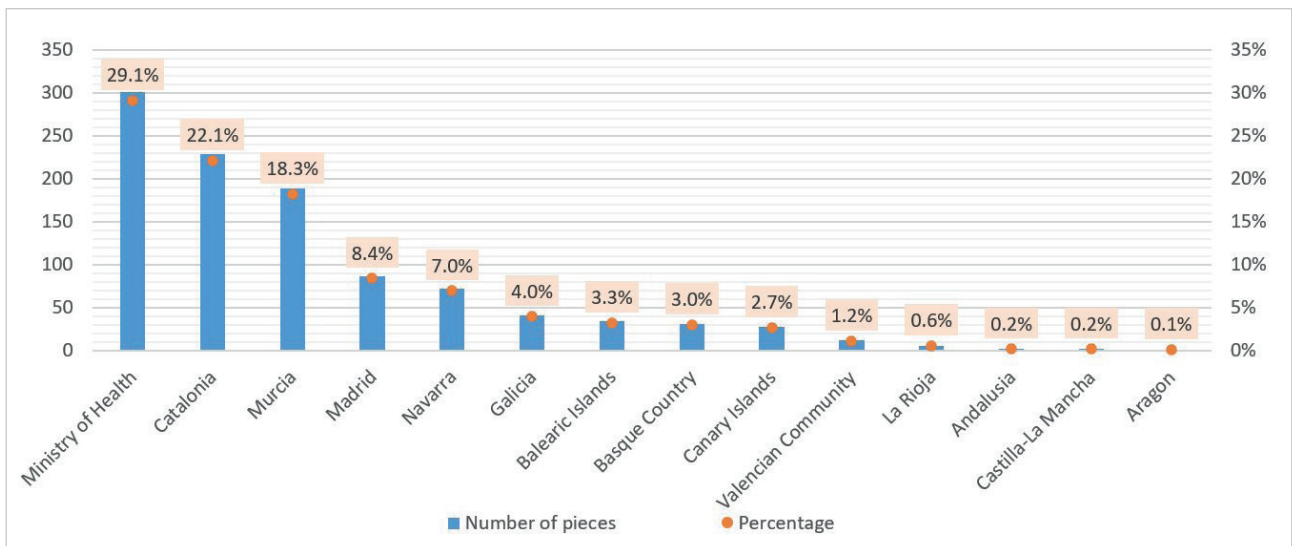


Figure 1. The production of *YouTube* channels belonging to the *National Health System* in 2020

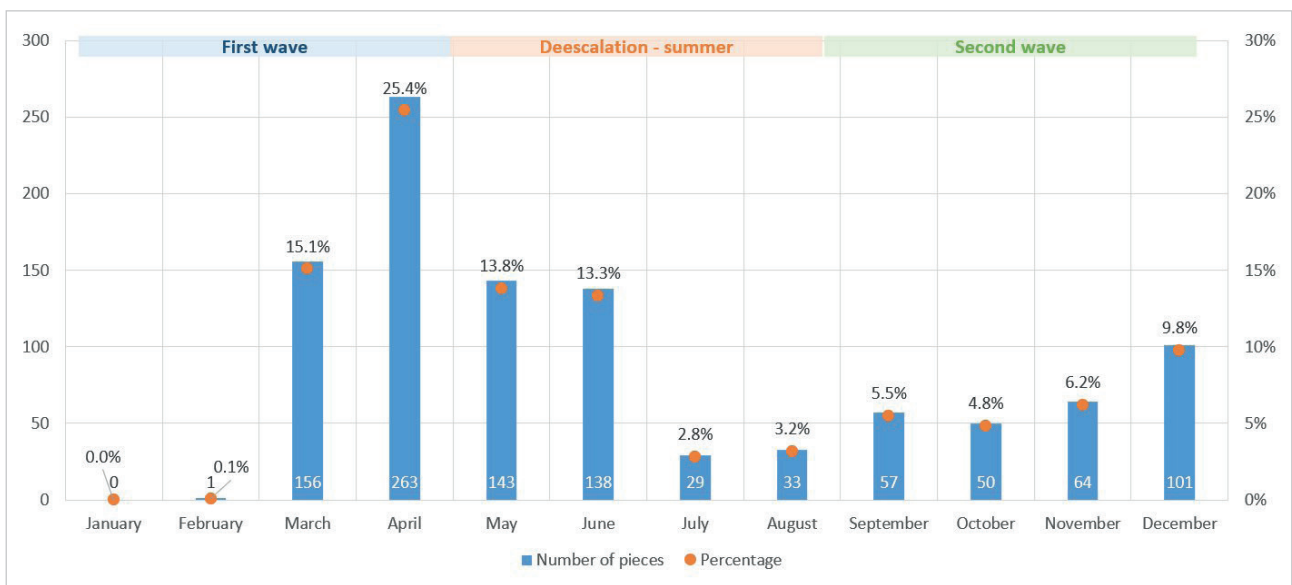


Figure 2. Evolution of audiovisual production in 2020

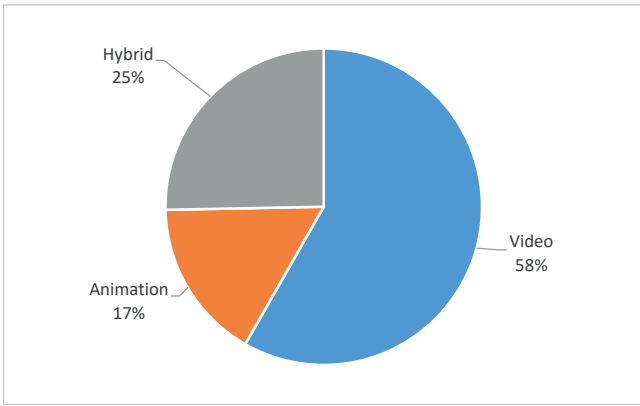


Figure 3. Format (%)

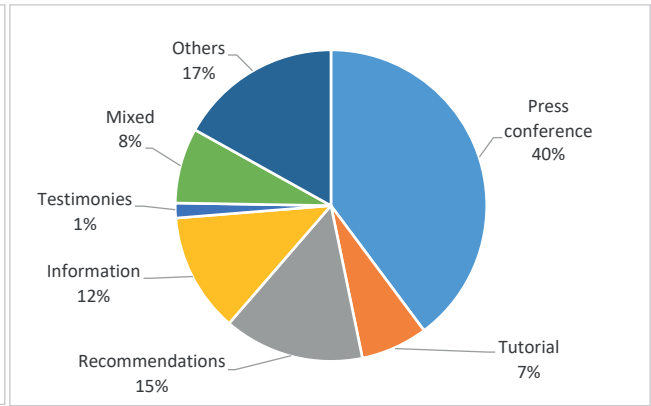


Figure 4. Content type (%)

Regarding their type, it was noted that 40% were press conferences while 17% corresponded to the category Other, including spots, video tributes, songs, political appearances, interviews, and scientific communications. The figure below describes the pieces that provided health prevention recommendations (15%), while purely informative content (12%) is presented thereafter in Figure 4.

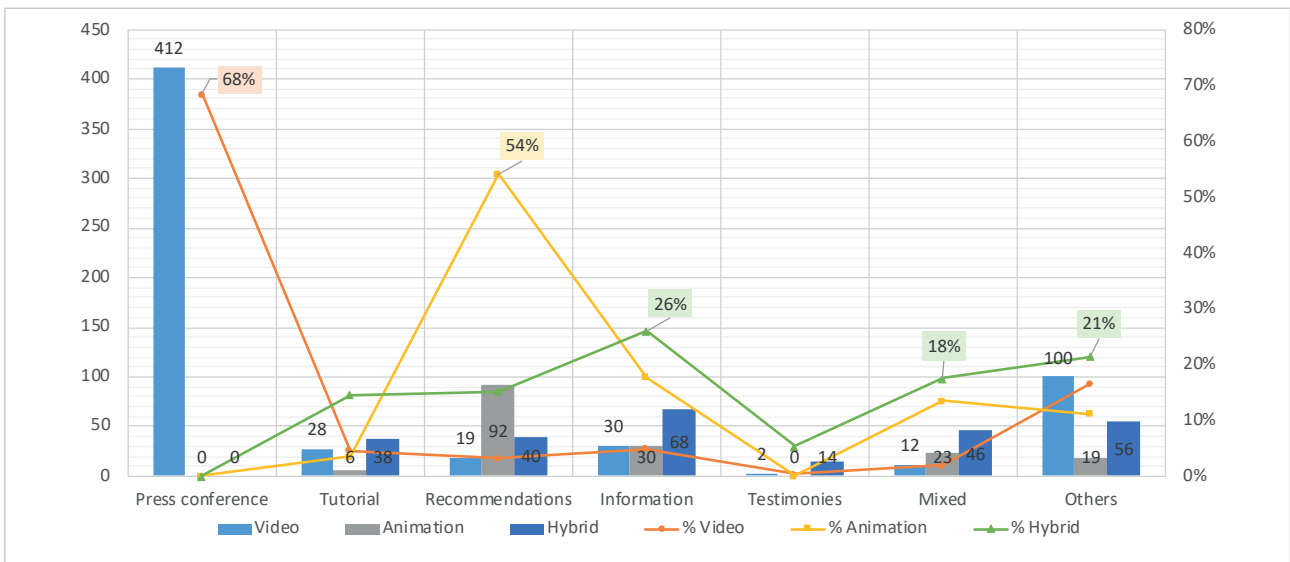


Figure 5. Format according to type of content

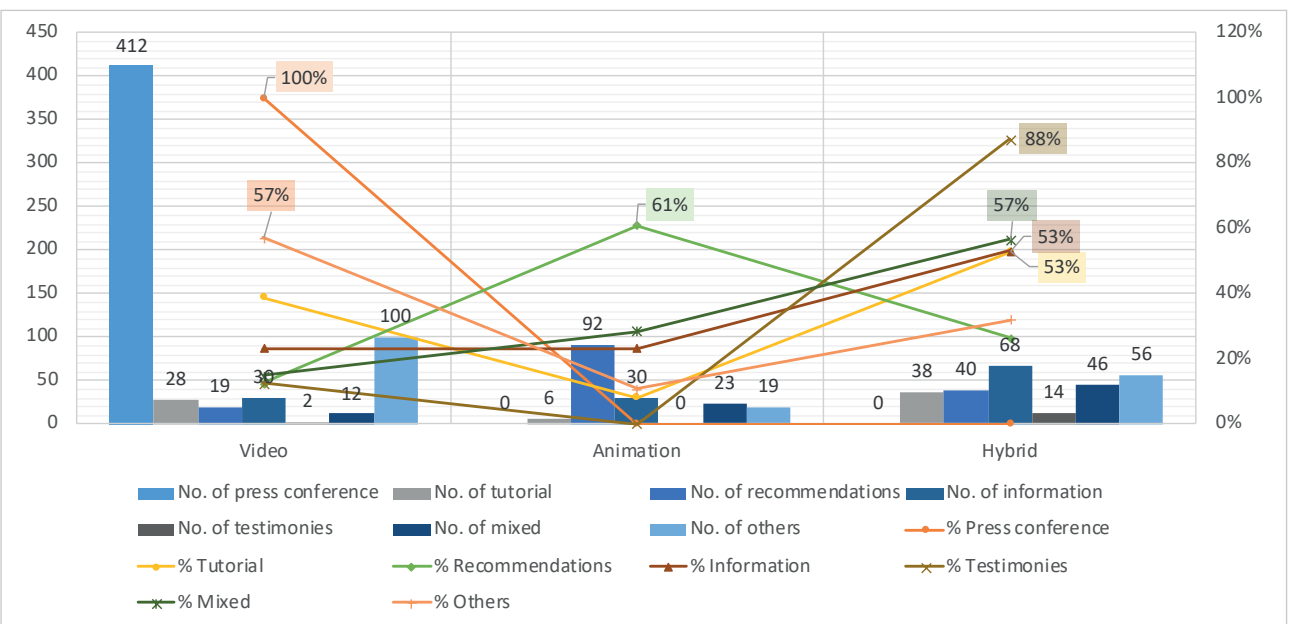


Figure 6. Content type according to format

It was found that 68% of the pure videos (without processing) were press conferences, while most of the animations (54%) aimed to provide recommendations and advice on good habits to avoid infection. Hybrid pieces were used regardless of the type of content: 26% being used to disseminate information, 21% to offer tutorials on exercises, handling, and use of personal protection equipment, among others, and 18% to share mixed content (information and recommendations) (Figure 5).

Throughout 2020, the 17 official channels of the *National Health System* on *YouTube* published 1,035 audiovisual pieces, including 603 pure videos, 262 hybrid pieces, and 170 animations

In the same way, flipping the data to take the type of content as a reference revealed that 100% of the press conferences and 38% of the category Others (acknowledgments, advertising, and scientific communications) was presented through videos. Animations were used to disseminate recommendations in most cases (61%). Finally, 88% of the testimonies were presented as hybrid pieces, followed by mixed pieces (information and recommendations) (57%), information (53%), and tutorials (53%) (Figure 6).

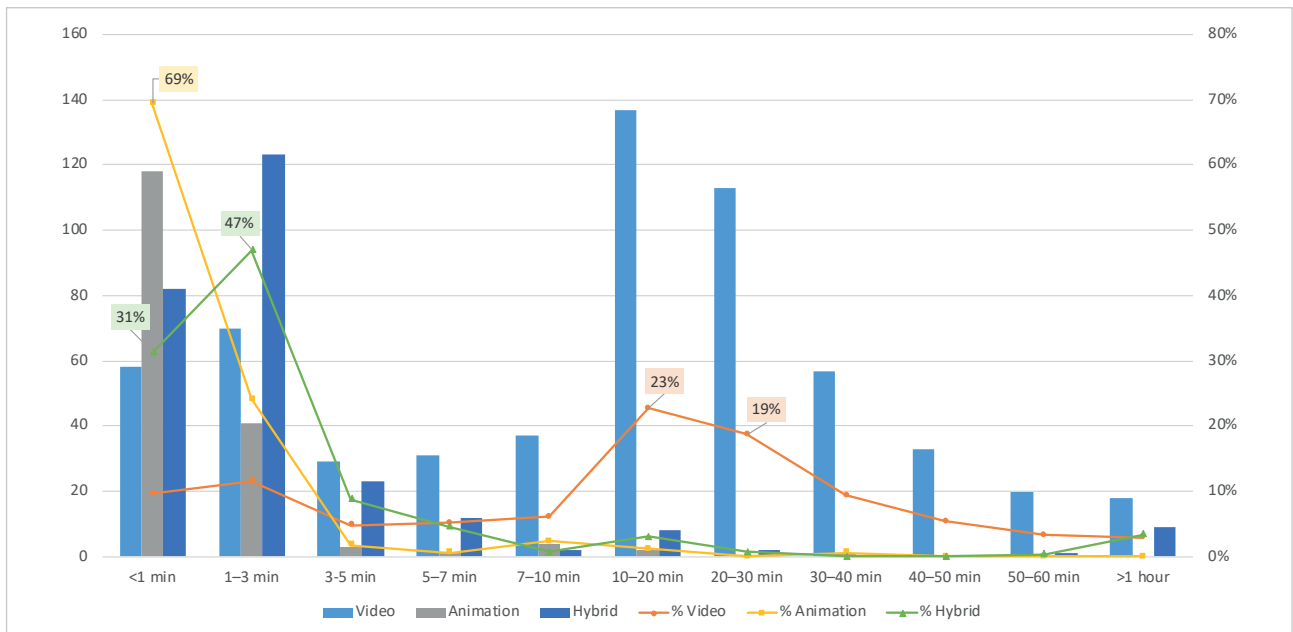


Figure 7. Duration of the pieces according to their format

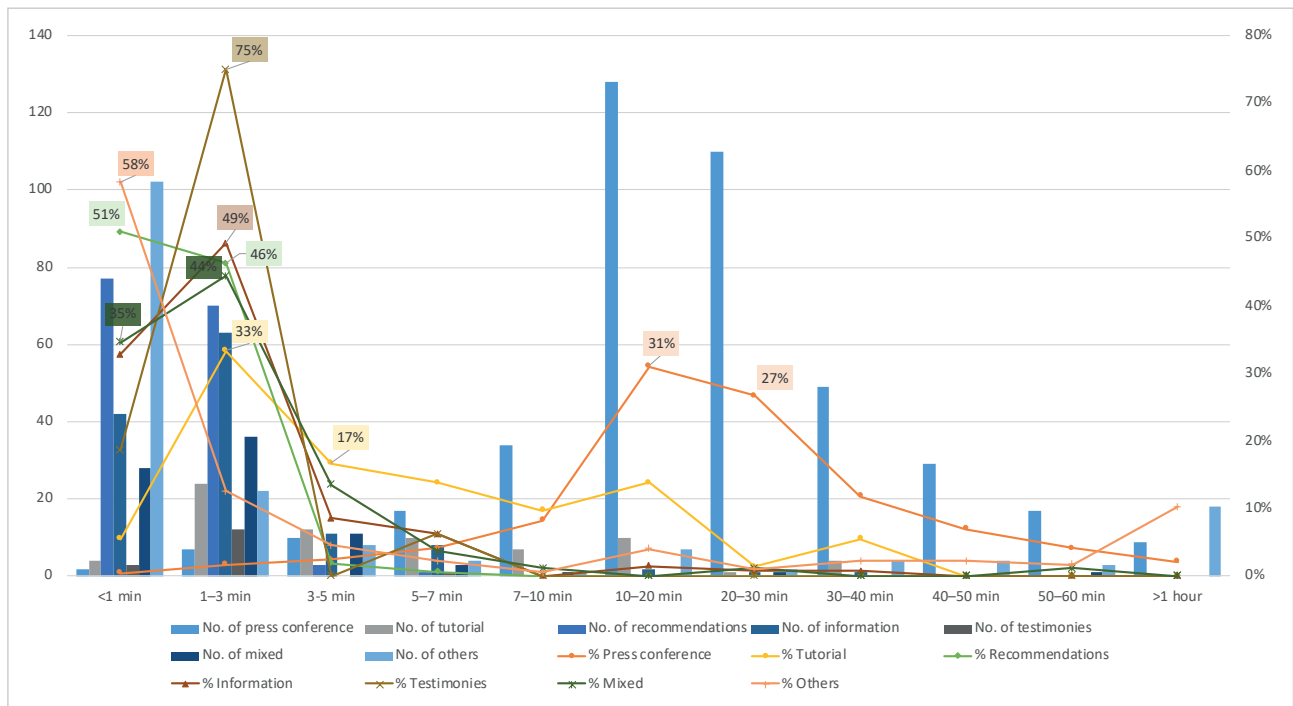


Figure 8. Duration of pieces according to type of content

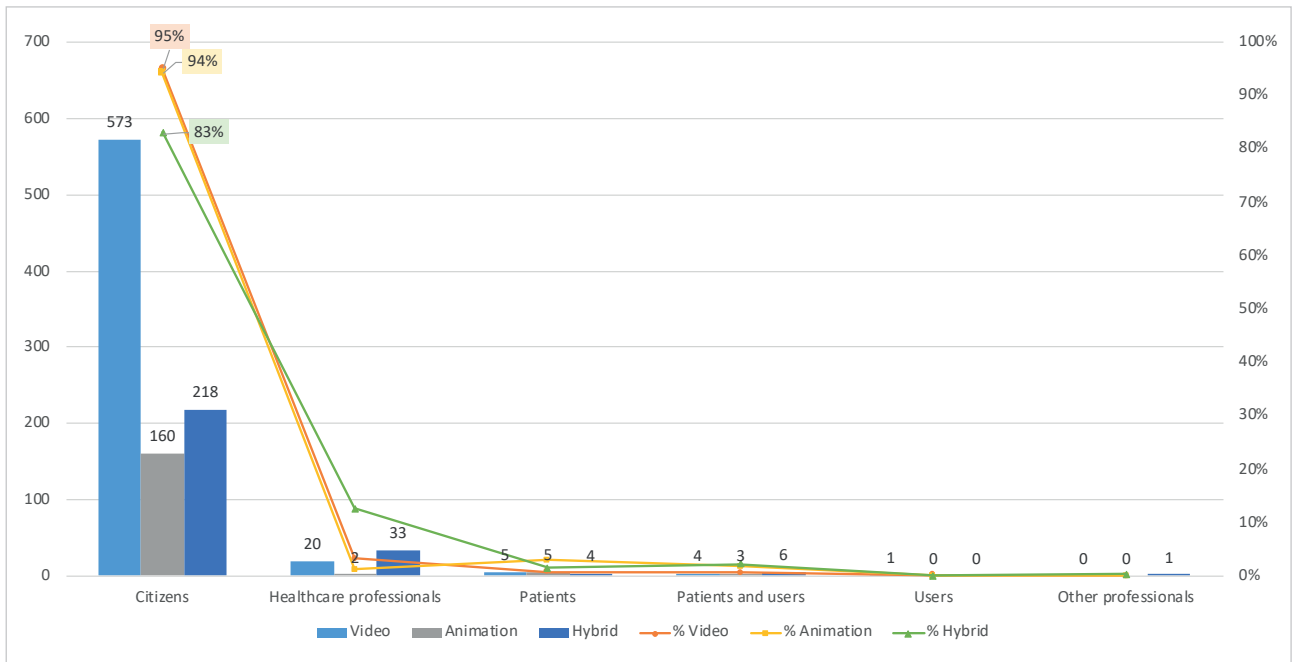


Figure 9. Formats according to their audience

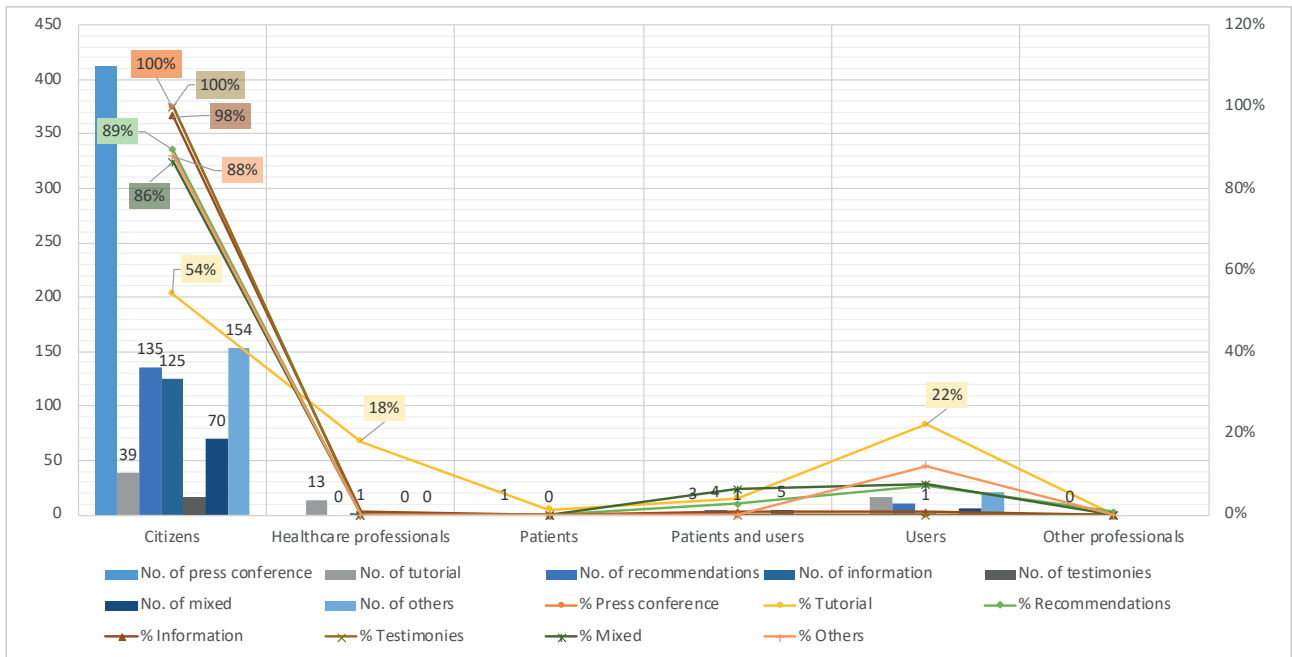


Figure 10. Types of content according to their audience

3.1.2. Duration, topic, and target audience of the content

Of the emitted pieces, 53% had a duration of less than 5 minutes, but they most commonly did not exceed 3 minutes (47%). Depending on their format, the videos were characterized by longer durations, with 42% lasting 10–30 minutes, whereas 69% of the animations lasted less than 1 minute and 47% of the hybrid content lasted 1–3 minutes (Figure 7).

On the other hand, 97% of the recommendations, 79% of the mixed pieces, 75% of the testimonials, and 49% of the informative lasted no longer than 3 minutes. Of the tutorials, 50% did not exceed 5 min, while 58% of the press conferences lasted 10–30 min (Figure 8).

The published content showed great thematic variety, but always with the coronavirus as a central axis, from pieces offering advice to promote healthy habits and safety measures to avoid infection, to pieces expressing gratitude and tribute to professionals, sick people, or victims, through recommendations on the use and handling of personal protective equipment. Other pieces informed about what Covid-19 is and its symptoms, prevention, and relationship with other diseases, and even video tutorials for applications and websites to carry out administrative procedures.

Regarding the target audience, 92% of all the content was directed towards citizens, that is, the entire society. This finding did not depend on the format or type, since 95% of videos, 94% of animations, and 83% of hybrid content (Figure 9), as well as 100% of press conferences and testimonials, 95% of information, 89% of recommendations, 86% of mixed content, and 89% of the Others category were aimed at all citizens. However, the tutorials exhibited a certain difference, with 22% being addressed towards health professionals (Figure 10).

3.2. Consumption and user interaction

Regarding the number of views, 77% had fewer than 1,000 and 64% fewer than 500, with 13% having between 500 and 1,000 (Figure 11).

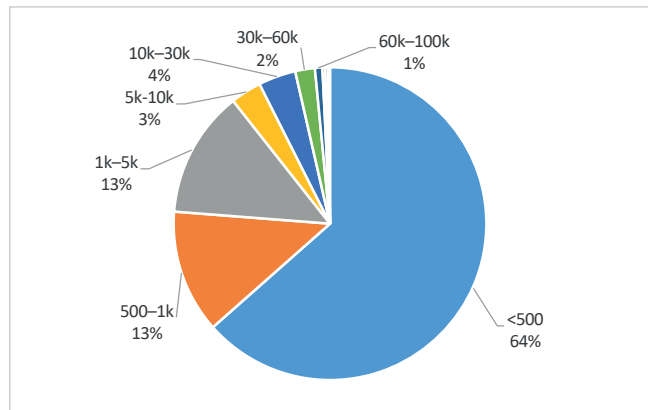


Figure 11. Number of content views

Regarding reactions from users, 95% of the content received fewer than 50 likes, 79% fewer than 10, and 16% between 10 and 50, while 98% received fewer than 50 dislikes, 92% fewer than 10, and 6% between 10 and 50, revealing that there was not a great difference between the number of positive and negative reactions (Figure 12).

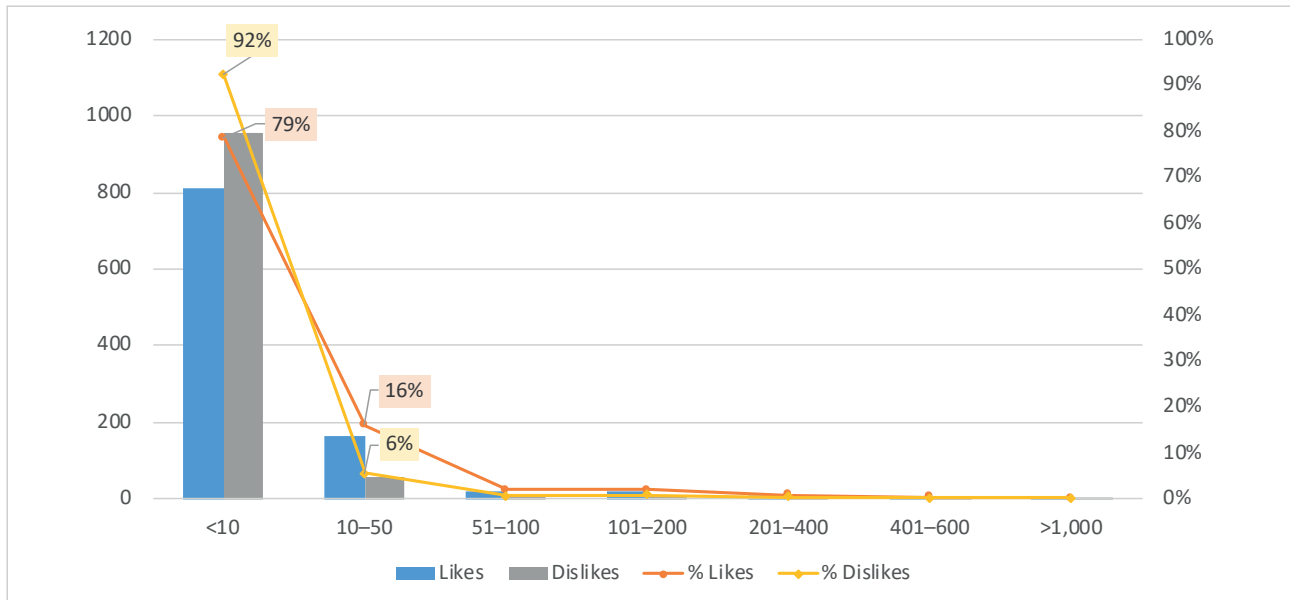


Figure 12. Number of reactions to the content

Meanwhile, comments were deactivated for 60% of the content, while no comments were made in 95% of the cases where it was possible (Figure 13). Eight of the 14 institutions that shared pieces about the coronavirus deactivated the option to comment on 100% of their content (Andalusia, Aragon, Catalonia, Valencian Community, Galicia, Madrid, Murcia, and the Basque Country). The other health services allowed users to make contributions to most of their content: Balearic Islands, Canary Islands, and Castilla-La Mancha (100%), the *Ministry of Health* (97%), La Rioja (83%), and Navarra (72%).

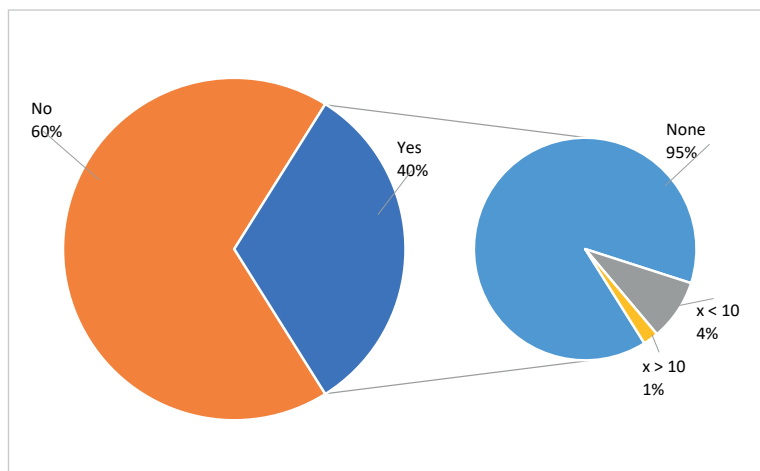


Figure 13. Activation and number of comments

Animations and hybrid pieces received a greater number of views (by up to 30%) than videos (Figure 14). By type of content, 78% of the recommendations and 76% of the tutorials were visited up to 5,000 times (Figure 15), while the average number of views of all the content did not exceed 500 (63%).

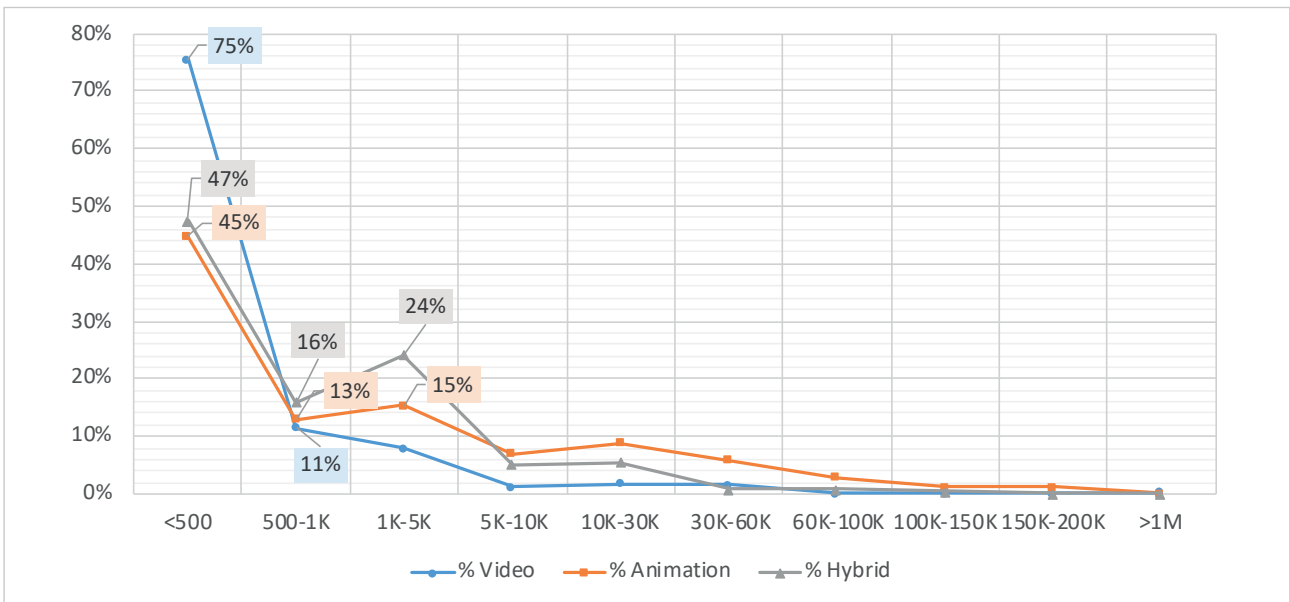


Figure 14. Number of views according to format (%)

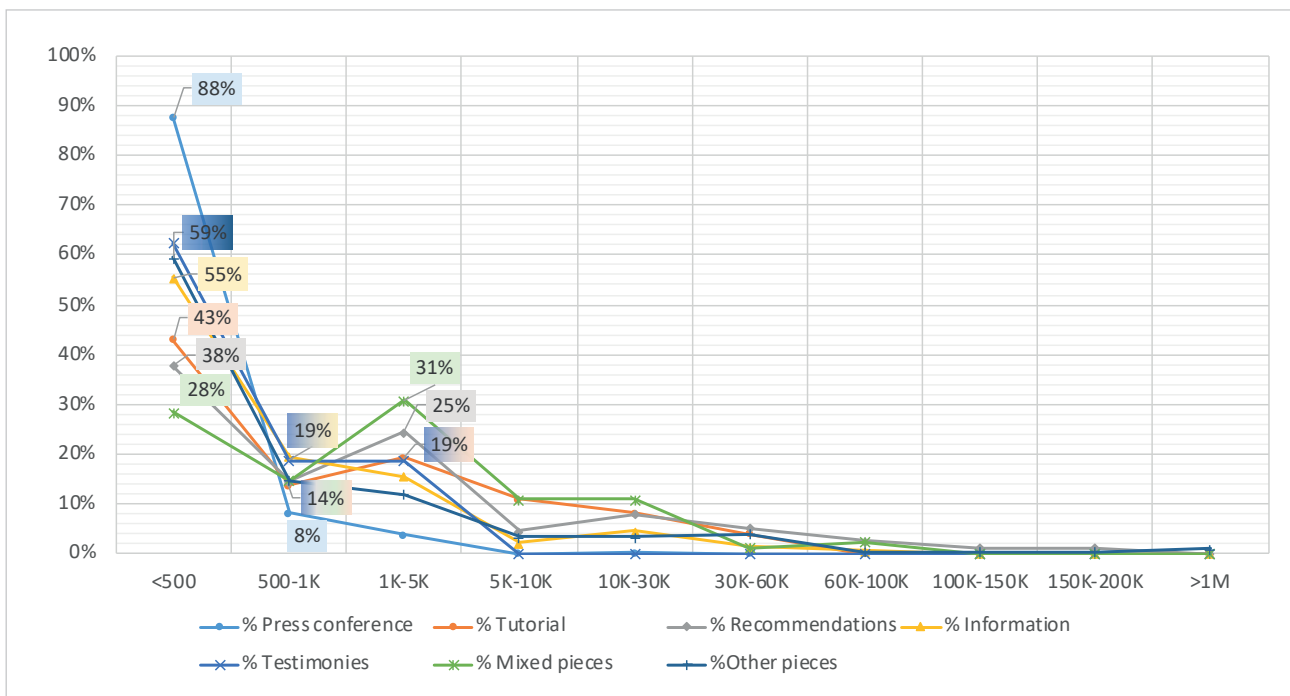


Figure 15. Number of views by content type (%)

4. Discussion and conclusions

As well as attracting extraordinary attention (Casero-Ripollés, 2020), the Covid-19 crisis also accounted for almost all the health information emitted by the *National Health System* on *YouTube* in 2020. During this year, 1,035 pieces were produced, representing more than twice the content published in 2019 (505 pieces), with practically no others dealing with issues unrelated to the pandemic, barely 2%.

Of the 17 official channels of the *National Health System* studied, the *Ministry of Health* was the institution that emitted the most content (29%), while in the case of regional services, Catalonia (22%) and Murcia (18%) stand out, with these three together representing 69% of the total. At the other extreme are three regional institutions that, despite having an official *YouTube* channel, did not include any audiovisual pieces related to Covid-19 during 2020 (Cantabria, Castilla and Leon, and Extremadura). Among the channels that released such data (Table 1), the two with the highest number of subscribers were Andalusia and La Rioja, followed at some distance by the *Ministry of Health*, with less than half as many. At the other extreme are services with a few hundred followers. It is striking that, despite having the channel that broadcast the most content about Covid-19 and that received the most views, the *Ministry of Health* does not have a greater number of subscribers.

The *National Health System* may seem to have used its *YouTube* channels to address societal demands for information, but these absolute data must be put into context. Although almost all the autonomous communities have a *YouTube* channel dedicated to health issues (except for Ceuta and Melilla, which depend directly on the *Ministry of Health*, and the Principality of Asturias health service, which does not have an official *YouTube* channel), 17.64% of the others did not use it at all to share information about the Covid-19 crisis. As noted above, more than half of the content was concentrated in three institutions, revealing the great disparity between the channels studied.

April was the month in which the greatest number of audiovisual pieces on Covid-19 were published (25%), and the *Ministry of Health* was the institution that published the most content (29%) in 2020

Regarding consumption and interaction, note that, as stated by **Picazo-Sánchez** (2016), establishing a single scale to qualify and classify views and/or reactions as normal, many, or few is complex, because of both the heterogeneity and the number of users, as well as the wide range of content emitted in the digital context. Therefore, the results for the number of views cannot be evaluated as positive or negative, despite the overwhelming differences between them. Of the 14 health institutions that used *YouTube* to emit information about Covid-19, 8 chose to use it as a one-way channel by deactivating comments. Obviously, they did this intentionally while using other networks such as *Twitter* or *Facebook* for bidirectional and participatory communication (**Castillo-Esparcia; Fernández-Souto; Puentes-Rivera, 2020; Tur-Viñes; González-Río, 2020**).

Beyond their obligation to inform and guarantee a presence in an environment that is as competitive as the digital world, institutions must adapt their messages to the channel and target public to optimize access and consumption (*Spain*, 2011). Most of the audiovisual production by health institutions was pure videos with little editing (58%), followed by hybrid pieces that combined real images with icons, texts, and other graphical elements, involving considerable assembly work (25%). In absolute terms, animations were in the third and last place, representing 17% of the pieces studied. Despite being the least used format, the results show that it received the most follow-up from users based on the number of views and reactions (Table 4). In addition, this format increased most in percentage terms compared with previous years, from 45 in 2019 to 170 in 2020, representing an increase of 378%. These data support the use of new formats and innovation in communication to guarantee wide exposure from the informational point of view (**Ruivo-Manzano; Gomes-Franco-e-Silva, 2019**). Also, as pointed out by **Xifra** (2020), the use of creative resources can make a difference in a digital context, where the visual prevails over the textual, dominated by the spectacular and striking (**Rodríguez-Andrés, 2017**). The increase and use of animations by health institutions are a reflection of all this.

Regarding the type of content, note that a large fraction of the audiovisual pieces broadcast on *YouTube* were press conferences (40%). This trend seems to coincide with the government's communications strategy on Covid-19 during the early months of the crisis, which "focused mostly on the press conference format" ["*centrad[a] en su mayoría en formato de ruedas de prensa*"] (**Castillo-Esparcia; Fernández-Souto; Puentes-Rivera, 2020, p. 2**). Meanwhile, the content that offered recommendations and tutorials on health advice against Covid-19, representing 22% of the communication from the *National Health System* of Spain, are messages that propose a change in the viewer and active participation of society in the face of the pandemic by promoting healthy habits, encouraging the application of safety and hygiene measures to avoid infection, or advise on diet, physical activity, and mental health during the crisis, thereby promoting health education, which is a responsibility of public bodies (*Spain*, 1986; 2011). Thus, the production and dissemination of this type of information seems to be gaining in importance, since both the publication of educational content and their innovative and striking representation have increased notably.

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This type of message was presented mainly in hybrid and animation formats and was of short duration, as established by **Paredes-Otero** (2019, p. 61), being less than 4 minutes, comprising direct, simple, entertaining, and engaging montages that are fully adapted to the most efficient type of audiovisual content for a channel such as *YouTube* (**Costa, 2014**). Compared with pure video, formats that include visual elements (many of them in motion) are increasingly required to transmit messages in a more attractive way and thereby capture the attention of the population and encourage their participation (**Costa, 2014; Ruivo-Manzano; Gomes-Franco-e-Silva, 2019**).

This reflects a tendency to share useful and practical information that motivates a proactive attitude in society so that, through a change in behavior, people can prevent disease and look after and improve their health. The analysis described above illustrates that an attempt was made in this crisis to adapt health communication to the actual context. In fact, as pointed out by **Rodríguez-Andrés** (2017), this represents the satisfaction of a fundamental requirement, although we insist that this cannot be considered true in absolute terms given the wide differences observed between the studied content. A double-faceted reading of the data obtained is thus interesting. This disparity is clearly illustrated when correlating the format and content variables (Figs. 5 and 6). This shows that, on the one

Animation is the format that increased most in percentage terms compared with previous years, almost quadrupling in 2020 and being used mainly to offer recommendations and advice on good habits

hand, 68% of the pure videos published were press conferences, while 54% of the animations presented recommendations. On the other hand, if we focus on the types of content, we observe a stronger relationship between these and the format of each piece, revealing a clear trend, with 100% of press conferences being broadcast as pure video (without edition, even when published later), 61% of the recommendations taking the form of animations, and 88% of the testimonials being presented as hybrid pieces. This difference clearly indicates a preference to use a specific format depending on the type of information to be communicated. All of this is closely related to the responsibility of these public institutions to promote health education to the population, making use of content adapted thematically and formally to the informational needs and demands of citizens while respecting the social, cultural, and linguistic dimensions (*Spain*, 2011).

Considering that each act of communication is conditioned by the context in which it occurs, these findings present great opportunities and threats for the development of appropriate policies and strategies by such institutions. This analysis of the communication by the *National Health System* enables the identification of the main weaknesses and strengths of the audiovisual messages published by the health services via their official *YouTube* accounts throughout 2020 (Table 3).

Table 3. SWOT analysis of the audiovisual content studied

Weaknesses	Threats
Lack of a unified strategy to determine the informational functions that health systems must cover: <ul style="list-style-type: none"> · A tendency to limit the use of the channel to a repository to host audiovisual pieces Lack of a unified strategy for the adaptation of the content to the public	Informational competition from other channels and media: <ul style="list-style-type: none"> · Proliferation of hoaxes · Loss of relevance of health institutions as authorized information sources in a context of information overload Few views and little interaction from the public
Strengths	Opportunities
Increase in informative production in audiovisual format <ul style="list-style-type: none"> Use of dynamic and eye-catching formats (hybrid pieces and animations) Greater dissemination of information of a didactic/pedagogical nature (recommendations and tutorials) 	Importance of the institution as an authorized source and means of communication <ul style="list-style-type: none"> Use of <i>YouTube</i> as a channel for disseminating health information Use of <i>YouTube</i> as a two-way medium to achieve greater interaction with citizens

5. Study limitations and future proposals

During the analyzed period, many institutions, in addition to providing first-hand information on the progress of the virus, also gave advice and offered recommendations to guarantee the health of citizens during the pandemic. There is a trend towards homogenization and the unification of thematic and formal criteria within the channels but not between them: while some institutions tried to inform society through *YouTube* by sharing content related to health promotion and disease prevention, others used it exclusively as a means of advertising the activity of their political leaders. This shows that there is in fact great formal and thematic heterogeneity between the channels, which directly affects the role of each institution on this social network.

We consider that the problem of this supposed contradiction lies in how the object of study is approached and the results obtained. The raw data obtained by combining the channels provides an acceptable overview but does not reveal the specificities of each channel, which are remarkable as described above. This problem has already been identified in previous studies, which applied approaches of a much more selective nature based on the most visited videos on *YouTube* (*Picazo-Sánchez*, 2016; *Tur-Viñes*; *González-Río*, 2020), very exhaustive and wide approaches (*Orduña-Malea*; *Font-Julián*; *Ontalba-Ruipérez*, 2020), and others with great depth (*Paredes-Otero*, 2019; *Ruivo-Manzano*; *Gómez-Franco-e-Silva*, 2019). This problem regarding specificity becomes evident when transforming the data obtained herein to draw up a list of the ten audiovisual pieces with the most views (Table 4).

The most popular audiovisual piece had more than 2.3 million views, followed by another with more than 1.5 million, according to data collected on 1 January 2021. Both were broadcast on the *Ministry of Health* channel and were advertising spots with a hybrid format. However, the large number of views of these pieces contrasts with the others, since the third most popular piece was viewed only 179,770 times, while the average for the 1,035 pieces studied was 7,487 views.

On the one hand, the commercial spot appears to be extraordinarily successful. However, it only represents 9.8% of the broadcast content; it is included in the Others category, and comprises 58.3% of the pieces. On the other hand, one must remember that all advertising spots are broadcast via many more media in addition to *YouTube*. Therefore, it is logical that its number of views will tend to be higher than for the others, as it is part of a transmedia communication strategy that uses synergy between channels to achieve greater dissemination. However, the format that seems to attract most attention from the public is animation, since it represents 60% of the most played content. However, once again, it is not the most produced, representing only 17% of the total. The same effect occurs with the type of content: 60% of the most popular pieces were recommendations, but they represented only 15% of the total.

Table 4. Top ten pieces of the Spanish *National Health System* with the most views on *YouTube* (2020)*

	Institution	Date	Duration (sec)	Views	Likes	Dislikes	Comments activated? (no.)	Format	Type	URL	
Top 10 most viewed pieces	1	Ministry of Health	10/09	20	2,338,228	200	301	Yes (0)	Hybrid	Spot	https://www.youtube.com/watch?v=iojY4d0JyTE
	2	Ministry of Health	17/03	60	1,525,467	2,540	1,845	No	Hybrid	Spot	https://www.youtube.com/watch?v=b6Fgddtx6aw
	3	Basque Country	13/03	41	179,770	0	0	No	Animation	Recommendations	https://www.youtube.com/watch?v=9Zel5nbJkI4
	4	Ministry of Health	10/12	20	170,444	10	19	Yes (0)	Hybrid	Spot	https://www.youtube.com/watch?v=YUWVmiMowjY
	5	Ministry of Health	12/03	77	151,189	505	115	No	Animation	Recommendations	https://www.youtube.com/watch?v=jPqIHZfrl8k
	6	Basque Country	04/03	35	110,119	0	0	No	Animation	Recommendations	https://www.youtube.com/watch?v=dtTr8H_HXGA
	7	Basque Country	02/05	25	103,766	0	0	No	Animation	Recommendations	https://www.youtube.com/watch?v=I7UmFlrLiZU
	8	Catalonia	18/12	30	102,062	5	0	No	Hybrid	Spot	https://www.youtube.com/watch?v=epIbm4BWSsA
	9	Catalonia	18/12	30	96,848	3	0	Yes (0)	Animation	Recommendations	https://www.youtube.com/watch?v=ih3OQjIKRm0
	10	Basque Country	02/05	25	85,634	0	0	No	Animation	Recommendations	https://www.youtube.com/watch?v=aT3BvaNig28

Beyond the decision of health institutions to use *YouTube* as a media channel that is open to comments from citizens and bearing in mind the low number of user reactions, we could not observe any correlation between the number of visits, likes and dislikes, and comments. Moreover, the views do not correspond to the number of likes and dislikes (compare, for example, the pieces released by the *Ministry of Health*).

Considering the number of subscribers, although the most viewed content was presented on channels with a considerable number of followers, they were not among the top two. This may be because both Andalusia and La Rioja, despite having the channels with the most subscribers, broadcast very little content about Covid-19 on *YouTube*.

However, a correlation appears between the number of views and the most successful pieces. However, this can be explained by their large number of views, with the top ten listed in Table 4 accounting for 63% of the total views of all the channels throughout 2020.

However, it cannot be concluded that there is a relationship between the number of views and the quantity of pieces published. Although the channels of the *Ministry of Health* and Catalonia produced the greatest amount of content and information on Covid-19, the Basque Country only published 31 messages (3% of the total), but three of them were among the top ten visited.

A comparison of the absolute data obtained from the analysis of all the content emitted by the *National Health System* on *YouTube* versus the most viewed pieces reveals that there does not seem to be a correlation between them. On the one hand, publishing a certain amount does not necessarily guarantee a high number of views. On the other, a sample of the most viewed content cannot be extrapolated to the entire universe of study, since it is not guaranteed to be representative.

Finally, this work is one of a small number of studies that have focused on the dissemination of health information via *YouTube*. Although some approaches have studied the presence or absence of this type of content on the channel (**Orduña-Malea; Font-Julián; Ontalba-Ruipérez**, 2020), we have not found any that focus on a specific broadcaster. Regarding the description of health messages on *YouTube* as a channel, we tried to relate what is expected, and even required, of the producer to the content disseminated. Contextualizing the object of study and addressing it exhaustively, since all the channels of the *National Health System* have been analyzed, allowed us to go beyond only a purely formal description of the disseminated pieces.

An approach of this type faces the double challenge of identifying an adequate methodology for the analysis of audiovisual content with these characteristics, and of not being able to use automated tools without

“ There is a trend towards homogenization and a unification of the thematic and formal criteria in each channel but not between them ”

subsequent review (Orduña-Malea; Font-Julián; Ontalba-Ruipérez, 2020, p. 12). Both Arévalo-Salinas (2017) and Paredes-Otero (2019) already encountered this methodological problem, with both proposing an analytical form adapted to the audiovisual content found on *YouTube*. In fact, Arévalo-Salinas already suggested that this

difficulty could be one of the reasons for the small number of scientific publications of this type. Tur-Viñes and González-Río (2020, p. 20) proposed a future line of research in which *YouTube* content was analyzed through the format and type of content, and degree of interaction. The analytical form designed and used in this research allows these proposed objectives to be met, but as in the case of the above-cited studies, it is limited to the health context.

It would be interesting to use both this methodology and the data presented herein to carry out an exhaustive analysis of each official channel of the *National Health System* individually, thus identifying the informative role that each adopts when spreading audiovisual messages on *YouTube*, and delving into the relationship between the format and type of the content, contextualized in each channel. We believe that this approach has proven its usefulness and could be used in future research in both public relations and journalism.

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The image shows a computer monitor displaying the Dialnet website. The website has a dark blue header with the Dialnet logo (a red circle with a white dot) and the text "Dialnet" in white. To the right of the logo, it says "Visibilidad para la producción científica en español". Below the header, there is a navigation menu with links for "Buscar", "Revistas", "Teas", "Congresos", and "Regístrate". There are also links for "Ayuda" and "Español". The main content area has a search bar labeled "Buscar documentos" and "Buscar revistas". Below the search bars, there are statistics: REVISTAS 9.618, DOCUMENTOS 4.928.574, ALERTAS 28.860.455, USUARIOS 1.552.740, and TEAS 45.101. There are also sections for "Dialnet plus", "Noticias", "Colaboradores", and "Últimas incorporaciones". The website is displayed on a silver computer monitor with a white base. Below the monitor, the URL "dialnet.unirioja.es" is written in white. At the bottom right, there are logos for "Fundación Dialnet" and "UNIVERSIDAD DE LA RIOJA".