Vivat Academia. Revista de Comunicación (2024).
ISSN: 1575-2844

RESEARCH

Received: 12/12/2023 **Accepted**: 03/18/2024 **Published**: 29/04/2024

AND NOW THAT THE GLOBAL HEALTH EMERGENCY ABOUT MPOX 2022-2023 IS OVER: HOW ARE THE HEALTH COMMUNICATIONAL MESSAGES ABOUT THIS DISEASE WITH MOST VIEWS ON YOUTUBE?

Y ahora que terminó la emergencia sanitaria mundial sobre MPOX 2022-2023: ¿cómo son los mensajes comunicacionales en salud sobre esta enfermedad con más visualizaciones en YouTube?

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How to cite this article:

Montero-Liberona, Claudia; Abuín-Penas, Javier, & Vilches-González, Hugo (2024). And now that the global health emergency about MPOX 2022-2023 is over: How are the health communicational messages about this disease with most views on YouTube? [Y ahora que terminó la emergencia sanitaria mundial sobre MPOX 2022-2023: ¿cómo son los mensajes comunicacionales en salud sobre esta enfermedad con más visualizaciones en YouTube?]. *Vivat Academia*, 157, 1-20. http://doi.org/10.15178/va.2021.154.e1535

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ABSTRACT

Introduction: Following the end of the global outbreak of Monkeypox (known as "Monkeypox" or "Mpox") in 2023, the importance of health communication messages cannot be ignored. With the aim of analyzing the information available about Mpox on YouTube, this study examined the main characteristics of the most viewed videos about Monkeypox, examining their reliability, usefulness, intentionality and impact. **Methodology:** For this analysis, YouTube videos about Monkeypox were selected based on the content that had received the greatest number of views. **Results:** Broadly speaking, of the 173 videos detected, among other results, it was found that the majority of the videos are published by content channels of various media outlets (43.93%) and by individuals (37.57%). **Discussion:** The main findings reaffirm previous trends, regarding the great success of YouTube as a health information consumption platform; although it was not possible to identify any specific influencer. **Conclusions:** Although this work is limited to a specific disease, future research is recommended that replicates this methodology in other types of diseases linked to health communication, to check if there are patterns of characteristics found in these videos that are replicated in other pathologies or cases.

Keywords: YouTube, videos, Monkeypox, Mpox, health communication, public health.

RESUMEN

Introducción: Tras el término del brote global de viruela del mono (conocida como "Monkeypox" o "Mpox") en 2023, la importancia de los mensajes comunicacionales en salud no puede desconocerse. Con el objetivo de analizar la información disponible sobre Mpox en YouTube, este estudio examinó las características principales de los vídeos más vistos sobre la viruela símica, examinando su fiabilidad, utilidad, intencionalidad y repercusión. **Metodología:** Para este análisis se seleccionaron vídeos de YouTube sobre la viruela símica en base a los contenidos que habían recibido un mayor número de visualizaciones. **Resultados:** A grandes rasgos, de los 173 vídeos detectados, entre otros resultados, se obtuvo que la mayoría de los videos son publicados por canales de contenido de varios o medios de comunicación (43,93%) y por individuos (37,57%). **Discusión:** Los principales hallazgos encontrados reafirman las tendencias anteriores, respecto al gran uso de YouTube como plataforma de consumo de información en salud; aunque no fue posible identificar algún *influencer* específico. **Conclusiones:** Si bien este trabajo se limita a una enfermedad específica, se recomiendan futuras investigaciones que repliquen esta metodología en otro tipo de enfermedades vinculadas a la comunicación en salud, para comprobar si existen patrones de características encontrados en estos videos, que se repliquen en otras patologías o casos.

Palabras clave: YouTube, vídeos, viruela símica, viruela del mono, comunicación en salud, salud pública.

1. INTRODUCTION

One of the most recent international health emergencies, declared by the World Health Organization (WHO) on July 23, 2022, was the epidemic of monkeypox (also known as simian smallpox, "Monkeypox" or "Mpox"). During its prevalence, this disease constituted such a worrying global threat that many international experts even feared a new and possible "epidemic", comparing it to COVID-19 (Mishra et al., 2023; Islam et al., 2022). The figures for this condition were distressing: 89.308 cases between January 1 and August 9, 2023, including 152 deaths in 113 countries (PAHO-WHO, n.d.). Since the last situation report, between July 14 to August 9, 2023, a total of 1.020 new cases were reported, an increase of 1.2% from the previous total, and three new cases in Trinidad and Tobago (Infobae, 2023). However, despite these figures, on May 10, 2023, WHO declared the end of this health emergency, based on the beginning of a significant decrease in international cases (PAHO-WHO, 2023a).

Considering the almost ten months that the world was under alert, Mpox constituted a disease that was disseminated both in traditional media and through social networks. In the case of the latter, specific studies on its presence were conducted on platforms such as Reddit (Hong, 2023), Google Trends (Shepherd et al., 2023), Facebook (Movahedi-Nia et al., 2023), among others. But, of all the digital platforms, communication and health experts agree that YouTube is one of the main ways to communicate topics of this type, being "a potentially effective medium for disseminating knowledge and supporting health-related activities and decision making by the public" (Haslam et al., 2019, p. 64). Researchers such as Jana et al. (2023), Yapici and Gülseren (2023), and Comeau et al. (2023) have conducted studies on Mpox content disseminated on YouTube, agreeing on the urgency of informing and educating citizens with useful and quality content. Today, almost seven months after the official end of this disease, its presence is still ongoing. Therefore, to dismiss possible future scenarios would still be a serious mistake; even more so, considering that it is the responsibility of all citizens of the world.

Although the international emergency has come to an end, we still do not know whether new cases could continue to emerge. Therefore, and as a starting point, this exploratory study will describe and examine the type of information circulating about Mpox on YouTube, as well as the possible emergence of any influencers, based on those with the highest number of views. To meet these objectives, this article has been organized into the following key sections: (a) theoretical background and previous research on the subject; (b) methodology used; and, finally, (c) results and conclusions of the study conducted.

2. Background on Mpox

Mpox is a zoonotic disease that is transmitted mainly from animals to humans and has the potential to be transmitted from person to person through different routes, such as: direct contact with body fluids such as droplets from the respiratory tract of people through the air; by sexual transmission, mainly sexual intercourse between men

associated with anal and genital lesions, feces and saliva; or cases of vertical transmission, occurring through the placenta from mother to fetus, or by close contact during and after birth with infected persons (Amer et al., 2023).

Among the most common symptoms and signs are skin rashes or mucosal lesions, accompanied by fever, headache, muscle aches, back pain, lack of energy and swollen lymph nodes (PAHO-WHO, 2023b). Other consequences include pneumonia; corneal infection with loss of vision; pain or difficulty swallowing, vomiting and diarrhea; sepsis; heart (myocarditis), rectum (proctitis), genital organs (balanitis) or urinary tract (urethritis); and death (PAHO-WHO, 2023b). People at higher risk of severity and death are immunocompromised patients, people with HIV who are not well controlled or treated, among other cases.

2.1. The importance of YouTube for communicating about Mpox

In health communication, Mpox is a disease that should not be neglected. Although the WHO called to consider clinical, epidemiological, diagnostic and treatment aspects worldwide, communication efforts to warn, inform and educate citizens about this disease cannot be forgotten. International research confirms the importance of social networks in communicating health content (Smailhodzic et al., 2016; Schillinger et al., 2020).

Among the main social networking platforms, YouTube has been highlighted for its high role and social value in communicating about health (Briones et al., 2012; Madathil et al., 2015; Tong et al., 2022). Ten years after its creation, in 2015, YouTube was a recognized platform for the dissemination of health information; although, in parallel, it warned of content that contradicted "reference standards" and projected the possibility that "a non-specialized user [could] find such content" was "relatively high" (Madathil et al., 2015, p. 173). Although at the time it was the most widely used platform in the field of health communication, social organizations already had the ability to deliver messages that contributed to "changing patients' beliefs about controversial topics such as vaccines" (Madathil et al., 2015, p. 173). This was especially important, at the time, this platform was available to meet the need to "design interventions to enable consumers to critically assimilate published information" (Madathil et al., 2015, p. 173). Undoubtedly, one of the main features that stood out the most about this platform was that it allowed both "sharing and disseminating health information in a timely manner; fulfilling a function both as a video repository and as a social networking interface, where users could interact and socialize" (Madathil et al., 2015, p. 174).

During the following years, YouTube continued to lead the international rankings as one of the most popular social networks for the consumption of health information. Specifically, during the COVID-19 pandemic, which started in 2020, YouTube video consumption spiked mostly in the four countries most affected by this disease during its first months: United States, United Kingdom, Spain, and Italy (Martinez et al., 2022). This

upward trend continued to promote high viewing of health content on YouTube. Today, after reviewing the report Digital 2023: Global Overview Report (Kemp, 2023), You Tube is considered the second platform with the most monthly active users in the world, being only surpassed by Facebook. This result is consistent with YouTube's latest "official" statement, which indicates that they have "more than 2 billion monthly connected users" (Kem, 2023).

In relation to monkeypox, YouTube is one of the platforms where this disease has been present since its international outbreak. According to Martins-Filho (2022),

> May 24 [in 2022] saw a sudden spike in searches for monkeypox on YouTube after World Health Organization (WHO) officials stated that the monkeypox outbreak is being spread primarily through sex. Since then, there has been a steady increase in online interest in STDs [for sexually transmitted diseases] on YouTube, with a peak on July 26, three days after WHO declared the current outbreak of monkeypox a Public Health Emergency of International Concern. Despite a decline in Internet searches for information on simian pox, possibly due to a 21% drop in the overall number of cases in epidemiologic week 33 (August 15-21), STI searches on YouTube remained high (p. 1).

Coincidentally, Tong et al. (2022) confirmed that, "YouTube has become increasingly relevant as a source of health information. It thus serves a dual function: as a repository of video content, and as a social networking platform where users acquire information through interactions with content and other users" (p. 3).

Regarding the main studies on the 2023 monkeypox outbreak via YouTube, four papers stand out. First, Jana et al. (2023) examined the availability, characteristics, content, reliability, and quality of YouTube videos on the Mpox outbreak. After using only the word "Monkeypox," in May 2022, the researchers obtained 599 videos, in English language only, with "nearly half of the selected videos on recent simian pox outbreaks containing useful information" (Jana et al., 2023, p. 40). Reviewing only the useful videos, it was found that the contents addressed corresponded to the description of "epidemiological characteristics, transmission, signs and symptoms, and treatment of the disease; while diagnosis and prevention were less discussed. Only 8% of the useful videos focused on disease screening or testing (...); [whereas] delivering a discussion on prevention (...) is more than desirable" (Jana et al., 2023, p. 49).

A second inquiry was conducted by Yapici and Gülseren (2023), who confirmed the importance of using YouTube by governments and specialized health organizations. From a total of one hundred videos inspected, between July 20 and 23, 2022, a sample of 44 videos was obtained. From their studies, the researchers concluded that, "the material uploaded by physicians and health institutions was statistically significantly higher than news agencies" (Yapici and Gülseren, 2023, p. 361); which confirmed the importance of publishing useful content by health professionals, contributing to decrease and ensure

correct information regarding the spread of diseases such as Mpox. This last point should, therefore, be of significant relevance in the face of the emergence of epidemic outbreaks worldwide by health authorities.

A third study in the year 2023 was conducted by Comeau et al., agreeing on the importance of cautioning the content on Mpox disseminated through YouTube. After studying a sample between May and July 2022, both on YouTube and TikTok, Comeau et al. (2023) corroborated the urgency of creating content by specialized physicians based on educational information on Mpox. Likewise, experts supported the urgency that "these platforms can be used as an educational tool and, at the same time, decrease the spread of infections and misinformation" (Comeau et al., 2023, p. 2). And, at the end of 2023, a fourth inquiry was conducted by Bayrak (2023), who assessed the quality of YouTube videos on Monkeypox after May 22, 2022. The results of this latest examination revealed that "the topics of the videos were mainly about symptoms (68.4%), transmission (48.5%), definitions (39.7%), and prevention (33.8%), and as for the sources of the video; news agencies/TV sources (106) uploaded the most videos" (p. 397). Additionally, Bayrak (2023) concluded that "quality video sources, such as doctors and scientific journals, should upload more videos to YouTube for users to access useful/quality information" (p. 397).

In parallel to the studies conducted, last May 11, 2023, the WHO declared the end of the Mpox outbreak. On that occasion, the Director General of this organization warned that "this does not mean that it has ceased to be a public health challenge" (PAHO-WHO, 2023). Moreover, the International Committee of this body considered, at that time, that "these are long-term challenges that would be better addressed through sustained efforts in a transition to a strategy to manage the public health risks posed by monkeypox, rather than the emergency measures inherent in a public health emergency of international concern" (PAHO-WHO, 2023). This last aspect has, moreover, been recently confirmed by the work of León-Figueroa et al. (2024), who, after studying the most recent and reliable sources of information on Mpox in a total of 1.833 studies, confirmed, again, that "people access a variety of information sources to acquire knowledge about Mpox virus infection, with a strong emphasis on online sources such as social networks and the Internet." (p.1). However, these authors did not consider the different platforms or social networks separately, but rather, based on global information, corroborated the importance of social networks and their link to this disease. Specifically, it is now known that the prevalence of the Internet as a source of information on Mpox corresponds to 59% worldwide.

2.2. Influencers in the Mpox

Influencers are commonly conceived as influential opinion leaders in various fields, including health. In that sense, as Pfender et al. (2023) conceptualized, "health influencers in social networks disseminate health information to the public, and at the same time, act as health educators" (p. 1). Moreover, they are recognized as "semi-professional micro-

celebrities on social media platforms, such as YouTube, usually sponsored by brands to promote healthy living products to their followers" (Pfender et al., 2023, p. 1). Experts agree that, as opinion leaders, health influencers have the ability to influence and shape the opinions of their followers on products, services, and social and political issues (Bamakan et al., 2019).

In the specific case of this research, the international literature has used the term "sexual health influencers" (Yang et al., 2021). The latter concept refers to "people whose knowledge and behaviors linked to sexual relationships influence, or are more likely to influence than be influenced by, their peers in their social network" (Wu et al., 2019). Therefore, influencers linked to Mpox are those people who stand out for delivering knowledge that influences other peers, in direct relation to this disease.

In summary, today, after the WHO declared the end of Mpox, and according to our knowledge, no study has investigated what has happened with this disease after its official end date on YouTube, as well as the possible existence of health influencers. Hence, and considering that the first half of 2023 to date has been one of the most key moments, this research proposes to investigate both aspects.

3. OBJECTIVES

The main objective of this research is focused on knowing the main characteristics of the most watched videos on simian smallpox. The aim is to examine their reliability, usefulness, intentionality and impact. To this end, the following specific objectives are proposed:

O1. To know the people responsible for the creation of the most watched videos on smallpox.
O2. To identify the communicative formats used in the videos on smallpox.
O3. Analyze the type of content and what aspects of the disease these videos provide information about.
O4. To study the relationship between the previously analyzed characteristics and the impact obtained in terms of views, likes and comments.

4. METHODOLOGY

For the development of this study, a selection of YouTube videos on simian smallpox was carried out, with the aim of analyzing the contents that had received the highest number of views. Thus, the following search terms in English language were selected: Monkeypox or Mpox, as the most frequent general search terms when wanting to locate information on the disease globally. The terms monkeypox and monkeypox were also incorporated into the search, as the most frequently used search terms in Spanish-speaking countries.

YouTube was the analysis platform selected due to the rise of social networks as an information channel, for 39% of the Spanish population they are the main source of

information (Amoedo-Casais et al., 2023). Specifically, 21% of Spaniards acknowledge using YouTube as a source of information. In addition, multiple studies point to the importance of video in information consumption. According to data from the report by Amoedo-Casais et al. (2023), Spain is the country in southern and western Europe with the highest consumption of news video (71% of those surveyed have watched a news video in the last week), with YouTube being the most popular platform for this purpose. It also highlights that it is an upward trend, as the frequency of daily use of YouTube in Spain in 2023 grew by 34% over the previous year, according to the Social Networking Study recently published by IAB Spain (2023).

In September 2023, a search was carried out for each of these terms and the 50 videos that appear on the first page of YouTube results were selected, using the order offered by the platform that allows you to see the most popular content (by views), since they are the ones that have obtained a greater reach reaching the maximum number of users who perform a search on this topic. Of the resulting 200 videos in total, for the four search terms, duplicities were eliminated.

After discarding the repeated videos, we worked with the database, eliminating from the sample those that were present more than once. Thus, the sample consisted of a total of 173 videos. An analysis template was applied to each video, which included, firstly, the general data on the broadcasting of each video (year of publication and duration in seconds) and its impact (number of views, likes and comments). This type of variable is used to evaluate the impact of the videos (O4).

The videos were also classified according to the type of transmitter or source (O1). To carry out this process, the classification references of Míguez-González et al. (2020), made from other previous classifications such as Basch et al. (2015) or Adhikari et al. (2016), were considered. Finally, a total of six variables were established for this category of analysis:

- Individuals: spanning from youtubers with a large number of followers to particular individuals not publicly recognized.
- Specialized medical sources: including medical channels, medical centers, medical specialists, universities and other types of research centers.
- Public institutions in the field of health.
- Other specific health and/or wellness channels: accounts related to the health field but that cannot be considered specialized medical sources.
- Miscellaneous content or media channels: news, educational, entertainment or general content channels.
- Other: all types of content that could not be included in any of the above categories.

According to the format or type of publication (O2), we also considered the classification of Míguez-González et al. (2020), which was based on the previous work of Tuells et al. (2015) and incorporated the considerations set forth by Nichols (1997). Thus, a total of six

variables were established: news, advertisements, documentaries or reports, interviews, conferences and exclusive material for YouTube.

For the predominant content type (O3), Míguez-González et al. (2020) performed an inductive coding analyzing in four variables: (a) informative content, when it is intended to inform about a phenomenon; (b) testimonial content, when the narration of one or several testimonies predominates; (c) advertising content, when persuasive content or content with a commercial purpose is in the majority; and (d) other, when content different from the previous one is found, such as could be, for example, musical content.

Finally, an attempt was made to identify the tone of the videos using the variables proposed by Míguez-González et al. (2020): neutral, emotional, humorous, warning or other. Although this category is not part of the proposed objectives, it can help to give more context to the type of videos published on monkeypox.

Table 1: *Variables and categories of analysis.*

Category of analysis	Variable	Source
Broadcast and impact	Date of publication, duration in seconds, number of views, number of likes and number of comments.	Data from YouTube.
Broadcaster	Individuals, specialized medical sources, public institutions in the field of health, other specific health and/or wellness channels, various content channels or media, and others.	Míguez-González et al. (2020), based on previous classifications by Basch et al. (2015) and Adhikari et al. (2016).
Subjects covered	Description of the disease, questions and answers about the disease, reports about the disease (news), prevention of the disease, treatment of the disease, care about the disease, related to vaccine(s) about the disease, gender stigmatization linked to the disease, emergence of influencers about the disease or others.	Deductive methodology.
Type of content	Informative, testimonial, advertising or other.	Míguez-González et al. (2020)
Format	News, advertisements, documentaries or reports, interviews, conferences and exclusive material for YouTube.	Míguez-González et al. (2020), from previous classifications by Tuells et al. (2015) and Nichols (1997).
Tone	Neutral, emotional, humorous, warning or other.	Míguez-González et al. (2020).

Source: Elaborated by the authors.

5. RESULTS

The 173 videos analyzed about simian pox on YouTube have a median duration of just over 7 and a half minutes (470.08 seconds), obtaining averages of 764.023 views, 37.767 likes and 1.247 comments. In comparison, the median in duration is 3 and a half minutes (221 seconds), with medians in views, likes and comments of 169,907, 4.161 and 257,

respectively. These differences between the means and medians are due to the fact that two of the videos uploaded by the account "Professor Of How" have 33.590.397 and 19.649.801 views, being the two analyzed contents with more views and also with more likes with 1.994.371 and 1.269.040. Meanwhile, the two videos with the most comments were posted by the "Dr. John Campbell" account, with 16.987 and 11.079 comments.

In contrast to those numbers, a total of 17 videos about simian pox have been identified without any comments, some of the accounts for having this option blocked. In addition, a total of 7 videos with no likes were also found. In this section, the account "Greater Than HIV" stands out, which, despite having up to 3 videos on smallpox with more than one hundred thousand views on average, has no likes or comments.

In addition, the YouTube channel "We Are Greater Than", which posted a total of 7 videos on monkey pox with an average 205.000 views, has the likes and comments disabled for its videos so they could not be counted in the analysis.

It was also observed that most of the videos are published by various content channels or media (43.93%, n=76) and by individuals (37.57%, n=65). These are also the broadcasters with the most views, likes and comments, although in this sense the videos published by individuals obtain better results than those published by various content channels or media (Table 2).

Table 2: *Analysis according to the broadcaster of the videos.*

Broadcaster	Number of videos		Duration in seconds		Number of views		Number of likes		Number of comments	
	Total	%	Total	Average	Total	Average	Total	Average	Total	Average
Individuals	65	37.57%	37.088	570	59.277.764	911,965	3.605.377	55,467	108,315	1.692
Specialized medical sources	3	1.73%	5.166	1,722	648.274	216,091	9.244	3,081	404	134
Public institutions in the field of health.	20	11.56%	6.184	309	2.644.736	132,236	908	56	53	3
Other specific health and/or wellness channels	5	2.89%	1.607	321	1.669.417	333,883	101.976	20.395	5,103	1,020
Various content or media channels	76	43.93%	30.425	400	67.284.185	885,318	2.647.436	34.834	94.220	1,239
Other	4	2.31%	853	213	651.718	162,929	17.830	4,457	1.432	358
TOTAL	173	100 %	81.323	470	132.176.094	764,023	6.382.771	37,767	209.530	1,247

Source: Elaborated by the authors.

In terms of format, it has been observed that more than half of the videos are exclusive material for YouTube (59.54%, n=103). It is also the exclusive material that receives the highest average number of views and likes per video 1.061.082 and 60,902. This type of video has an average duration of 8 minutes (483.5 seconds), which is only similar to that

of reports. In any case, in the number of comments generated per video, it is the report format that has obtained the best data with 1.930 comments per video (Table 3). This could be a clear indication that content generated specifically for a platform such as YouTube tends to obtain better results than adaptations of other formats.

Table 3: *Analysis according to the format of the videos.*

Format	Number of videos		Duration in seconds		Number of views		Number of likes		Number of comments	
	Total	%	Total	Average	Total	Average	Total	Average	Total	Average
News	28	16.18%	3.622	129	6.921.065	247.180	97.467	3.480	25.111	896
Advertisement	4	2.31%	68	17	1.028.834	257.208				
Reports	10	5.78%	4.918	491	6.088.590	608.859	83.061	8.306	19.306	1.930
Interviews	19	10.98%	12.780	672	4.923.944	259.154	93.729	4.933	15.237	801
Conferences	9	5.20%	10.135	1.126	3.922.136	435.792	79.202	8.800	7.661	957
Exclusive material	103	59.54%	49.800	483	109.291.525	1.061.082	6.029.312	60.902	142.212	1.436
TOTAL	173	100 %	81.323	470	132.176.094	764.023	6.382.771	37.767	209.530	1.247

Source: Elaborated by the authors.

When analyzing the type of content, informative videos were the most abundant, representing 71.1% of the sample (n=123). Although in this section there are no clear differences between the average number of views, likes or comments when comparing the types of content, it should be noted that testimonial videos have the capacity to generate more comments per video than other ones (Table 4).

Table 4: *Analysis according to the content of the videos.*

Content	Number of videos		Duration in seconds		Number of views		Number of likes		Number of comments	
	Total	%	Total	Average	Total	Average	Total	Average	Total	Average
Informative	123	71.10%	69.628	566	96.902.481	787.825	4.505.012	37.541	144.025	1.210
Testimonial	13	7.51%	1.901	146	7.845.334	603.487	353.419	27.186	22.140	1.703
Advertisement	5	2.89%	140	28	1.385.664	277.132	2	0.5	0	0.00
Other	32	18.50%	9.654	301	26.042.615	813.831	1.524.338	47.635	43.362	1.355
TOTAL	173	100 %	81.323	470	132.176.094	764.023	6.382.771	37.7678	209.530	1.247

Source: Elaborated by the authors.

The tone of the videos analyzed is mainly neutral (64,74%, n=112). However, it is the contents with warning and humorous tones that obtain the most views 993.073 and 899.930, respectively, and likes 55.051 and 51.272, respectively, on average. In the case of comments, there are few differences between the videos that use one type of tone or another (Table 5).

Table 5: *Analysis according to the tone of the videos.*

Tone	Number of videos		Duration in seconds		Number of views		Number of likes		Number of comments	
	Total	%	Total	Average	Total	Average	Total	Average	Total	Average
Emotional	1	0.58%	15	15	140.586	140.586	0	0	0	0.00
Humorous	29	16.76%	6.011	207	26.097.992	899.930	148.6913	51.272	35.167	1.212
Warning	31	17.92%	17.956	579	30.785.274	993.073	170.6590	55.051	29.308	945
Neutral	112	64.74%	57.341	511	75.152.242	671.002	318.9268	29.530	145.052	1.355
TOTAL	173	100 %	81.323	470	132.176.094	764.023	6.382.771	37.767	209.530	1.247

Source: Elaborated by the authors.

When analyzing the topics covered by the videos on monkeypox posted on YouTube with the most views, it was observed that videos describing the disease (38,73%, n=67) and reports on the disease (21,97%, n=38) are the most discussed. In contrast, videos dealing with gender stigmatization linked to the disease and giving relevance to the sexual orientation of people suffering from monkeypox are the videos that receive the highest number of views (1.086,580), likes (81.472) and comments (2.870) on average, with quite a difference compared to the rest of the topics (Table 6).

Table 6: *Analysis according to the topic of the videos.*

Topic	Number of videos		Duration in seconds		Number of views		Number of likes		Number of comments	
	Total	%	Total	Average	Total	Average	Total	Average	Total	Average
Disease description.	67	38.73%	22.034	328	45.608.173	680.719	2.204.895	34.451	58.843	934
Questions and answers about the disease	19	10.98%	21.503	1,131	15.046.119	791.901	261.056	13.739	36.406	1.916
Disease reports (news)	38	21.97%	22.379	588	11.863.436	312.195	317.366	8.351	48.483	1.275
Disease prevention.	6	3.47%	1.064	177	1.714.163	285.693	34.420	5.736	925	154
Disease treatment.	1	0.58%	464	464	105.955	105.955	6.166	6.166	244	244
Disease prevention and control	1	0.58%	360	360	81.034	81.034	5.403	5403	345	345
Related to disease vaccine(s)	6	3.47%	539	89	707.588	117.931	955	191	263	52
Gender stigmatization linked to the disease.	10	5.78%	5.109	510	10.865.806	1.086.580	814.725	81.472	28.705	2.870
Emergence of influencers on the disease	3	1.73%	590	196	53.616	17.872	6.336	2.112	315	105
Other	22	12.72%	7.281	330	46.130.204	2.096.827	2.731.449	124.156	34.998	1.590
TOTAL	173	100.00%	81.323	470	132.176.094	764.023	6.382.771	37.767	209.530	1.247

Source: Elaborated by the authors.

Finally, regarding the presence of an influencer in Mpox, the results did not yield any specific findings in this regard. In other words, none of the individuals that could be categorized in this specific area were found to be present.

6. DISCUSSION AND CONCLUSIONS

The main findings found in this research confirm, in general terms, the trends observed in previous studies regarding the use of YouTube as a platform for the consumption of information, also in the field of health. The amount of content analyzed on monkeypox, both in Spanish and English, as well as the reach that these videos have had in terms of views with an average of more than half a million views and a total of 17 videos exceeding one million views show that it is a source of information on health topics such as monkeypox.

In relation to the first objective (O1), it can be concluded that, although the user will find a significant diversity in terms of formats, broadcasters and types of content, the most relevant videos belong mainly to individuals or generic media. Specialized medical sources, public institutions in the field of health and other specific health and/or wellness channels barely account for 16.18% of the videos analyzed. In addition, they are the ones that receive the lowest reach in terms of views and the lowest interaction in terms of likes and comments, also far from the results obtained by individuals and generic media. These results are consistent with the conclusions obtained by Míguez-González et al. (2020), Adhikari et al. (2016) or Basch et al. (2017) in their analyses of content related to different types of cancer.

As expected, the most commonly used communicative format is YouTube-only material (O2). As expected, native content generated ad hoc for the platform is in the majority and also obtains better results in terms of impact at all levels: views, likes and comments. When crossing the data between the different variables, it has been found that specialized medical sources, public institutions in the field of health and other specific health and/or wellness channels are the broadcasters that generate the least exclusive material for YouTube, this being barely 19.23%. It would be highly recommended that these types of sources take into account exclusive content to try to reach a greater number of people.

The type of informative content with a neutral tone is the most present (O3). In any case, in none of the cases are the contents that meet these characteristics the ones that obtain the greatest repercussion or interaction. Warning and humorous contents are by far the most consumed videos on YouTube about monkeypox. This could be mainly due to the fact that social networks are primarily a space for entertainment.

While videos describing the disease or news about it were the most discussed, it has been found that gender stigmatization linked to the disease, especially affecting the LGTBIQ+ community, have been the videos with the greatest impact and interaction. In this sense, a series of well-defined variables have been identified that have obtained a higher impact than the rest in the videos on smallpox (O4). On the one hand, the topic of gender stigmatization linked to the disease is the topic that generates the greatest impact. Similarly, videos with a humorous and warning tone receive better averages of views, likes and comments, as well as material generated exclusively for the platform and

content created by individuals or by the media. These types of variables have significantly influenced the videos on smallpox published on YouTube and should be taken into account when generating content related to public health issues.

On the other hand, it could be concluded that, while broadcasters specialized in health issues seem to make an effort to offer videos with a neutral tone and using an informative type of content, YouTube users prefer content with humorous or warning tones and generated by non-specialized sources.

This research is limited to the specific case of one disease, simian smallpox, thus future investigation is recommended to replicate this methodology in other types of diseases to see if the patterns of characteristics of the videos are repeated in a different context and if the conclusions obtained regarding the relationship between these characteristics and the impact of the videos are applicable in other types of public health situations.

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AUTHORS' CONTRIBUTIONS, FUNDING AND ACKNOWLEDGMENTS

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Funding: This research received no external funding.

Conflict of interest: None

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ISSN: 1575-2844