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Disinformation and health: fact-checking strategies of Spanish health public institutions through YouTube

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Introduction: Through their social media, public institutions address fake news and tackle disinformation that affects both them and the general public. With the rise of online video platforms, the audiovisual format has made its way as a dynamic and engaging format that allows for the creation of narratives to counter distorted information. This circumstance is particularly noticeable in the healthcare sector, where most of the recent fact-checking activity is taking place.

Methodology: Through the analysis of the official YouTube channels of the health departments of all Spanish autonomous communities from 1 January 2021 to 31 December 2023, this paper explores the use of audiovisual fact-checking by Spanish regional governments, and it describes the nature of these videos and the strategies undertaken on that platform to tackle disinformation.

Results: Despite the expected territorial disparities, the research findings show that an increasing number of Spanish regional health authorities are using YouTube to fight disinformation. They also show that the videos posted on that platform provide a strong response to fake news, either as a preventive measure or in response to existing publications.

Discussion: In the current landscape of declining mass media, where audience dispersion leads a to (sometimes deliberate) fragmentation of discourse, we are confronted with the paradox of being a society with access to a vast amount of information, but not well-informed. Therefore, it is essential to have strong institutions that verify fake content through popular formats.

KEYWORDS

disinformation, fact-checking, public information, YouTube, public administration, post-truth

1 Introduction

Health disinformation has emerged as a critical phenomenon in the digital age, which negatively impacts decision-making and health-related behaviors. Addressing this phenomenon requires a coordinated and sustained effort to promote truth, accountability, and trust in medical information sources. In the 21st century, the proliferation of online information has changed how people access and share health knowledge. However, along with

this information revolution, a concerning trend has emerged: disinformation, ranging from fake news about miracle treatments to conspiracy theories casting doubts on the efficacy of vaccination and other well-established medical methods. This issue has been exacerbated by the outbreak of the COVID-19 pandemic in 2020 and everything that it involved.

Addressing health disinformation requires a global approach involving governments, health institutions, digital platforms, and society at large. Promotion of media and scientific literacy, effective regulation of online information, collaboration among digital platforms to limit the spread of deceptive content, and promotion of transparency in science communication are key strategies to ensure better-informed citizens.

This academic paper explores the unique dynamics of YouTube as a platform for disseminating health information from the Spanish regional public institutions and how it can influence public perception of health care, the challenges associated with health disinformation, and it proposes strategies to improve the quality of the information provided through this channel. YouTube plays an integral role in health information, which can turn it into a valuable tool for health education, bringing accurate and useful information to global audiences. The collaboration between the platform, health professionals and regulators will be essential for building a healthier and more reliable online environment.

2 Materials and methods

2.1 Disinformation and fake news

Perhaps it may seem that the 21st century has discovered a new phenomenon called disinformation, along with other related or associated terms such as fake news, post-truth, etc. However, the truth is that disinformation has existed almost from the beginning of human history. Burgueño (2018) reminds us that the dissemination of false information with the purpose of deceiving and manipulating to achieve certain goals has been a common practice since Roman times. French et al. (2023) recall us that the term "disinformation" derives from the Russian word *dezinformatsia*, used by the Soviets in the 1920s to refer to the false information intentionally spread by KGB officials to control public opinion. It appears in S. Ozhegov's dictionary of the Russian language in 1949, "defined as the "action of misleading by means of false information," and it gained popularity in 1980, when during the trial in Paris against Pierre Charles Pathé, commentator and publisher of a confidential bulletin, the testimony of an agent of the Direction de la Surveillance du Territoire (DST) made KGB techniques widely known" (Burgueño, 2018).

On the other hand, Olmo y Romero (2019) defines this concept as the "intentional dissemination of non-rigorous information that seeks to undermine public trust, distort facts, convey a certain way of perceiving reality, and exploit vulnerabilities with the aim of destabilizing" (p. 4). Although this author operates more in the strategic and institutional spheres, it is a definition that encompasses all aspects. It is important to highlight, even though that is not the focus of this paper, the significant relationship between the concept of disinformation and *fake news*, which is more widely used to refer to this phenomenon, but should not be confused with it, as advocated for example by Rodríguez Pérez (2019), with whom we agree, putting forward four reasons:

- The concept of disinformation is much broader, as it refers to fraudulent or deceptive news content, hate speech, deliberate false narratives, unintentional information errors…
- Fake news is an oxymoron, since by its very definition news cannot be fake, but "a true fact that is unpublished and current, of general interest" (Martínez Albertos, 1974).
- The concept of fake news has been taken over by political discourse to target journalists and media that publish news contrary to their political, ideological, or personal interests.
- The motivations behind the production of fake news.

The key issue is that disinformation has already become an international problem and the development of online tools has only served to complicate this situation even further.

As we have mentioned, the history of disinformation traces back to the beginning of humanity, although the term "fake" has acquired unprecedented prominence (we should not forget that the term "fake news" was named word of the year by the Oxford Dictionary in 2017). Despite this, we will continue using the concept of disinformation, as we have previously justified, since it includes many more actions that are having a significant impact on societies and on the loss of credibility in traditional media and democratic institutions. This cast doubts on much of the information that emerges from them, thereby undermining citizens' confidence.

The political sphere has been the most conducive context for examining these types of activities, with the 2016 United States elections issuing a global alert on the limitations of this practice, as it was found that millions of Americans had been exposed to misleading stories and many believed them to be true, with the subsequent effects on the electoral results (Guess et al., 2018; Gunther et al., 2018). Other examples include the 2021 Mexican elections, researched by Echeverría and Rodríguez Cano (2023) with the aim of analyzing the influence of false information on public perception and confidence, and to what extent could media literacy protect against it, or the current Russian-Ukrainian war, a breeding ground for studies and an example of disinformation strategies (Wenzel et al., 2023).

Beyond the field of geopolitics, the interference of disinformation in the day-to-day operations of public institutions has also been the subject of recent research. Graves (2018) argues that the proliferation of deceptive news has prompted public institutions to develop fact-checking strategies that encompass not only their policy actions, but also their governance practices. On the other hand, Davis and Beck (2023) set the context for these strategies within social media and point out that it is within this context (and with its native tools) that disinformation should be tackled.

Examples of concern about disinformation and the fight against it through verification tools can be found in the research by Rúas-Araujo and Paniagua-Riojano (2013), sponsored by the Spain State Research Agency, which reveals that, between 2018 and 2021, works on this theme were funded with a little over 1 million euros. Among them, there are studies that focus on information verification through digital platforms such as Twitter/X or Facebook (Allcott et al., 2019), as well as contributions that highlight the role of the so-called fact-checkers in reaching wider audiences (as shown in the research on Latin America conducted by Dafonte-Gómez et al., 2022), and even there

are researchers who concentrate on search engines (Aslett et al., 2024). These are all different ways to address a fundamental task in the field of traditional journalism, that of verification, a practice that appeared to have been forgotten with the advent of the Internet and, especially, with the emergence of social media and platforms of all kinds where anyone can access and provide information without any filter, causing chaos and discrediting media, journalists, and institutions. This issue highlights the need for ongoing training among journalists, as recalled by Fernández-Barrero et al. (2024) in their research on local media in the Iberian Peninsula.

In our recent history, the COVID-19 pandemic has opened a new chapter in the fight against disinformation. Among the various academic approaches, the one by Tuñón Navarro and Sánchez del Vas (2022) stands out, as they have leveraged the present situation to understand the fact-checking phenomenon, its evolution, and characteristics.

2.2 The rise of fake news since the COVID-19 pandemic

If the 2016 United States elections served as a wake-up call regarding the phenomenon of disinformation, the COVID-19 pandemic proved to be the final straw in a situation that was already beginning to be considered unmanageable.

In the case of the healthcare sector, disinformation is not something new either. Hoaxes and conspiracy theories about remedies, medications, treatments, miracle diets, etc., have long been present. Whether it be the Ebola crisis, mad cow disease, avian influenza, Zika or dengue fever, all health crises have given rise to endless false information, shared through traditional sources or media or through the most important social media or platforms at any given time. However, it is true that the global pandemic caused by COVID-19 surpassed any expectation that anyone could have ever had, not only due to its health impact but also because it affected every aspect of our lives, as individuals and as a society, across the world simultaneously.

It is important to remember that the spread of fake news, hoaxes, reports, memes, decontextualized information, unauthorized opinions, and all types of content reached such a magnitude that in February 2020 the World Health Organization warned about an "infodemic" situation. This information pandemic had resulted in disbelief and over-information among a population that was no longer able to differentiate what was real from what was not. Research of all sorts was carried out all around the world, such as in Latin America with studies on Brazil (Ceron et al., 2021) or Chile (Mellado et al., 2021): in Europe, the case of Spain (Salaverría et al., 2020) and comparisons between countries (Peña Ascacíbar et al., 2021) and in all kinds of fields, such as sports (Estanyol et al., 2023), education (Alarifi and Song, 2024; Nishimura et al., 2024) or communication (Krittanawong et al., 2020).

It is evident that the crisis caused by COVID-19 was not the first global health crisis in our history, but it was indeed the first one under unique circumstances. The technological revolution that began in the late 20th century consolidated a number of behaviors and uses in this second decade of the 21st century. The use of platforms, apps, mobile devices, etc., is no longer exceptional but rather a part of our daily lives, to a greater or lesser extent. Much of our existence is now digital, which brings significant advantages but also major drawbacks in a complex communicative context, as highlighted in some of the conclusions drawn by the Reuters Institute (Newman et al., 2020) prior to the arrival of COVID-19. The report mentioned great concern about disinformation. Only 38% of respondents said then that they trusted the news they received (in 2019, just 1 year earlier, that rate was 42%), political polarization worldwide was growing disproportionately, and access to information was expanding through websites, applications, and social media. The report for that year showed that the use of Instagram as a news source had doubled and was expected to surpass Twitter (now called X) in the following years.

And in this scenario, a global pandemic emerged for the first time, locking us all down and forcing us to rely on information from all kinds of online and offline sources, media and platforms, at a speed that made verification very challenging. Additionally, it presented a typology of formats that exceeded our knowledge, including news satire, news parody, fabrication, manipulation, advertising, and propaganda, as reviewed by Tandoc et al. (2018).

2.3 The role of public institutions in the face of disinformation

We could say that, in terms of communication, COVID-19 exceeded the forecasts that any crisis communication manual could have made. Local, provincial, regional, national, and supranational institutions were overwhelmed by the situation, facing information chaos and numerous logistical problems that they had to solve every passing minute: temporary cessation of non-essential activities and industries, organization of telework, schooling, grocery shopping, care for the elderly, or document processing. Suddenly, the in-person activities of daily life turned virtual amidst a pandemic with millions of deaths and with fake news spreading like wildfire on social media. This led to a growing distrust among the population, unsure of whom to trust.

Governments found themselves unable to monitor the information that was uploaded almost in real time to social media, resulting in widespread disinformation with massively disseminated hoaxes and an uncontrolled flow of pandemic-related news (Armitage et al., 2020; Kulkarni et al., 2020). At a time when it was necessary for the population to critically assess the information received and refrain from sharing it, the approach taken involved multiple spokespeople delivering different messages, contradictory health information, and politicians appropriating the narrative. That is, the very opposite of an effective crisis communication strategy. In the case of Spain, for instance, the government led by Pedro Sánchez opted for a strategy focused on press conferences by the president, ministers, regional presidents, and experts (not without complaints from the media), but failed to target specific audiences such as young people, older adults, or specific professional sectors who rely on different sources of information and have different needs (Castillo-Esparcia et al., 2020).

Having analyzed the management of the information crisis in the United States, United Kingdom, Spain, South Korea, Argentina, and Germany, the report *Navigating the Infodemic* by the Reuters Institute (Newman et al., 2020) identifies a number of conclusions. Among these, three key ideas stand out regarding trust in institutions, experts, media, and social networks:

– Most respondents trust traditional media, experts, and health authorities more than digital platforms. The average "trust gap" between traditional media and social networks is 33 percentage points.

In all countries, except Spain and the United States, most respondents consider their national governments to be relatively reliable. Health authorities and experts are viewed as very reliable sources by almost everyone in all countries, while politicians and most ordinary people provoke more skepticism. In South Korea, Spain, and the United States, respondents said that politicians generate large volumes of top-down disinformation.

– Three-quarters of respondents trust national or international public health organizations, and express very high levels of confidence in scientists, doctors, and other experts, as well as in global health organizations, such as the World Health Organization (hereinafter referred to as WHO). The study highlights that, "after years in which some politicians and parts of the public allegedly had had 'enough of experts'," specialized scientific knowledge is having a comeback.

Thus, to restore public trust and return to normal, it was necessary to implement a new information scenario (combining traditional media with digital channels) and use specialized spokespeople. According to Çömlekçi (2022) or Méndiz-Noguero et al. (2023), this required improving media literacy on health matters within the population and raising awareness that social media can provide both accurate and misleading information at the same time. As a result, public authorities created specific institutional communication for digital platforms to generate trust among citizens as a complement to traditional media.

The WHO itself led these media literacy efforts. Initially (in 2020), it tackled false myths in a question/answer format through its website (who.int), media center, and social media, tagging all fact-checking content under the slogan "Let us Flatten the Infodemic Curve." Since 2021, it has used audiovisual content in a much more sophisticated manner: through an information campaign on vaccination that included videos and podcasts hosted on covid19infovaccines.com and disseminated through social media. Healthcare personnel from different countries addressed the most common questions about vaccines from a highly educational perspective and debunked hoaxes about their side effects.

This is a paradigmatic example of information verification by an institution, not only because it tackled fake news about the pandemic but also because it did so through audiovisual formats hosted on YouTube. A platform created in 2005 for sharing videos had become, by the end of 2023, the second most visited website with 115 billion monthly views (Orús, 2024) and the social media where the most news content is consumed (Newman et al., 2023).

In the field of health, YouTube has been the subject of several studies as a source of medical research (Betancourt et al., 2021). During the pandemic, Basch et al. (2020) highlighted the role played by public authorities as major producers of audiovisual content to raise awareness and encourage population to take protective measures, while authors like Orduña-Malea et al. (2020) emphasized the importance of YouTube as a communication tool through which news content is broadcast (sometimes accurate, but also misleading).

It is to be assumed that, within this extensive audiovisual production, content has been created by public authorities aimed at fighting disinformation, similar to what the WHO had done at the time. Thus, once the COVID-19 emergency has subsided, it is worth questioning whether health authorities continue to fight disinformation through YouTube, and whether the pandemic experience has prompted public authorities to create videos to counter fake news on other topics.

2.4 Methodology

Through the study of the Spanish case, this paper establishes three research objectives:

> *O1*: To describe how Spanish regional governments use this social network to conduct audiovisual fact-checking of health-related content.
>
> *O2*: To characterize these videos and identify the strategies employed to fight disinformation through YouTube.
>
> *O3*: To evaluate their impact in comparison to other published content and audience feedback.

Achieving these objectives will allow us to test the hypothesis that Spanish health authorities use YouTube to debunk hoaxes and disinformation. This involves descriptive research, which is particularly suitable when one wishes to "accurately display the angles or dimensions of a phenomenon" (Hernández-Sampieri et al., 2010, p. 80).

Social media, as the primary means through which fake news spreads (Amazeen and Bucy, 2019), provide the framework for our fieldwork. And more specifically, YouTube, the social network with most unique users per day in 2023, making it the top entertainment website in Spain, followed by Spotify and Facebook (Fernández, 2023). Additionally, YouTube is the audiovisual platform through which 21% of the Spanish citizens obtain information, according to the Reuters Institute Digital News Report (Newman et al., 2023, p. 98).

The present research analyses all the activities carried out between 1 January 2021 and 31 December 2023 by the 17 Spanish regional governments, which have been transferred the competences of execution, administration, and management of health policies. It is worth clarifying that the General Health Act of 1986 created a decentralized health system in Spain, in which the Central Administration coordinates laws and basic regulations concerning health care, but the Governments of the Autonomous Communities (that is, the regions of the State) are the ones that implement them and provide health services.

Hence, it seems more appropriate to analyze the 17 entities responsible for managing health policy, in such a way that, in the present research, the universe aligns with the sample. In chronological terms, the year 2020 is deliberately avoided due to the potential distortions that could arise from the audiovisual production made during the most challenging times of the pandemic, thereby limiting the study to the three natural years prior to the drafting of this paper (Table 1).

In the present case, a total of 1,981 videos were analyzed and categorized based on their format, following the YouTube video typology established by Costa-Sánchez and Túñez-López (2019), including formats such as spot, advertorial, news, corporate

TABLE 1 Websites and videos analyzed.

	Region	Web	Subscribers	Videos uploaded	Videos analyzed	
					Number	% channel
1	Basque Country	https://www.youtube.com/@OsakidetzaEJGV/videos	23,800	465	63	13.55%
2	Catalonia	youtube.com/@salutgeneralitat/videos	13,000	1,200	326	27.17%
3	Galicia	https://www.youtube.com/@p2pfegas/videos	30,400	708	428	60.45%
4	Andalusia	youtube.com/@Csaludandalucia/videos	38,300	939	154	16.40%
5	Asturias	https://www.youtube.com/@servicioatencionalciudadan3649/videos	41	28	18	64.29%
6	Cantabria	youtube.com/@serviciocantabrodesalud6271/videos	1,280	261	75	28.74%
7	La Rioja	https://www.youtube.com/@riojasaludes/videos	41,700	906	217	23.95%
8	Murcia	https://www.youtube.com/@murciasalud1972/videos	489	48	40	83.33%
9	Valencia	https://www.youtube.com/playlist?list=PL850A4F96F89C61EC	14,873	91	1	1.10%
10	Aragon	https://www.youtube.com/@ServicioAragonesdeSalud/videos	226	6	0	0.00%
11	Castile-La Mancha	https://www.youtube.com/@sanidadclm/videos	577	186	37	19.89%
12	Canary Islands	https://www.youtube.com/@CanariasSaludable/videos	2,150	472	150	31.78%
13	Navarre	https://www.youtube.com/@SaludNavarra2015/videos	16,800	580	183	31.55%
14	Extremadura	https://www.youtube.com/playlist?list=PL0tXtG77KZ39ZehMZGCCXkZ0jmGiUBtro	2,620	6	6	100.00%
15	Balearic Islands	https://www.youtube.com/@conselleriadesalutdelesill6410/videos	188	182	26	14.29%
16	Madrid	https://www.youtube.com/@MadridSalud/videos	1,750	362	208	57.46%
17	Castile and Leon	https://www.youtube.com/@saludcastillayleon/videos	752	73	49	67.12%
			188,946	**6,513**	**1,981**	**37.71%**

Bold value indicates difference between analyzed values.

videos, micro-videos, statements, news coverage, CSR, branded content, raw footage, interviews, making-of, and others. In addition to this classification, other variables such as duration, number of views, and number of "likes" were taken into consideration, aspects that Montero Gómez (2021, p. 181–185) considers essential for conducting quantitative analysis of a YouTube video.

For videos focusing on audiovisual fact-checking, a second analysis was conducted. In addition to describing these contents from a quantitative and format perspective, qualitative aspects were also examined separately, including themes, narrative structure, and technical resources, as deemed relevant by Montero Gómez (2021).

In the final analysis, the following variables are examined: purpose and objective of the videos, format, duration, theme, and narrative structure of the audiovisual pieces. By combining techniques from both quantitative and qualitative analysis, we carried out a manual extraction of data, viewing each and every one of the videos without relying on any software to automate the analysis. Every video was processed through a spreadsheet.

3 Results

3.1 The use of YouTube by Spanish health authorities

Initially, it appears that, in Spain, it is a recent phenomenon for public health departments to communicate with citizens through YouTube. In fact, the 1,981 videos published during 2021, 2022 and 2023 account for more than a third (specifically 37.71%) of the total content uploaded by them to this platform, with six territories having posted more than half of their videos during this period.

The use they make of this platform is primarily focused on healthcare assistance (Figure 1). This approach is present in 1,145

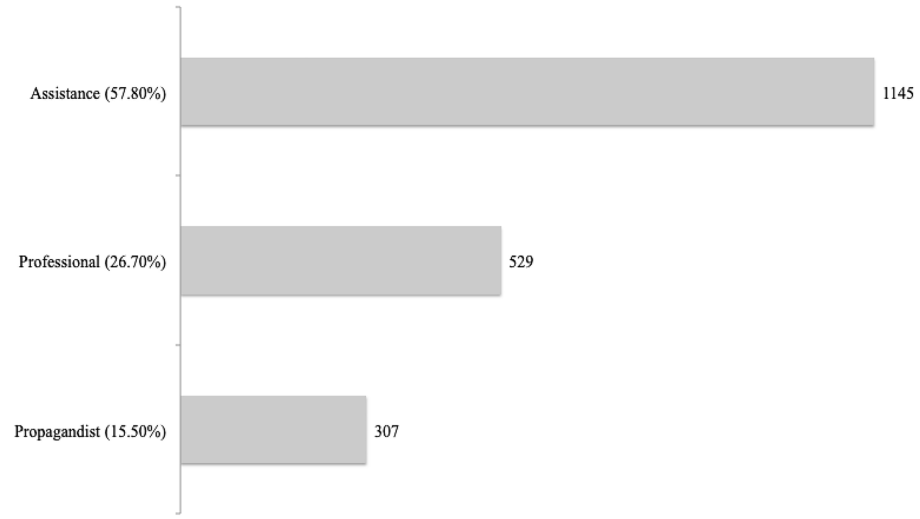

FIGURE 1
Purpose of the use of the Youtube channel of the analysed institutions.

TABLE 2 Duration, views, likes, and approach.

Average length	782.99″
Average videos	3,172.32
Average likes	7.50

videos (that is, 57.80% of the analyzed content). In all these cases, YouTube serves as an extension of the channels through which public communication campaigns are disseminated, providing a window to educate the population on health matters and equip them with the necessary tools to prevent and treat different ailments.

This does not mean that the videos on this social network cannot have other purposes. For instance, 529 out of the total videos analyzed (26.70%) are mainly professionally oriented, turning the platform into a repository of conferences, lectures, or webinars for professionals in the sector. As for the remaining 15.50% (307 videos), it could be argued that they have a propagandist nature, as they praise the high quality of public healthcare services, the modernity of its equipment, or other reflections on their public authorities. These videos lack an assistance or professional purpose, as they simply seek to convey a positive image of the healthcare system and influence public opinion.

However, not all regional governments make the same use of YouTube. Regions such as Andalusia, the Canary Islands or the Basque Country tend to post content focused on health assistance or public interest (99.35, 95.33% y 76.19%, respectively). On the other hand, in Navarre (61.73%) or Galicia (57.71%), there is a predominance of audiovisual content aimed at healthcare personnel or professionals, while in Extremadura (66.67%) or La Rioja (49.77%) there are numerous propagandist videos (Table 2).

On average, the analyzed videos have a duration of about 13 min (783 s), 3,172 views, and 7.50 likes. These variables suggest that the content gets a considerable number of views but a reduced engagement rate from the audience. Another remarkable aspect is the excessive duration, far from commercial formats (which, according to authors such as Bellman et al., 2021 or Wang et al., 2022, range from 4 to 90 s). This is an anomaly that surely can be explained by the great heterogeneity of the sample, where videos that last hours coexist with others that barely reach a minute.

This would also explain the paradox that audiovisual pieces in micro-video format are the most common format in the present research (879 videos, accounting for 44.37% of the total). This type of content, due to its short duration and quick consumption, is the one that best fits the algorithm of social media platforms like YouTube (Lei, 2022).

Far behind micro-videos, we find raw, unedited images (478 videos, 24.13%). A significant part of these videos (464) are complete recordings of lectures hosted on the channel, each lasting several hours. To a lesser extent, there are also commercials (199 videos; 10.05%), infomercials (152; 7.67%), statements (102; 5.15%), corporate videos (99; 5.00%), or branded content (72; 3.63%, Figure 2).

During the three analyzed years, there is a relatively constant frequency of publication, although 2021 stood out as the year with the highest number of videos posted. We should not forget that, in that year, the effects of the COVID-19 pandemic were still being felt, and that Spain was immersed in a large vaccination campaign. This circumstance explains why 330 out of the 1,981 analyzed videos (16.95%) were focused on that subject (Figure 3).

3.2 Audiovisual fact-checking among the analyzed videos

Out of the total number of videos published, 156 (7.87%) are focused on fighting health disinformation. These are short pieces that identify myths, hoaxes, or false beliefs on specific topics, provide accurate information, and enhance health education of the population.

The vast majority of them (150 cases, that is, 96.15%) are micro-videos, while the remaining six videos (3.85%) can be classified as statements. In relation to the total sample of 1,981 videos, these audiovisual pieces have a shorter average duration (approximately 95 s; therefore, they are more commercially focused), and they also have a

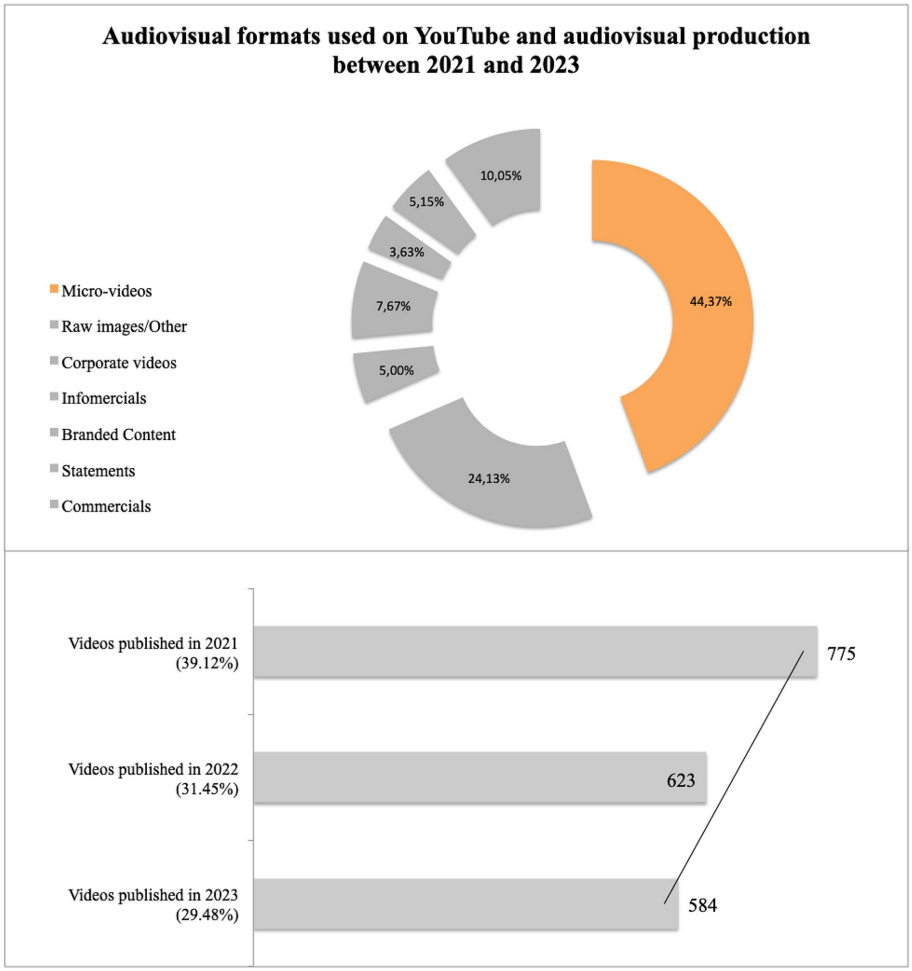

FIGURE 2
Audiovisual formats used on YouTube and audiovisual production between 2021 and 2023.

higher number of views (8,281.20) and a higher engagement rate (33.14 likes per video) (Table 3).

From a technical standpoint, there are various approaches to audiovisual fact-checking in the videos. These include animation pieces (6 out of 156 videos, 3.85%), realistic pieces based on archival images with the addition of an omniscient narrator's voice (2 videos, 1.28%), and realistic pieces where text is added instead of a narrator's voice (11 videos, 7.05%), 10 of which follow a question-answer model on a specific subject.

However, videos rely most often on testimonies from renowned narrators in the field of health. This practice is present in 137 out of 156 videos (87.82%), either with a narrator talking to the camera (114 cases) or through a question-answer system, which occurs in 23 pieces. In all these cases, an expert is present to provide scientific validity to the discourse, moral authority to the narration, and a sense of reliability to the audiences. These experts are generally healthcare personnel, although there are also cases where experts are researchers, managers of health institutions, members of international organizations, or public officials.

There is a wide range of topics on which audiovisual fact-checking is conducted (Figure 3). On the YouTube channels of regional health authorities, we can find videos debunking false myths on issues such as mental health, smoking, suicide, respiratory infections, healthy diet, or the child flu vaccine.

However, during the research period, one topic stood above all others: COVID-19. That is the main theme of most videos (125 out of 156; 80.13%). This affirmation reveals one the most interesting findings of the present research: the fact that one-third of the 330 videos about COVID-19 published by regional health authorities on their YouTube channels between 2021 and 2023 were intended to address fake news and tackle disinformation on healthcare matters.

4 Discussion

It is only recently that Spanish health policymakers have incorporated YouTube as a support for their communication activity. This new channel is used to establish a dialogue with citizens and to promote media literacy in the field of health, as suggested by authors such as Çömlekçi (2022) or Méndiz-Noguero et al. (2023).

This recent interest is evidenced by the fact that much of the content uploaded to this platform has been published in the three last years. For the most part (85%) these are micro-videos with an assistive purpose aimed at the whole population, which coexist with

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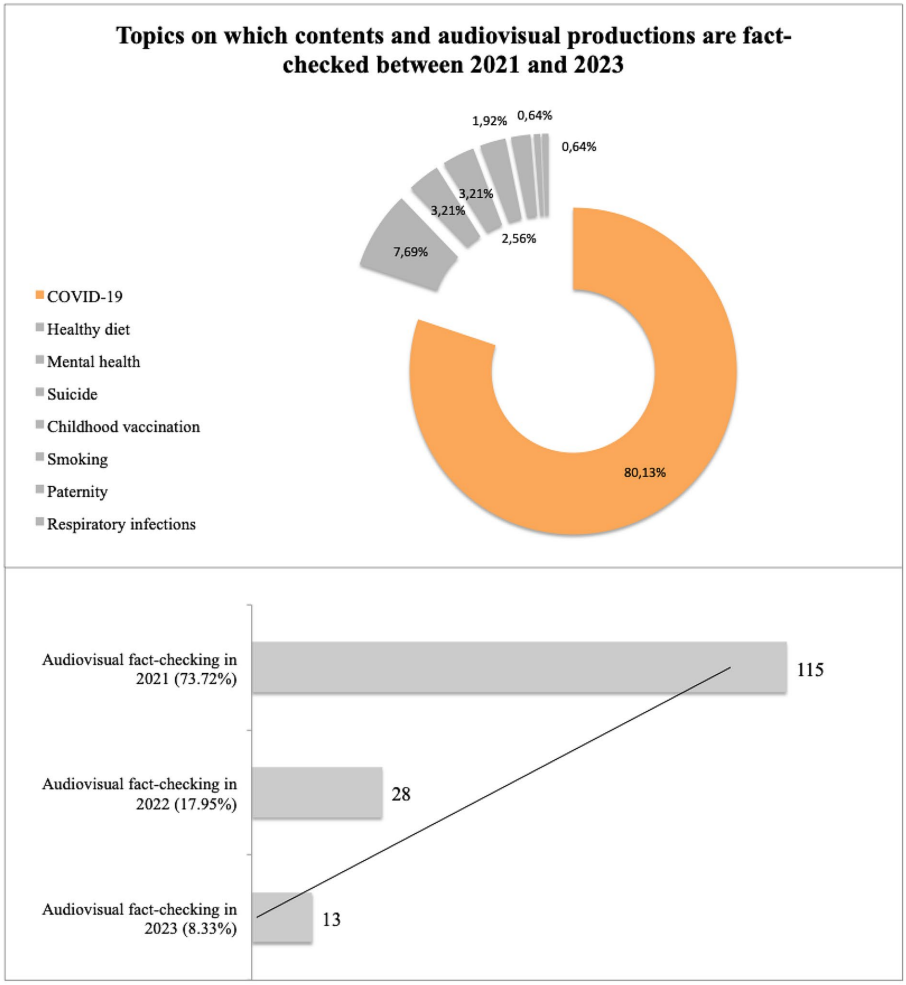

FIGURE 3
Topics on which contents and audiovisual productions are fact-checked between 2021–2023.

TABLE 3 Differences in duration, views and engagement rates between the sample and the videos on health disinformation.

	Total sample	Fact-checking videos	Difference
Average length	782.99"	94.68"	**−688.31"**
Average views	3,172.32	8,281.20	**+5,109.88**
Average likes	7.50	33.14	**+25.64**

Bold value indicates difference between analyzed values.

professional and medical research pieces (as envisioned by Betancourt et al., 2021). This vast audiovisual production played a major role during the COVID-19 pandemic, both providing health advice to the population and releasing reliable information to debunk the lies and false beliefs that were circulating on the Internet (Basch et al., 2020).

It seems plausible to consider that the use that Spanish health authorities made of YouTube during the pandemic has had a direct impact on the content posted on that platform in the following years. This circumstance was to be expected and aligns with the research of Tuñón Navarro and Sánchez del Vas (2022), who already warned that the strategies adopted to fight fake news during the pandemic would influence how public institutions would address disinformation in the future. Thus, between 2021 and 2023, it is still possible to find a variety formats and themes in the videos they produce. Some are longer and with a more basic production, targeting healthcare professionals, while others, under the guise of institutional videos or advertorials, have a propagandist nature. The bulk of the production consists of audiovisual pieces aimed at patients, seeking to educate them on health issues and providing them with advice for the prevention and treatment of various ailments.

In this final group, we find videos that debunk hoaxes and conduct audiovisual fact-checking of health-related content. The descriptive analysis of this material (first objective of this research) indicates that 7.87% (that is, close to 10%) of the videos that Spanish health authorities published on YouTube were intended to address disinformation and provide a scientific perspective on myths and fake news about several diseases.

Initially, they were focused on COVID-19 (particularly, on the vaccination campaign, which took place in 2021), but, as the pandemic subsided, they began to cover other themes, such as mental health,

smoking, suicide, respiratory infections, healthy diet, or child flu vaccine.

The analysis of these videos provides insights into the narratives used and the strategies adopted by Spanish health authorities to fight disinformation through YouTube (second objective). In this regard, nearly all of them are micro-videos, short clips with an average duration of 90 s, a format that fits the fast-paced consumption demanded by the medium (Wang et al., 2022). They usually feature a healthcare professional in the role of an expert and renowned narrator, that is, an expert spokesperson whose knowledge, as referenced in the report *Navigating the Infodemic* by Reuters Institute (Newman et al., 2020), instills confidence and credibility in the general public. Whether talking directly to the camera o simulating an interview with questions and answers, this expert debunks a number of fake news around health issues through engaging, educational and accessible discourse for the general public.

Their aim is to tackle disinformation through social media by leveraging the specific codes of these platforms, as suggested by Davis and Beck (2023). This involves developing content in native formats in terms of appearance, style, and duration, so that users perceive them as content native to the channel and be more receptive to their message.

Not only does the clarity of the presentation stand out in these materials, but also their significant impact. After analyzing the impact of the videos in relation to the rest of the published content (third objective), it is evident that when public health departments publish fact-checking contents, they arise great interest among audiences. They get almost three times the views of a regular video and the number of likes multiplies by 4.5 compared to any other audiovisual piece on their website. Indeed, while the average engagement rate of the analyzed channels is 0.24%, when a health department uploads content aimed at tackling disinformation, this rate increases to 0.40%. These figures are remarkable and allow us to talk about an engaging content, highly valued by audiences. After presenting these arguments, the hypothesis that Spanish health authorities use YouTube to fight hoaxes and disinformation is confirmed. At the same time, new avenues of work are opened up, some of which could expand the scope of analysis and determine whether fact-checking by public authorities also occurs in other government areas, or whether this trend is present in other European countries, and expand the study to the specific reality of each region. From a message reception perspective, it would also be interesting to further explore the impact these videos have on citizens and their qualitative assessment, given their remarkable engagement rates. Other studies with a more complex methodology (including interviews and content analysis) could also be included.

These perspectives fuel the debate over the necessity of having strong institutions leading the fight against disinformation. This paradox is a result of our times and of a society that, despite having access to a vast amount of information, is not well-informed. Therefore, it is essential to effectively promote media literacy among citizens at all levels.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

MV-G: Conceptualization, Funding acquisition, Methodology, Writing – original draft. JP-S: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. A-BF-S: Funding acquisition, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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