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Youtube as a source of information about symptomatic irreversible pulpitis: Quality and content analysis

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Purpose: With the advancement of technology, both patients and healthcare professionals increasingly seek information. However, analysis of the data hosted by various platforms that allow rapid access to such information via the internet remains underexplored. This study aims to evaluate the content accuracy and educational quality of YouTube videos related to symptomatic irreversible pulpitis.

Methods: On April 5, 2024, a search was conducted on the YouTube platform using the keyword "Symptomatic irreversible pulpitis." Initially, 610 videos were screened, but only 32 met the inclusion criteria. The videos were assessed according to five content parameters: Diagnosis, treatment, etiology, prognosis, and symptoms. Quality assessment was conducted using the Video Information and Quality Index (VIQI), which includes information flow, accuracy, technical quality, and title-content consistency. Kruskal-Wallis and Dunn's tests were used for statistical evaluations. (significance level $p<0.05$).

Results: Among the 32 videos included in the study, 34.4% provided inadequate, 43.8% moderate, and 21.9% high-quality information. Videos providing moderate-quality information had a significantly higher number of likes compared to the other groups ($p<0.05$).

Conclusion: Most YouTube videos related to symptomatic irreversible pulpitis are academically insufficient. There is a growing need for more reliable and higher-quality digital content to be used in dental education.

Keywords: Information; irreversible pulpitis; YouTube.

Introduction

Pulpitis is an inflammatory condition of the pulp tissue in response to stimuli and bacterial by-products. If the irritant is removed, the inflammation is considered reversible; however, if the irritant persists, it progresses to stages regarded as irreversible. The condition of the pulp is classified as healthy pulp, reversible pulpitis, symptomatic irreversible pulpitis, asymptomatic irreversible pulpitis, pulp necrosis, previously treated, and previously initiated therapy. This classification is based on histological and clinical changes in the pulp (1).

The clinical diagnosis of either reversible or irreversible pulpitis in a healthy pulp relies on past and current clinical signs and symptoms, the extent of caries near the pulp, responses to percussion and pulp tests, and the radiographic appearance of periapical tissues (2).

Symptomatic irreversible pulpitis is a condition based on subjective and objective findings, where the vital inflamed

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pulp is incapable of healing, and root canal treatment is indicated (3). Its features include sharp pain after thermal stimuli, prolonged pain (usually lasting 30 seconds or more after stimulus removal), spontaneous (unprovoked) pain, and referred pain. Common etiologies include deep caries, extensive restorations, or fractures exposing the pulp tissue (4). Since inflammation has not yet reached the periapical tissues, percussion usually does not elicit pain or discomfort (5). Therefore, diagnosing teeth with symptomatic irreversible pulpitis is challenging. In such cases, the patient's history and thermal tests are used to assess pulpal status (6).

Clinicians with many years of experience often need to consult various resources to stay up to date. In recent years, there has been an increase in internet use by both healthcare professionals and patients seeking health information (7). Although there are various online resources for health-related information, 77% of online health seekers reportedly use general search engines like Google, Bing, and Yahoo, whereas only 13% utilize expert websites such as WebMD (8). In different studies, YouTube™ has been ranked as the top choice after Google and Facebook for online health-related searches (9,10).

Founded in 2005, YouTube is a free video-sharing website accessible to anyone with an internet connection. Users can view, like, comment on, and share videos, and upload original content without prior review or moderation (11). Because anyone can upload content without oversight, health-related videos may be uploaded by non-professionals, commercial entities, or doctors. As a result, these videos may contain insufficient or incorrect medical information, highlighting the need for critical evaluation.

In recent years, studies evaluating dental content on YouTube have revealed that a considerable portion of videos lack scientific accuracy and fail to meet educational standards. For example, videos related to endodontic procedures often present outdated or incomplete information, raising concerns about their reliability as educational tools for both patients and professionals (12-15). These findings emphasize the need to systematically analyze the quality and credibility of online video content in dentistry.

The aim of this study is to evaluate the accuracy and quality of YouTube videos related to symptomatic irreversible pulpitis. In the present study, the focus is exclusively on symptomatic irreversible pulpitis due to its clinical relevance and diagnostic complexity, as it represents a critical condition that necessitates root canal treatment and often leads patients to seek information online.

Materials and Methods

Video Selection

Since the data used in this study were obtained from a publicly available platform, ethics committee approval was not required. The search terms were selected based on terminology commonly used by dental students and clinicians on social media. A search for the term "symptomatic irreversible pulpitis" was conducted on YouTube™ on April 5, 2024. The results were sorted using the "sort by relevance" option, with no additional filters applied.

A total of 610 videos were identified through the search. Videos were excluded from the study if they met any of the following criteria: Not in English, advertisements, audio-only or visual-only content, unrelated to the search terms, or exceeding 20 minutes in length.

Video Evaluation

Out of the 610 videos reviewed, 32 met the inclusion criteria (Fig. 1). For each of these videos, the following were recorded: 1) Duration, 2) number of views, and 3) number of likes. Each video was evaluated for the presence of five content parameters: 1) Diagnosis, 2) treatment, 3) etiology, 4) prognosis, and 5) symptoms.

Each video was then scored based on the inclusion of information on these parameters: A score of 1 was assigned if the parameter was addressed, and 0 if it was not. Videos scoring 0–2 points were considered to provide insufficient information, those scoring 3–4 points were deemed to have moderate content (useful but with some deficiencies), and those scoring 5 points were classified as providing good information (comprehensively addressing all parameters).

The quality of the videos was assessed using the Video Information and Quality Index (VIQI), which includes four evaluation criteria: Information flow (relevance and coherence of the content) (VIQI 1), information accuracy (VIQI 2), quality (presence of images, animations, interviews, subtitles, and summaries) (VIQI 3), and precision (consistency between the video title and content) (VIQI 4). Each criterion was evaluated using a 5-point Likert scale (12).

Statistical Analysis

The statistical evaluations were performed in the SPSS software program (Version 22.0, IBM Corp, Armonk, NY, USA). The normality of data distribution was assessed using the Kolmogorov-Smirnov test, which revealed that the data did not follow a normal distribution. Descriptive statistical methods (minimum, maximum, mean, standard deviation, median, frequency) were used for data analysis. The Kruskal-Wallis test was applied to compare quantitative variables and intergroup differences. When significant differences were found, Dunn's test was used to identify the specific group responsible for the difference. A p-value of less than 0.05 was considered statistically significant.

Results

Among the 610 videos screened, only 32 met the inclusion criteria. Of the included videos, 75% contained information related to diagnosis, 53.1% to treatment, 46.9% to etiology, 46.9% to prognosis, and 87.5% to symptoms. Overall, 34.4% of the videos provided insufficient information, 43.8% offered moderate-level information, and 21.9% were rated as having good informational content (Table 1). Descriptive statistics of the videos are presented in Table 2.

Videos providing moderate-level information had a significantly higher number of likes compared to both the insufficient and good information groups ($p=0.045$ and $p=0.021$, respectively; $p<0.05$). No significant difference was observed between the insufficient and good groups in terms of like counts ($p=0.559$; $p>0.05$). (Table 3; Fig. 1)

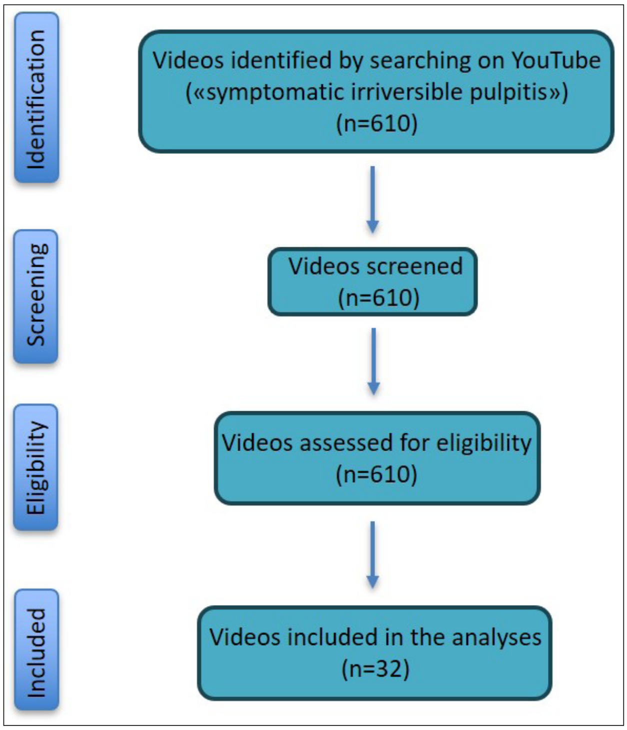

Fig. 1. Flowchart showing the evaluation process of the YouTube videos examined in the study.

Table 1. Descriptive data on the informational capacity of the videos

	Minimum	Maximum	Mean±SD	Median
Information capacity score	0	5	3.09±1.49	3
	n	%		
Diagnosis	24	75.0		
Treatment	17	53.1		
Etiology	15	46.9		
Prognosis	15	46.9		
Symptoms	28	87.5		
Information capacity				
Inadequate	11	34.4		
Medium	14	43.8		
Good	7	21.9		

Table 2. Descriptive statistics of the videos

	N	Minimum	Maximum	Mean±SD	Median
Video Duration (min)	32	1:36	19:2	9.61±4.89	8.76
Views	32	9	50262	4198.38±11110.39	753
Likes	32	1	2100	127.59±400.34	15
VIQI 1 "Information Flow"	32	2	5	3.78±0.83	4
VIQI 2 "Information Accuracy"	32	4	5	4.56±0.50	5
VIQI 3 'Quality'	32	2	5	3.72±0.89	4
VIQI 4 "Accuracy"	32	3	5	4.13±0.71	4
VIQI Total	32	11	20	16.19±2.49	16

VIQI: Video Information and Quality Index.

Table 3. Comparisons by level of informational content

	Inadequate Mean±SD (median)	Min-Max	Medium Mean±SD (median)	Good Min-Max	Mean±SD (median)	Min-Max	p
Video Duration (min)	8.79±4.81 (8.3)	2.39-16.39	11.32±4.73 (12.7)	1.36-19.2	7.48±4.79 (6.5)	2.58-14.44	0.334
Views	5178.91±14973.66 (292)	9-50262	5175.86±10631.97 (1709)	75-41055	702.57±962.13 (308)	28-2795	0.080
Likes	206.36±628.49 (9)	1-2100	123.64±256.47 (48)	4-992	11.71±11.93 (7)	1-33	0.036*
VIQI 1	3.64±0.92 (4)	2-5	4.07±0.62 (4)	3-5	3.43±0.98 (3)	2-5	0.197
VIQI 2	4.45±0.52 (4)	4-5	4.71±0.47 (5)	4-5	4.43±0.53 (4)	4-5	0.322
VIQI 3	3.64±1.03 (4)	2-5	3.86±0.66 (4)	3-5	3.57±1.13 (4)	2-5	0.901
VIQI 4	3.91±0.7 (4)	3-5	4.29±0.73 (4)	3-5	4.14±0.69 (4)	3-5	0.407
VIQI Total	15.64±2.84 (16)	11-20	16.93±1.82 (16.5)	15-20	15.57±3.05 (15)	11-20	0.384

Kruskal Wallis Test. *p<0.05. VIQI: Video Information and Quality Index.

Discussion

In dental and endodontic treatment processes, patients' knowledge about the procedure and their compliance are crucial factors for achieving successful clinical outcomes. In this context, video-sharing platforms such as YouTube have become significant sources of information for both patients and experienced clinicians (16). Studies have shown that YouTube is a highly effective medium for disseminating medical and dental information (17).

During the COVID-19 pandemic, dental students were distanced from traditional learning methods and had to resort to online educational tools such as virtual reality, communication platforms, lectures, presentations, hands-on and virtual workshops, webinars, and didactic courses (18). During this period, YouTube and similar online streaming platforms stood out as important resources for distance learning due to the powerful impact of audiovisual content on cognition and emotion (19).

However, despite YouTube's wide content range, it has been observed that some educational videos fail to reflect updated diagnostic criteria and treatment approaches or include misleading information (20). Although YouTube was not originally designed as an educational platform, its ease of access and popularity have made it a frequent subject of academic evaluation concerning the reliability of scientific content.

Due to the nature of YouTube, the information in the videos published on the platform is not subject to academic review and is not pre-verified by specialists in the field. Consequently, videos on symptomatic irreversible pulpitis in endodontics often fall short of providing comprehensive coverage. This study evaluated the accuracy, reliability, and quality of YouTube videos on symptomatic irreversible pulpitis. The findings revealed that these videos were generally insufficient in educational quality.

Previous studies have also investigated YouTube's role in dental education. For instance, Kaval et al. (12) reported that most YouTube videos on regenerative endodontic procedures focused mainly on clinical practices but lacked academic depth. Similarly, another study on vital pulp therapy reported that content on YouTube had low reliability and often included incomplete information (13).

Additionally, a study on root resorption and related etiological factors found that most YouTube videos were insufficient in content and were predominantly uploaded by dental clinics. It was noted that approximately 57.9% of the videos were of low quality, and only 2.1% met academic standards (14). This highlights a significant gap in educational quality in dental training.

Another study on the use of mineral trioxide aggregate (MTA) found that the majority of YouTube content was uploaded by commercial companies or individual users, and the information presented often lacked scientific accuracy (15). The insufficient availability of academic-level content can lead to the widespread dissemination of misleading information among students and clinicians.

Our study also identified specific deficiencies in the content of dental videos on YouTube. For instance, prognosis and etiology were the least addressed topics. Other studies similarly found that videos related to endodontic treatments often lacked detailed discussion of etiology, diagnosis, and prognosis (14,15). This reflects a significant shortcoming in dental education and underscores the need for greater academic content production. The findings of our study support this conclusion, demonstrating that the educational value of videos on symptomatic irreversible pulpitis is generally low.

One of the methodological limitations of this study is the use of the VIQI index, which relies on subjective interpretation by the evaluators. Although this tool has been validated in previous studies assessing the quality of online health information, such as those focusing on regenerative endodontics and vital pulp capping (12,13), the scoring may still vary based on the evaluators' clinical experience and personal judgment. In the present study, two independent evaluators with expertise in endodontics applied the VIQI criteria based on a standardized scoring guideline. Any discrepancies in scoring were resolved through consensus, which aimed to minimize individual bias and improve the overall reliability of the results.

Another important finding of our study is the statistical difference in the number of likes and views among videos with different levels of information. Videos offering moderate-level information received more likes than both low-quality and high-quality videos. This suggests that viewers may prefer general and easily understandable content over highly academic and detailed materials. A similar trend was observed in a study on the use of mineral trioxide aggregate (MTA), where academic content created by experts received less attention, whereas videos with practical applications attracted more engagement (15).

This study has some limitations. First, the video selection was based solely on a specific keyword search, resulting in a limited dataset. Moreover, due to the ever-changing nature of YouTube algorithms, the results may vary over time. Our study only analyzed videos in English; a comprehensive analysis of content in other languages was not performed. Another limitation of this study is that it only included English-language videos. YouTube hosts a diverse range of content in numerous languages, and the informational quality may vary across different linguistic and cultural contexts. Future research should consider evaluating videos in multiple languages and regions to provide a more inclusive and comprehensive assessment of dental information available online. Such efforts could help identify region-specific gaps in educational content and facilitate the development of targeted and culturally appropriate digital resources to support global dental education.

Conclusion

The findings of this study reveal that most YouTube videos concerning symptomatic irreversible pulpitis are academically insufficient and lack reliable academic sources. These results underscore the need to increase the production of high-quality digital content in the field of dentistry and to implement monitoring mechanisms for existing materials.

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