

Assessment of The Quality And Reliability of Youtube Video Content Related to the Loss of Smell

Cem Çelik¹, Yavuz Atar², Ömer Kumaş¹, Hasan Sami Bircan¹, Ziya Saltürk³

¹University of Health Sciences, Prof. Dr. Cemil Tascioglu City Hospital, Department of Otorhinolaryngology, Istanbul, Turkiye

²Acibadem Maslak Hospital, Department of Otorhinolaryngology, Istanbul, Turkiye

³Uskudar Univesity Faculty of Medicine, Department of Otorhinolaryngology, Istanbul, Turkiye

ORCID ID: C.Ç. 0000-0002-8538-2081; Y.A. 0000-0003-4496-6408; Ö.K. 0000-0002-4007-1044; H.S.B. 0000-0002-2918-1947; Z.S. 0000-0001-6722-7865

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ABSTRACT

Objective: Video-sharing sites have recently become a popular means of obtaining medical information. This study aims to analyze the English content quality and reliability of YouTube videos as a source of information on the loss of smell.

Material and Methods: A search was made on YouTube using the keyword "loss of smell," "anosmia" and "olfactory dysfunction". A total of 180 videos, 60 from each category, were reviewed. Ninety videos were excluded due to exclusion criteria, and a total of 90 videos were reviewed.

Results: Videos in 5 categories (physician-based, social/professional organizations, patients, health-related websites, and academic origins) were evaluated with DISCERN, GQS, and JAMA scores. Physician-based videos had higher scores for quality and reliability than other videos.

Conclusions: YouTube is a universal information tool growing in popularity in the medical field. Physician-based videos on the loss of smell are better in terms of quality and reliability and may be more informative.

Keywords: Anosmia, loss, olfactory, smell, video, YouTube

INTRODUCTION

The internet has revolutionized the way people access information, and the field of health is no exception. The internet is now a ubiquitous source of information for people seeking health-related information, with up to 80% of internet users seeking health information online (1). Patients and caregivers alike now have access to an array of written and visual information about diseases and treatments (2).

Google is the world's most popular search engine, and YouTube is the second most popular website globally and the most popular video-sharing platform. YouTube is increasingly being used as a source of health information by users globally (3). Unlike traditional media, YouTube provides an open platform for anyone to upload content, and it has become a hub for health-related videos. Users can upload videos on a range of health topics, including symptom management, disease prevention, and treatment options. With over 500 hours of videos uploaded

every minute and over 2 billion monthly visitors, YouTube has become an essential source of information for many people (4).

However, studies have shown that many websites that provide health-related information contain inappropriate and misleading content (5). This is a concern for many health professionals, as users risk being misinformed by the information presented on YouTube. The lack of a scientific review process for uploading medical content on YouTube is a significant concern. The risk of misinformation poses a challenge to individuals seeking to understand their health issues better and can lead to wrong decisions regarding their healthcare.

The sense of smell and taste are essential for survival, as they work interconnectedly to help us perceive flavors and identify potentially dangerous substances. Therefore, any reduction in their function can significantly affect an individual's quality of life (6). Loss of smell and taste can occur due to various reasons, including aging, neurological diseases, dietary deficiencies,

Corresponding Author: Cem Çelik E-mail: ceemcelik1@gmail.com

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hormonal irregularities, neoplastic diseases, drug side effects, and infectious diseases (7). While around 1-2% of the global population experiences loss of smell (anosmia), only around 0.1–0.2% experience loss of taste (ageusia) (8).

With the outbreak of the coronavirus disease 2019 (COVID-19) pandemic, there has been a growing interest in the loss of smell and taste. COVID-19 patients have reported experiencing anosmia and ageusia, with 15.3% of COVID-19 patients experiencing one or both of these sensory losses, and 52% of those experiencing both (10). This has led to an increase in research articles and YouTube videos discussing anosmia and ageusia.

However, while there is a plethora of information available on the internet about the loss of smell and taste, no scientific study has been conducted on the quality and accuracy of YouTube video content related to anosmia and taste loss. With the unprecedented increase in both research articles and YouTube searches related to these sensory losses, it is important to assess the quality of information available to the public.

Therefore, there is a need for scientific studies to evaluate the accuracy and reliability of the information provided on YouTube

regarding anosmia and ageusia. While the internet has become an essential source of information, individuals need to be cautious about the quality of the information they consume. It is always recommended to consult with qualified medical professionals before making any health-related decisions.

In this study, we aimed to analyze the quality and reliability of English content related to the loss of smell and taste in YouTube video content, which is used as a source of information worldwide.

MATERIAL and METHODS

The following section provides a detailed explanation of the methods used in the study to assess the quality and accuracy of YouTube videos related to the loss of smell and taste.

Ethics

This study only used publicly available data and did not involve any human subjects. Therefore, it did not require approval from the institutional review board.

Table1: Video Characteristics and Source

	Min-Max	Median	Mean±standart deviation/n-%
Views	3.0-2166232	21495	139732±297604
Time since upload (Day)	1.0-2957	738.5	881.3±586.6
Duration (Second)	41.0-3525	220.0	356.5±436.5
Comments	0.0-13000	149.5	764.7±1757.4
Likes	0.0-32000	215.0	1934.5±4601.7
View Ratio	16.0-288062	2311.5	21644±43497
Origin	USA		67 74.4%
	India		6 6.7%
	UK		7 7.8%
	China		2 2.2%
	Germany		2 2.2%
	Australia		1 1.1%
	Belgium		1 1.1%
	Canada		1 1.1%
	Italy		1 1.1%
	South Africa		1 1.1%
Quality	Turkiye		1 1.1%
	Good		22 24.4%
Published by	High		68 75.6%
	Academic		10 11.1%
	Physician-based		19 21.1%
	Health-related web site		12 13.3%
	Patient		12 13.3%
	Society/Professional Organization		37 41.1%

Table 2: Correlation of the Scores of Author I and Author II

	Min-Max	Median	Mean±sd	r-p
GQS Score				
Author I	1.0-5.0	3.0	3.22±1.19	r=0.647(0.464-0.768)
Author II	1.0-5.0	2.0	2.79±1.04	p= 0.000
DISCERN Score				
Author I	0.0-5.0	3.0	3.16±1.15	r=0.721(0.576-0.816)
Author II	0.0- .0	2.0	2.47±1.06	p= 0.000
JAMA Score				
Author I	0.0-4.0	2.0	1.98±0.97	r=0.647(.464-0.768)
Author II	0.0-4.0	2.0	1.84±0.91	p= 0.000

ICC: Intra Class Correlation

YouTube search

To collect data for this study, a systematic search was conducted on YouTube using the terms “loss of smell,” “olfactory dysfunction,” and “anosmia.” The web browser’s cookies and history were cleared on June 25, 2021, to ensure a fresh search. The search was conducted using the default filter “sort by relevance,” which is the most commonly used filter by viewers.

Selection of videos

To ensure that the study’s results are reliable and representative, only the top 60 videos for each search term were included, as previous research has shown that most viewers do not go beyond the first three pages of search results (11). Videos that were not in the English language were excluded (n=26), as English is the most commonly used language in science and is spoken in many countries worldwide. Videos without audio or video (n=3), advertisements (n=1), duplicates (n=28), irrelevant material (n=5), and conference (n=15) or lecture videos (n=12) were also excluded to ensure that only relevant and informative content was analyzed.

Analysis of videos

Two authors (OK and HSB) conducted independent analyses of the videos in this study. To evaluate the quality of information presented in the videos, the Modified DISCERN Score, Journal of the American Medical Association (JAMA) benchmark score, and Global Quality Scale (GQS) were used. The GQS is a validated quality measurement scale that utilizes a 5-point Likert scale to measure the overall quality of information and its usefulness for patients, with higher scores indicating better quality. The videos were subjectively classified into poor quality (scores of 1 or 2), intermediate quality (score of 3), and high quality (scores of 4 or 5) based on criteria proposed by Bernard et al. (12).

To evaluate the reliability of the information presented in the videos, the modified DISCERN tool and a questionnaire proposed by Singh et al. were used. The modified DISCERN tool includes five questions that are answered as either yes or no, with a maximum score of 5. The questionnaire proposed

by Singh et al. evaluates the reliability of the videos based on aspects such as clear and achieved objectives, reliable sources of information, balanced and unbiased information presentation, additional sources of information listed for patient reference, and mention of areas of uncertainty (13).

The JAMA benchmark score was used to rate the online content of the videos based on authorship, attribution, disclosure, and currency, with one point given for each criterion (15).

In addition to analyzing the quality and reliability of the videos, data such as the universal resource locator (URL) information, titles, duration, origin country, time since upload, number of total views, number of likes, and uploader source were collected and saved in an Excel file. The video view ratio (VVR) was calculated to evaluate video popularity. The videos were categorized based on their uploader source, including academic institutions, society-professional organizations, physicians, health-related websites, and patients.

Statistical analysis

To analyze the data in this study, various statistical methods were utilized, including descriptive statistics such as mean, standard deviation, median, minimum, maximum, frequency, and ratio values. The distribution of variables was also examined using the Kolmogorov-Smirnov test. For the concordance analysis, intraclass correlation was employed, while the Mann-Whitney U test was used to analyze independent quantitative data. Additionally, Spearman correlation was used to examine the correlations between variables. All statistical analyses were conducted using the SPSS 28.0 software package, and the level of statistical significance was set at $p < 0.05$.

Reporting guideline

In this study, the STROBE-ME guideline was followed as a reporting method.

Table 3: Correlation between Video Characteristics and GQS, DISCERN and JAMA scores

		GQS Score	DISCERN Score	JAMA Score
DISCERN Score	r	0.646		
	p	0.000		
JAMA Score	r	0.619	0.666	
	p	0.000	0.000	
Views	r	0.209	0.138	0.171
	p	0.048	0.195	0.106
Time since upload (Day)	r	-0.275	-0.202	-0.313
	p	0.009	0.056	0.003
Duration (Seconds)	r	0.294	0.100	0.104
	p	0.005	0.348	0.327
Comments	r	0.164	0.077	0.106
	p	0.123	0.473	0.319
Likes	r	0.251	0.113	0.127
	p	0.017	0.290	0.231
View ratio	r	0.231	0.127	0.191
	p	0.029	0.231	0.072

Spearman correlation

RESULTS

A total of 90 videos were excluded from the study, and the remaining 90 videos were analyzed. According to the source, 19 (21.1%) of the videos were physician-based, 37 (41.1%) were social/professional organizations, 12 (13.3%) were patients, 12 (13.3%) were health-related websites, and 10 (11.1%) were of academic origins (Table 1). A significant correlation was observed between the DISCERN, GQS, and JAMA scores (Table 2). According to these scores, physician-based videos had higher scores in reliability and quality than other videos ($p < 0.01$). There was no correlation shown between image quality, country of origin, number of views, view ratio parameters, and DISCERN, GQS, and JAMA scores ($p > 0.05$). A positive correlation was observed between the DISCERN, GQS, and JAMA scores (Table 3).

DISCUSSION

Loss of smell is not a common condition and affects just 1–2% of the population (8).

However, the sense of smell is of great importance to humans. The probability of patients with olfactory loss experiencing hazardous events including leaking natural gas, fire, and spoiled food has been shown to be higher in some studies (8). Since the onset of the COVID-19 pandemic, there has been a significant increase in the number of patients experiencing loss of smell. For this reason, treatment for loss of smell has become a popular topic searched on the internet.

The main finding of our study is that physician-based videos about anosmia are of higher quality and are more informative

than other videos. However, the number of videos with low DISCERN, JAMA, and GQS scores was high (DISCERN: 44%, JAMA: 62%, GQS: 42%). This finding indicates that the quality of informative videos on YouTube should be improved. The first study to investigate the quality of videos on YouTube was conducted by Keelan et al. (16). In a study on rotator cuff repair videos, physician-based videos scored higher in reliability and quality (5). In another study on sarcopenia, physician-based and academic videos were found to have higher quality than other class videos (17). We also obtained similar results in this study.

YouTube is one of the world's most commonly used social media tools and allows users to like, dislike, and comment. There are many studies on the use of likes and dislikes. A study evaluating videos about retinopathy of prematurity found that useful videos had more likes and views than less useful videos (18). However, in a study by Singh et al., no relationship was found between these parameters and the usefulness of videos (19). Since independent variables such as the popularity of the channel and the number of followers affect the number of likes and dislikes, it is not an essential parameter in the reliability and quality evaluation of the video. In our study, no correlation was observed between the quality and reliability levels of the videos and the number of likes and dislikes. To the best of our knowledge, this is the first study in the literature evaluating YouTube videos on the loss of smell.

Over the past few years, social media platforms like YouTube have emerged as powerful tools for disseminating information about health and healthcare. Videos posted by healthcare professionals and patients alike can help individuals make informed decisions about their own health or that of their

loved ones. However, with so much information available, it can be difficult to determine which videos provide accurate and reliable information.

One of the biggest challenges with assessing the accuracy and reliability of health-related videos is that anyone can post a video online. Unlike traditional healthcare information sources such as medical journals or textbooks, there is no formal process for vetting the quality or accuracy of the information provided in online videos. As a result, it can be challenging to determine which videos are based on solid scientific evidence, and which are not.

Fortunately, there are a few tools that can help individuals evaluate the quality and reliability of health-related videos. One such tool is the DISCERN instrument, which was developed by a group of researchers in the United Kingdom to help people evaluate the quality of information provided in patient information materials. The tool consists of 16 questions, which cover various aspects of the information provided, including the quality of the evidence presented, the clarity of the information, and the balance of the information presented.

Another useful tool is the JAMA benchmark score, which was developed by the Journal of the American Medical Association to assess the quality of online content related to healthcare. The score assesses online content based on four criteria: authorship, attribution, disclosure, and currency. One point is given for each criterion, with a maximum score of four.

Finally, the Global Quality Scale (GQS) is a validated quality measurement scale that can be used to evaluate the quality of health-related videos. The GQS uses a five-point Likert scale to measure the overall quality of information presented in a video, with 5 representing the best quality and 1 representing poor quality.

Using these tools, healthcare professionals and patients can evaluate the quality and reliability of health-related videos posted online. By doing so, they can help ensure that individuals have access to accurate, evidence-based information about their health and healthcare options. Furthermore, by creating their own videos and sharing them online, healthcare professionals can help educate patients about their conditions and treatments, and provide them with valuable resources to help them manage their health.

Limitations

Despite its contributions to the field, this study is not without its limitations:

1. Using Google Trends to identify the most commonly used keywords may have captured only some relevant terms related to the topic.
2. Searching for videos on YouTube using different keywords may yield different results, thus potentially affecting the overall conclusions of the study.

3. This study focused exclusively on English videos, which may differ from health-related videos in other languages or regions.

Another limitation of this study is the need for a validated assessment tool to evaluate the content of the videos. Although the authors developed a content score scheme based on previous studies, the lack of a validated tool may have affected the accuracy and consistency of the evaluations. Additionally, the subjective nature of the content evaluation process may have introduced bias into the results.

Moreover, the study was limited to analyzing videos that were available on YouTube at the time of data collection. As the content on YouTube is continually changing and evolving, the results of this study may not be applicable to videos that are currently available on the platform.

Lastly, this study did not assess the impact of health-related videos on patients' health outcomes or behaviors. Future studies could investigate the potential benefits or harms of health-related videos on patients' health literacy, decision-making, and health outcomes. Despite these limitations, this study provides valuable insights into the quality and reliability of health-related videos on YouTube and highlights the need for improved regulation and quality control measures to ensure that patients have access to accurate and reliable health information online.

CONCLUSION

Video content related to health has recently become a frequently used source of information. Video content can have various sources, and it can lead to as many incorrect directions as it can be helpful. Our study on YouTube video content has shown that physician-based content is more suitable for quality and reliability. Content quality and reliability rates can be increased with supportive studies being conducted.

Informed Consent: Written informed consent was obtained.

Peer Review: Externally peer-reviewed.

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