Global View on Monkeypox Epidemic: A Youtube Study

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Abstract

Aim: We aimed to evaluate the quality of the videos on Youtube about Monkeypox, the precision of the content, and the video features by using various tools.

Methods: Videos about Monkeypox were searched on YouTube™ (http://www.youtube.com) on 22/05/2022. After sorting by relevance for the search term "Monkeypox," the first 200 videos were recruited and saved as a file for later consideration. The browsing history was deleted before the search so that it would not be affected by previous searches. The Global Quality Scale (GQS) was used to evaluate the quality of the videos. A p value of <0.05 was considered statistically significant.

Results: Video topics were mainly about symptoms (68.4%), transmission (48.5%), definitions (39.7%), and prevention (33.8%), and as for the video sources; News agencies/ Tv sources (106) uploaded the most videos. While the GQS and Discern median values of the videos were 2 and 3, respectively, they were 2 and 3 for useful videos; and both 1 for misleading videos. Misleading videos had significantly and consistently lower GQS and Discern scores (1; p=0.001). Most of the videos were of USA (64) origin. While users upload the most useful and misleading videos from the USA, uploads were made from 17 different countries.

Conclusions: It is necessary to prefer useful videos for accessing medically accurate and quality information. Quality video sources such as Physicians and Scientific Journals should upload more videos to Youtube for users to access useful/quality information.

Keywords: *Monkeypox; Youtube™; videos; The Global Quality Scale; quality information.*

1. Introduction

Monkeypox disease is a zoonotic disease caused by the Monkeypox virus, a member of the Orthopoxvirus family. It is similar to smallpox, and patients are often misdiagnosed as chickenpox.[1] After an incubation period of 10-14 days; malaise, chills, fever, and reactive lymph nodes emerge. These are prodromal signs 1-3 days before the rashes appear. These may be accompanied by sore throat, cough, shortness of breath, back, and headache.[2] Macular rashes ashes characteristically start on the trunk and may spread to all body parts as they become more severe. The disease is contagious for one week after the rashes without PCR being positive.[2-3] Between the 2nd and 4th weeks, the lesions change the form of papules-vesicles-pustules[3], and healing occurs spontaneously if no secondary infections develop.

Pregnant women, children, and immunosuppressed individuals are more prone to secondary infections. Nevertheless, a chronic process should not be overlooked in major secondary infections such as eye infections, pneumonia, and encephalitis.[4] Monkeypox was usually present in Central and Western Africa, and so far caused sporadic infections. However, with its emergence as an outbreak outside the African continent on May 7, 2022, it became a source of concern that now affects the whole world. While not recovering from the effects of an ongoing COVID-19 pandemic, the world is facing great challenges, with thousands of monkeypox cases emerging globally.[5-6] Such health crises affect daily life, including changing daily routines and canceling important activities.[7]

Since more than 1 billion people worldwide use Youtube with its extensive and rich archive, Youtube has become a popular source of information about diseases and health services and an assistant in health-related decision-making processes.[4-8-9] A wide variety of users, including physicians and medical students, non-medical healthcare professionals, non-profit organizations, TV/media sources, and even commercial organizations, upload videos to YouTube. So, video uploaders are a very heterogeneous community; thus, the quality of information varies widely in all aspects, which can sometimes correlate with video features. The essential concern about

YouTube from a public health perspective is that; it has a public video upload policy without a control mechanism.[9]

The monkeypox epidemic is a brand-new situation; with its emergence in the shadow of an ongoing pandemic, people are more in need of information. The Covid Pandemic has impaired people's sense of concern and reasoning.[8] Video sources may upload an incorrect or low-quality video about Monkeypox, and biased or inaccurate information can easily be spread. The possibility of spreading false information should be carefully considered and put on the agenda, mainly to prevent an unduly increase in public groups who are worried about the new health condition. Many studies are already evaluating YouTube content on various subjects, such as air pollution, syphilis, vesicoureteral reflux, and scoliosis.[4-9-10-11] Previous studies have evaluated whether information on YouTube offers an excellent educational or awareness-raising opportunity to the public, the accuracy of the content, whether it is biased or coherent, video quality, and its characteristics. Therefore, we aimed to evaluate the quality of the videos on Youtube about Monkeypox, the precision of the content, and the video features by using various tools.

2. Materials and methods

Videos about Monkeypox were searched on YouTube™ (http://www.youtube.com) on 22/05/2022. After sorting by relevance for the search term "Monkeypox," the first 200 videos were recruited and saved as a file for later consideration. The browsing history was deleted before the search so that it would not be affected by previous searches. Off-topic, non-English, duplicate videos were excluded from the study.

2.1.Video Parameters
The videos' upload date, duration, number of views, comments, and likes were recorded. Then, based on the total number of days the video has been on YouTube, comments per 1000 views and daily likes for each video were calculated and used in some comparisons. Finally, the total number of days was calculated based on the time from the video upload to the search date.

2.2. Video Content
Symptoms, transmission, definitions, prevention, causes, treatment, complications, and risk factors were examined.

2.3. Video Sources
Sources were classified as News agencies/TV, Independent users/blogs, Physicians, Organizations/Associations, Non-physician health personnel, and Scientific journals.

2.4. Auditing of Quality and Reliability
The Global Quality Scale (GQS) was used to evaluate the quality of the videos. This scale ranges from 1 to 5 points on the GQS tool designed by Bernard. A video score of 4 or 5 points is considered high quality, 3 points medium quality, and 1- or 2-points low quality. The modified DISCERN tool (DS) was used to score the reliability of the videos. In this scale, adapted by Singh, the distinctiveness score ranges from 0 to 5 points. A high score on this scale indicates high reliability. Each yes answer is given a point and consists of 5 questions.[12-14] (Table 1).

The information quality and reliability of the videos were independently evaluated by two medical doctors. In case of any disagreement between the referees, the opinion of the third researcher was sought.

2.5. Statistical Analysis
The data obtained in the study were statistically analyzed using SPSS version 15 software. Cohen's kappa coefficient was used for inter-rater agreement. The conformity of data to normal distribution was evaluated with the Kolmogorov-Smirnov test. The Shapiro Wilk (for non-normally distributed data) test was used to compare video parameters between quality groups. A p value of <0.05 was considered statistically significant.

3. Results

After applying the exclusion criteria (32 non-English, 22 repetitions, 10 off-topic videos), all the remaining 136 videos were evaluated. Kappa values for information quality and information reliability were found to be 0.74 and 0.78, respectively, in the evaluation of agreement between observers. Video topics were mainly about symptoms (68.4%), transmission (48.5%), definitions (39.7%), and prevention (33.8%), and as for the video sources; News agencies/ Tv sources (106) uploaded the most videos (Table 2 and 3). While the GQS and Discern median values of the videos were 2 and 3, respectively, they were 2 and 3 for useful videos; and both 1 for misleading videos. Misleading videos had significantly and consistently lower GQS and Discern scores (1; p=0.001). The vast majority (121) of the videos were categorized as misleading. Median video duration was 2.92 minutes; the number of days on YouTube was 2 days; the view count was 10215.50; views/number of days on YouTube was 4851; likes/1000 views were 12.87, and comments/1000 views were 12.37.

Table 1
Quality and reliability assessment tool

Global Quality Scale tool
1.Poor quality, poor flow, most information missing, not helpful for patients
2.Generally poor, some information given but of limited use to patients
3.Moderate quality, some important information is adequately discussed
4.Good quality good flow, most relevant information is covered, useful for patients
5.Excellent quality and excellent flow, very useful for patients

Modified DISCERN reliability tool
1.Are the aims clear and achieved?
2.Are reliable sources of information used?
3.Is the information presented balanced and unbiased?
4.Are additional sources of information listed for patient reference?
5.Are areas of uncertainty mentioned?

Table 2
Distribution of the video contents, n (%)

Video contents*	n	%
Symptom	93	68,4
Transmission	66	48,5
Definition	54	39,7
Prevention	46	33,8
Causes	36	26,5
Treatment	24	17,6
Complication	18	13,2
Risk factor	14	10,3
Diagnosis	6	4,4

*There is more than one topic, n: number, %: percentage

Table 3

GQS and Discern Analysis

	Total (n =136)	Useful (n=121)	Misleading (n=15)	p value
Variables				
Video duration (min)	2,92 (0,40-158,58)	2,90 (0,40-158,18)	2,97 (0,55-72,45)	0,326
Number of days on YouTube	2 (1-1689)	2 (1-1689)	2 (1-1658)	0,913
Views	10215,50 (212-1562051)	9438 (304-526249)	36302 (212-1562051)	0,023
Views/day	4851 (0,63-781025,5)	4302 (0,63-391563)	12100 (48,26-781025,5)	0,088
Likes/1000 views	12,87 (3,22-149,88)	12,58 (3,22-149,88)	35,81 (4,50-133,05)	0,007
Comments/1000 views	12,37 (0-79,80)	12,37 (0-79,80)	9,57 (0-37,61)	0,914
Quality and reliability scores				
GQS*	2 (1-5)	2 (1-5)	1 (1-2)	<0,001
DISCERN**	3 (0-5)	3 (1-5)	1 (0-1)	<0,001
Video source				
News agencies/TV	106	97	9	
Independent users/blog	15	9	6	
Physician	11	11	0	
Organization/association	2	2	0	
Non-physician health personal	1	1	0	
Scientific journal	1	1	0	
Country				
USA	64	57	7	
India	16	15	1	
Canada	12	9	3	
Australia	11	11	0	
England	9	8	1	
South Africa	4	3	1	
Nigeria	4	4	0	
Singapore	3	3	0	
Israel	3	3	0	
Turkey	2	1	1	
Philippines	2	2	0	
Others (Germany, China, France, Qatar, Norway, New Zealand)	6	5	1	

Data presented as number or median (minimum–maximum)
**DISCERN modified DISCERN score, GQS Global Quality Scale score

Video lengths (2.90 and 2.97, respectively p=0.326), number of days on YouTube (2 and 2, respectively p=0.913), and views/number of days on YouTube (4302 and 12100, respectively p=0.088) were not different according to the categories of useful and misleading. However, view counts (9438 and 36302, respectively, p=0.023) and likes/1000 views (12.58 and 35.81 p=0.007, respectively) differ statistically according to the useful and misleading categories (Table 3).

Sources, especially new agencies/TV uploading the most videos, uploaded useful videos at a high rate; physician/non-physician health personnel, organizations/associations, and scientific journals did not upload any misleading videos. Independent users/blog sources proportionally uploaded the most misleading videos. Most of the videos were of USA (64) origin. While users upload the most useful and misleading videos from the USA, uploads were made from 17 different countries. Most of the videos originated from the following 5 countries, mainly from the USA: USA (64), India (16), Canada (12), Australia (11), and England (9) (Table 3).

4. Discussions

In the 21st century, also called the age of technology, the internet has become available everywhere in the world. YouTube is one of the most preferred video platforms since it is free and appeals to large audiences in a short time. Moreover, during the pandemic and

endemic periods, deadly diseases that directly affect global health spread rapidly; an increase can be expected in the use of YouTube as a source of medical information to obtain information quickly and easily.

The presence of videos containing medical information does not mean that YouTube always provides high-quality information useful to society. In addition to quality/useful videos, there are also poor/misleading videos on the platform. Poor quality/misleading videos on the Youtube platform during epidemic periods can create an environment of anxiety and panic due to the spread of false information in society and may cause undesirable results. For this reason, scanning and evaluating YouTube-based videos during the Monkeypox epidemic period will be socially beneficial.

Monkeypox-related videos included in our research were found to be highly beneficial (88.9%). News agencies/TV and Physician were the primary sources of useful videos. The main source of misleading videos was independent users/blogs.

According to the results of GQS and DISCERN regarding the quality and reliability of the videos, the average score of Useful videos was higher than the misleading videos. Some reviewed studies reported that 67% of videos regarding the COVID-19 pandemic, 70.3% of videos regarding the Zika virus, and 61.3% of videos regarding the H1N1 virus were beneficial.[15-17] Video studies which reported low benefit rates are also present in the literature .[18-19] The difference in the rates in the literature may be due to many variable factors. We interpret studies with a high benefit rate as focused on disease. Since our research also aimed at disease-focused screening, the video content was uploaded in higher numbers by competent people, and the benefit rate was higher.

The primary sources of useful videos in our research were News agencies/TV and Physicians, while the main proportional source of poor quality and misleading videos was independent users/blogs. When we look at the source countries, although the USA was high in the number of useful videos, it needed to be proportionally in the first place. We found that videos from Australia were 100% useful. While the main source of useful videos during the Zika virus pandemic is News agencies/TV, the source of low-quality videos has been identified as independent users[15]. In their study, Sahin et al. reported that independent people's videos were of low quality, similar to our results.[20] According to the studies in the literature and the current study results, the sources that upload the videos have crucial importance in the reliability of Youtube for medical purposes. As for Monkeypox, Physicians and News agencies/TV should be known as high-quality video sources. In our research, Scientific Journals uploaded a few high-quality and useful videos. Therefore, Scientific Journals as a source of videos should be supported in video uploading and should increase video production.

Our other major evaluation was on view counts and like/1000 views. Useful videos had significantly higher view counts as compared to misleading videos. However, for the number of likes per 1000 views, the number of likes of the misleading videos was significantly higher. Likewise, misleading/poor-quality videos were reported to have more views in video-based studies regarding the Zika virus and H1N1.[16-17] Although useful videos have a high number of views, it should be noted that misleading videos have a higher rate of likes; YouTube videos with a high number of likes on Monkeypox should be watched carefully.

4.1. Limitations

Studies that focus on YouTube videos may have limitations. Although three physicians evaluate the videos, the process may contain subjectivity. At the time of our study, 200 videos were recruited, and 136 videos were evaluated after exclusion criteria. Since Youtube is a dynamic platform, the number of videos, comments, and views may vary. Only English-language videos were scanned. Since a video search would be affected by past searches, to minimize it, the entire list of historical searches has been cleared before the investigation. Finally, our sample size can be counted as another limitation.

5. Conclusions

Although the number of useful and quality videos was high, misleading videos received higher likes. Therefore, it is necessary to prefer useful videos for accessing medically accurate and quality information. Thus it is crucial to select the appropriate video sources. Quality video sources such as Physicians and Scientific Journals should upload more videos to Youtube for users to access useful/quality information.

References

1.Sklenovská N, Van Ranst M. Emergence of Monkeypox as the Most Important Orthopoxvirus Infection in Humans. Front Public Health. 2018;6:241. Published 2018 Sep 4.
https://doi.org/10.3389/fpubh.2018.00241

2.Nalca A, Rimoin AW, Bavari S, Whitehouse CA. Reemergence of monkeypox: prevalence, diagnostics, and countermeasures. Clin Infect Dis. 2005;41(12):1765-1771.
https://doi.org/10.1086/498155

3.Fenner F, Henderson DA, Arita I, et al. Human monkeypox and other poxvirus infections of man. Smallpox and its Eradication. Geneva, Switzerland: World Health Organization, 1988:1287-320.

4.Toksoz A, Duran MB. Analysis of videos about vesicoureteral reflux on YouTube. J Pediatr Urol. 2021;17(6):858.e1-858.e6.
https://doi.org/10.1016/j.jpurol.2021.10.006

5.https://www.ecdc.europa.eu/en/news-events/monkeypox-situation-update#:~:text=Since%20the%20start%20of%20the.Western%20Balkan%20countries%20and%20Turkey. (ECDC. 2022. Access date:7 October 2022.)

6.Okyay RA, Bayrak E, Kaya E, et al. Another Epidemic in the Shadow of Covid 19 Pandemic: A Review of Monkeypox. EJMO 2022;6(2):95–9.
https://doi.org/10.14744/ejmo.2022.2022

7.Rodríguez-Rey R, Garrido-Hernansaiz H, Collado S. Psychological Impact and Associated Factors During the Initial Stage of the Coronavirus (COVID-19) Pandemic Among the General Population in Spain. Front Psychol. 2020; 11: 1540.
https://doi.org/10.3389/fpsyg.2020.01540

Drozd B, Couvillon E, Suarez A. Medical YouTube Videos and Methods of Evaluation: Literature Review. JMIR Med Educ. 2018; 4(1): e3.
https://doi.org/10.2196/mededu.8527

8.Staunton PF, Baker JF, Green J, Devitt A. Online Curves: A Quality Analysis of Scoliosis Videos on YouTube. Spine (Phila Pa 1976). 2015; 40(23): 1857-61.
https://doi.org/10.1097/BRS.0000000000001137

9.Sahin M, Kaya E. Understandability and Actionability of Education Materials About Syphilis on YouTube. Sexuality Research and Social Policy, 2022; 1-7.

10.Kaya E, Sahin M. YouTube as a Source of Information About Air Pollution. Aerosol Sci Eng 2022; 6: 155–60.
https://doi.org/10.1007/s41810-022-00129-6

11.Bernard A, Langille M, Hughes S, et al. A systematic review of patient inflammatory bowel disease information resources on the World Wide Web. Am J Gastroenterol. 2007; 102(9): 2070-7.
https://doi.org/10.1111/j.1572-0241.2007.01325.x
12.Kocyigit BF, Nacitarhan V, Koca TT, Berk E. YouTube as a source of patient information for ankylosing spondylitis exercises. Clin Rheumatol. 2019;38(6):1747-1751.
https://doi.org/10.1007/s10067-018-04413-0
13.Singh AG, Singh S, Singh PP. YouTube for information on rheumatoid arthritis--a wakeup call?. J Rheumatol. 2012; 39(5): 899-903.
https://doi.org/10.3899/jrheum.111114
14.Khatri P, Singh SR, Belani NK, et al. YouTube as source of information on 2019 novel coronavirus outbreak: a cross sectional study of English and Mandarin content [published correction appears in Travel Med Infect Dis. 2020 Jul - Aug;36:101821]. Travel Med Infect Dis. 2020; 35: 101636.
https://doi.org/10.1016/j.tmaid.2020.101636
15.Bora K, Das D, Barman B, et al. Are internet videos useful sources of information during global public health emergencies? A case study of YouTube videos during the 2015-16 Zika virus pandemic. Pathog Glob Health. 2018; 112(6): 320-8.
https://doi.org/10.1080/20477724.2018.1507784
16.Pandey PN, Singh M, Sood A, Singh G. YouTube as a source of information on the H1N1 influenza pandemic. Am J Prev Med. 2010; 38: e1–e3.
https://doi.org/10.1016/j.amepre.2009.11.007
17.Shungu N, Haley SP, Berini CR, et al. Quality of YouTube Videos on Prostate Cancer Screening for Black Men. J Am Board Fam Med. 2021; 34(4): 724-31.
https://doi.org/10.3122/jabfm.2021.04.200632
18.Villafañe JH, Cantero-Tellez R, Valdes K, Usuelli FG, Berjano P. Educational Quality of YouTube Videos in Thumb Exercises for Carpometacarpal Osteoarthritis: A Search on Current Practice. Hand (N Y). 2018; 13(6): 715-9.
https://doi.org/10.1177/1558944717726139
19.Şahin A, Şahin M, Türkcü FM. YouTube as a source of information in retinopathy of prematurity. Ir J Med Sci. 2019; 188(2): 613-7.
https://doi.org/10.1007/s11845-018-1902-2