



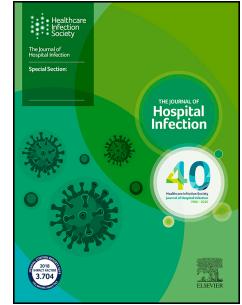
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YouTube and 2022 Monkeypox outbreak: opportunities for awareness and infection control

Yeimer Ortiz-Martínez, Lina M. Galvis-Cataño, Daniela Arias-Rodríguez, Cristhian Romero-Dager, D. Katterine Bonilla-Aldana, Alfonso J. Rodriguez-Morales



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1 YouTube and 2022 Monkeypox outbreak: opportunities for awareness and infection control

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3 **Yeimer Ortiz-Martínez,^{1,2} Lina M. Galvis-Cataño,² Daniela Arias-Rodríguez,² Cristhian**
4 **Romero-Dager,² D. Katterine Bonilla-Aldana,^{3,5,6} Alfonso J. Rodriguez-Morales.^{3,4,5,6}**

5
6 ¹Department of Internal Medicine, Universidad Industrial de Santander, Bucaramanga, Colombia.

7 ²Faculty of Health Sciences, Universidad de Sucre, Sincelejo, Colombia.

8 ³Faculty of Medicine, Institución Universitaria Visión de las Américas, Pereira, Risaralda,
9 Colombia.

10 ⁴Grupo de Investigación Biomedicina, Faculty of Medicine, Fundación Universitaria Autónoma
11 de las Américas, Pereira, Risaralda, Colombia.

12 ⁵Master of Clinical Epidemiology and Biostatistics, Universidad Científica del Sur, Lima, Peru.

13 ⁶School of Medicine, Universidad Privada Franz Tamayo, Cochabamba, Bolivia.

14 15 **Conflict of interest:**

16 The authors declare no potential conflict of interest with respect to the authorship and/or
17 publication of this article.

18
19
20 A global outbreak of human monkeypox (MPX) is concerning.¹ Cases have been reported in more
21 than 40 countries, sparking widespread interest, and resulting in a possible increase in Internet
22 searches, including video-sharing websites such as YouTube, a popular platform for streaming,
23 saving, and uploading video content.² YouTube is one of the most popular sources because it is
24 free and easy to access and provides essential opportunities for medical information dissemination.
25 However, the lack of regulation over incorrect or misleading content creates significant
26 challenges.³ Previously, the use of YouTube as a source of information has been investigated for
27 other epidemics.³⁻⁵ Therefore, we analyzed the quality of available information about monkeypox
28 from the most widely viewed YouTube videos.

29

30 On May 26, 2022, a search was conducted on the YouTube website (www.youtube.com) using the
31 term 'monkeypox'. The 100 most viewed videos were reviewed and analyzed using the default'
32 view count' filter. Exclusion criteria included non-English videos, duplicate videos, and videos
33 with absent audio. Two independent reviewers classified videos as 'useful', 'misleading', or
34 'neither', crossing-match the publications and guidelines from the CDC and the World Health
35 Organization (WHO). The sources were classified as healthcare/public health individuals,
36 academic/health institutions, talk shows, news agencies, or independent users. The content was
37 categorized into six overlapping categories: epidemiology, forms of transmission, symptoms,
38 diagnostic testing, treatment, and prognosis. An analysis of associations among the three
39 independent variables ('misleading' videos, 'useful' videos, and 'neither' videos) was performed,
40 and continuous and categorical variables were compared using the student t-test and Chi-square
41 test, respectively. The statistical analysis was performed using the STATA v.14.0 software
42 (StataCorp LP, College Station, TX).

43
44 The videos have been watched a total of 23,000,533 times, and the number of views per video
45 ranged between 69,556 and 1,794,685. Among the 100 videos, non-English-language videos
46 ($n = 31$) and duplicates ($n = 2$) were excluded. A total of 67 videos were included in the study. Of
47 these 67 included videos, 46 (68.6%) videos were classified as useful, 12 (17.9%) videos were
48 classified as misleading, and 8 (11.9%) videos were classified as neither useful nor misleading.

49
50 Most videos were posted by news channels ($n = 28$, 41.7%), followed by independent users ($n = 14$,
51 20.8%), talk shows ($n = 11$, 16.4%), healthcare/public health individuals ($n = 11$, 16.4%), while
52 only two (2.9%) of these were from academic/health institutions. Videos uploaded by
53 healthcare/public health individuals were all classified as useful. Excluding the 'neither' videos,
54 independent users were more likely to post misleading videos than useful videos (66.6% vs
55 10.8%, $p < 0.001$) (Table 1). Misleading videos had a higher number of likes when compared to
56 useful videos ($p = 0.012$) and the majority presented messages of conspiracy theories about the
57 fake outbreak created by international companies to sell vaccines and that monkeypox is a disease
58 only transmitted through sexual intercourse and it is exclusive to LGTBI people and men who have
59 sex with men.

60

61 Previous studies have shown the association between general knowledge of infectious diseases
62 and infection control,⁶ although MPX is not a new disease in the world, cases are occurring in non-
63 endemic countries, and healthcare workers also often use social media as a source of information,⁷
64 YouTube is a platform with significant potential in infection control, especially in raising
65 awareness of forms of transmission and prevention methods in the community and the hospital
66 environment.

67
68 Although the misinformation was only 11.9% of included videos, the risk of spread of misleading
69 content is latent on YouTube; therefore, it should be implemented a medical misinformation policy
70 in the early stages of the outbreak, as regulated in May 2020 for COVID-19,⁸ with which YouTube
71 removed the content that contradicted WHO or local health authorities' medical information.

72
73 YouTube is an increasingly crucial source of medical information during the 2022 monkeypox
74 outbreak and generally is a valuable source of information about monkeypox. However, the
75 platform's open nature could quickly spread misleading content, especially those uploaded by
76 independent users. Monitoring of YouTube content by healthcare institutions and experts could
77 help infection control and reduce the spread of potentially harmful information in the event of
78 further global disease outbreaks, as occurs with monkeypox.

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110 **Table 1.** Comparison of the characteristics of the monkeypox videos on YouTube is classified as
 111 useful and misleading.

<i>Variable</i>	Useful (n = 46)	Misleading (n = 12)	<i>p</i> value
Number of views, median (IQR)	142,690 (98,311-192,977)	121,402 (89,108-209,078)	0.686
Number of likes, median (IQR)	4,400 (1,900-9,100)	8,950 (6,950-18,000)	0.012
Number of days on YouTube, median (IQR)	5 (3-6)	4 (2-6)	0.144
Source			
Healthcare/public health individuals, n (%)	11 (23.91%)	0 (0%)	0.097
Academic/health institutions, n (%)	2 (4.35%)	0 (0%)	1
Talk shows, n (%)	6 (13.04%)	3 (25%)	0.374
News agencies, n (%)	22 (47.83%)	1 (8.33%)	0.019
Independent users, n (%)	5 (10.87%)	8 (66.67%)	<0.001
Content area			
Epidemiology, n (%)	40 (86.96%)	1 (8.33%)	<0.001
Forms of transmission, n (%)	32 (69.57%)	11 (91.67%)	0.156
Symptoms, n (%)	37 (80.43%)	2 (16.67%)	<0.001
Diagnostic testing, n (%)	5 (10.87%)	0 (0%)	0.573
Treatment, n (%)	8 (17.39%)	0 (0%)	0.185
Prognosis, n (%)	20 (43.48%)	4 (33.33%)	0.744

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