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Evaluation of the content quality and reliability of YouTube videos on endodontic retreatment

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Purpose: This study aimed to assess the content, educational quality, and reliability of YouTube videos on endodontic retreatment to determine their usefulness for patients, students, and dental professionals.

Methods: On February 15, 2025, a YouTube search was performed using the terms "retreatment," "repeat root canal treatment," and their Turkish equivalents. Among 85 videos screened, 35 met the inclusion criteria. Two observers independently evaluated them using a 13-item content checklist, the Modified DISCERN (mDISCERN) tool, and the Global Score for Educational Value (GSEV). Descriptive statistics, normality tests, Spearman correlation, t-tests, and Kruskal-Wallis tests were used for analysis ($p<0.05$).

Results: The mean GSEV score was 5.07±3.21, suggesting moderate educational value. The average mDISCERN score was 2.44±0.95, indicating low reliability. Retreatment indications were the most commonly discussed topic (91.4%), while contraindications and intraoperative pain were rarely mentioned. Longer videos had higher GSEV scores. No link was found between video popularity and quality. Most videos were uploaded by independent dentists (57.1%).

Conclusion: YouTube videos on endodontic retreatment show inconsistent quality and limited reliability. They can offer visual support but should not replace scientific resources. Dental professionals should help direct audiences to accurate, evidence-based content.

Keywords: Dental education; educational quality; endodontic retreatment; video reliability.

Introduction

Primary orthograde root canal treatments generally demonstrate high success rates, however, post-treatment failures are still frequently encountered (1). In such cases, the main treatment options include nonsurgical retreatment, surgical retreatment, or tooth extraction (2). Among these, nonsurgical endodontic retreatment is often the preferred approach when the goal is to preserve the affected tooth (3). According to the American Association of Endodontists, nonsurgical endodontic retreatment involves the removal of existing root canal filling material, followed by cleaning, shaping, and refilling of the root canal system (4). To make an informed clinical decision, it is essential to have a clear understanding of the procedure's indications, limitations, success rates, and potential complications (5).

Retreatment is indicated when the tooth has sufficient periodontal support and can be restored functionally

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(6). It may also be considered a preventive intervention in cases where the coronal restoration is to be replaced, but the existing root canal treatment appears radiographically inadequate - even in the absence of symptoms or apical pathology (7). On the other hand, certain clinical factors such as advanced periodontal disease, vertical root fractures, an unfavorable prognosis, complex prosthetic requirements, or the patient's own preferences may contraindicate retreatment and instead necessitate alternative approaches (8).

Prior to initiating retreatment, detailed radiographic evaluation is essential to identify potential complications from previous treatment, such as apical transportation, perforations, or fractured instruments (9). These factors can increase treatment complexity, duration, number of visits, and cost, while also potentially influencing prognosis (10,11). In cases where the root canal system can be accessed and disinfected, retreatment remains a viable and conservative option (12). However, when orthograde access to the apical area is not possible due to complications such as fractured instruments, ledging, overfilling, or severe curvature, surgical alternatives like apical surgery may be more appropriate (13,14).

Recent survey studies have shown that approximately 80% of internet users seek health-related information online (15). YouTube, in addition to being the largest and most popular video-sharing platform today, is also considered the second-largest search engine after Google (16). Furthermore, YouTube ranks as the second most popular social media platform worldwide (17). YouTube, Instagram, and Facebook is among the most widely used social media platforms globally. YouTube is frequently preferred for health information due to several factors, including its ease of use, the ability to access content without a subscription, and the fact that the expertise of content creators are often more clearly defined and predictable (18).

Although numerous videos related to retreatment procedures are available on YouTube, to the best of our knowledge, no prior study has evaluated the content, accuracy, or quality of these videos. Therefore, this study aims to fill that gap in the literature by assessing whether YouTube videos on retreatment serve as a reliable source of information for dentists, dental students, and patients in need of treatment.

Materials and Methods

Assessment of videos

On February 15, 2025, the term "Retreatment" and the Turkish equivalent/translation of "repeat root canal treatment, second root canal treatment" were searched by a single researcher on YouTube from a computer with its location set to Türkiye, through a private browser without prior login to YouTube to avoid any impact from pre-existing user browsing history or search data. The reason for this is that the YouTube algorithm offers content considering user interactions (19). The search filters were set to default, sorting the videos by 'Relevance'. As of the time of writing, YouTube's layout presented search results in a continuous feed. Therefore, it was not possible to determine the exact number of videos presented in the search results. Also, during the time of the research, the 'dislike' count on YouTube was inaccessible.

It has been reported that most YouTube users typically review the first 60 videos in the search results (20). For this study, a total of 85 videos were analyzed, including 60 videos retrieved from the search term 'retreatment' and 25 videos from the Turkish equivalent "repeat root canal treatment, second root canal treatment", all sorted by relevance. Due to the limited number of videos suggested in the Turkish search for "repeat root canal treatment, second root canal treatment" only 25 videos could be selected. Of these, 25 videos were excluded during the initial screening due to irrelevance, duplication, language differences (non-English or non-Turkish), lack of sound, titles or visuals, and the videos intended for advertising purposes. Additionally, videos shorter than 1 minute, longer than 25 minutes, or those that only briefly mentioned the topic were excluded (Fig. 1). The remaining videos were independently evaluated by two observers, each with two years of clinical experience in retreatment. The observers independently reviewed and analyzed the videos, without access to each other's evaluations. To preserve objectivity, they were blinded to the like and comment counts until the completion of the analysis. In case of disagreement, a third

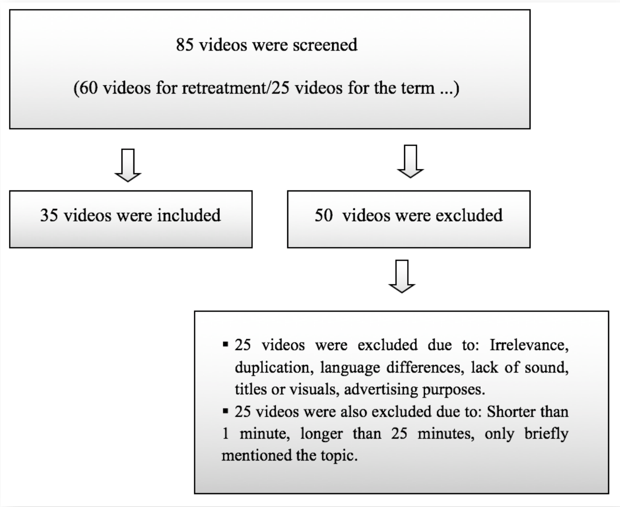

Fig. 1. Flow diagram of included and excluded videos.

Table 1. Modified DISCERN scoring system

MDISCERN Questions (1 point for each 'Yes', 0 point for 'No'.)	
1	Are the aims clear and achieved?
2	Are reliable sources of information used?
3	Is the information presented both balanced and unbiased?
4	Are additional sources of information listed?
5	Are areas of uncertainty mentioned?

researcher was consulted to achieve consensus.

Ultimately, a total of 35 videos were selected and subjected to a detailed evaluation by the observers. It took around one month to complete the video analysis and evaluation. The following parameters were recorded for each video: country of origin, source and date of upload, duration, and the number of views, comments, and likes. Using these data, interaction index (likes /total number of viewings×100) and viewing rate (Number of views/ Number of days since upload ×100%) were calculated.

The target audience of each video was determined by examining the language used and the level of scientific detail. Videos that included clinical content or used medical terms were considered to be aimed at dentists and dental students. Conversely, videos that provided a Turkish definition of "retreatment" or explicitly used the phrase "repeat root canal treatment, second root canal treatment" in Turkish were considered to be intended for a lay audience, specifically non-professionals and individuals seeking treatment.

Following a literature review on retreatment and previous YouTube/social media studies (19,20), 13 criteria were established to evaluate the selected videos: "Definition," "Indications," "Contraindications," "Alternative Treatment Options," "Success Criteria," "Clinical Application," "Treatment Duration," "Number of Sessions," "Pain During Treatment," "Complications," "Inter-session/Postoperative Symptoms," "Outcome/Restoration," and "Prognosis." If a video provided information on a given topic, it was assigned a score of "1"; otherwise, it received a score of "0." Each video's total content score was calculated by adding up the scores of individual topics (Table 1).

In line with previous studies (21-23), the quality of the videos in this study was evaluated by two independent investigators using the Modified DISCERN (mDISCERN) tool and the Global Score for Educational Value (GSEV). GSEV was determined by calculating the average of the total content score for each video. Scores between 0–2 indicated poor quality, 3-4 indicated generally low quality, 5-6 indicated moderate quality, 7-8 indicated good quality, and 9-10 indicated excellent quality.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics (version 21.0; IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated for all variables. The Shapiro-Wilk test was used to assess the normality of the data. Based on this evaluation, Pearson's correlation coefficient was used for continuous variables with a normal distribution, while Spearman's rank-order correlation was applied for ordinal variables or when the assumption of normality was violated. The independent samples t-test was used to compare GSEV scores between two groups when parametric assumptions were met, whereas the Kruskal–Wallis test was applied for comparisons involving non-normally distributed variables. Categorical data were analyzed using the chi-square test. Interobserver agreement was evaluated using Cohen's kappa coefficient. A p-value of less than 0.05 was considered statistically significant in all analyses.

Results

A total of 85 YouTube videos were analyzed, of which 60 included the term "retreatment" and 25 featured the Turkish equivalent "second /repeat root canal treatment". To assess viewer engagement and popularity, two additional metrics were calculated: the interaction index (likes divided by total number of views, ×100) and the viewing rate (total number of views divided by the number of days since upload, ×100). Out of these, 35 videos met the predefined inclusion criteria and were subsequently evaluated in detail using 13 criteria developed for educational content assessment. Based on previous literature (20-22), the GSEV and mDISCERN scoring systems were used to evaluate the quality and reliability of YouTube videos related to endodontic retreatment. The GSEV scale, adapted from the Global Quality Scale (GQS) by Fischer et al. (21), was used to assess educational value, while the mDISCERN score, developed by Singh et al. (22), was used to evaluate the reliability of the information.

A Cohen's kappa score of 0.70 indicated a substantial level of agreement between the two reviewers.

The mean view count of the videos was 32,612.94±50,302.16, with an average duration of 4.61±5.01 minutes. The mean number of likes was 203.63±353.95, and the average number of comments was 64.17±169.93. The videos had been online for an average of 1,615.57±1,409.37 days. The average GSEV score of the analyzed videos was 5.07±3.21, reflecting a moderate level of educational content. In contrast, the mean mDISCERN score was 2.44±0.95, suggesting that the overall reliability of the information presented in the videos remained limited according to standard evaluation criteria (Table 2).

Table 2. Demographics of evaluated videos

	Mean ± SD for evaluated videos
Number of views	32612.94±50302.16
Number of likes	203.62±353.95
Number of comments	64.17±169.93
Number of days since upload	1711.296±1475.720
Interaction Index	1.42±1.47
View Rate	30229.883±7602.21
GSEV scores	5.07±2.33
MDISCERN scores	2.44±0.57

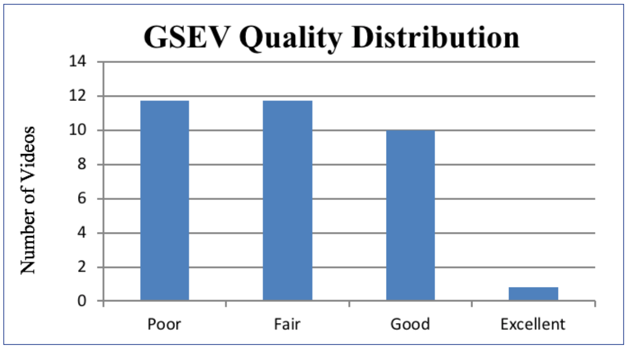

Fig. 2. GSEV quality distribution.

In the present study, 34.3% (n=12) of the videos were classified as having poor educational quality, while another 34.3% (n=12) were considered to be of fair quality. 28.6% (n=10) of the videos demonstrated good quality, and only 2.9% (n=1) reached the excellent category based on the GSEV scores (Fig. 2).

According to the MDISCERN evaluation, the majority of the videos (60.00%, n=21) were classified as low quality. A smaller proportion (34.29%, n=12) were categorized as moderate quality, while only one video (2.86%) was rated as high quality. Similarly, one video (2.86%) fell into the very low quality category. Notably, none of the videos achieved a very high-quality rating (0.00%) (Fig. 3).

According to the content analysis of the selected videos, endodontic indications were addressed in 91.4% (n=32) of the videos, making it the most frequently covered topic. This was followed by clinical procedures, discussed in 60.0% (n=21), and final restoration, included in 57.1% (n=20) of the content. Success criteria and definition appeared in 45.7% (n=16) of the videos, while alternative treatment options were mentioned in 31.4% (n=11). Less frequently addressed topics included postoperative symptoms (20.0%, n=7) and complications (45.7%, n=16). In contrast, treatment duration and intraoperative pain were only discussed in 8.6% (n=3) of the videos, and contraindications were mentioned in just 5.7% (n=2).

Notably, none of the evaluated videos addressed additional sources of information listed for patient reference or any areas of uncertainty, resulting in a failure to meet the fourth and fifth mDISCERN criteria for these videos.

The sources of the analyzed videos were distributed as follows: 8.6% were uploaded by universities, 57.1% by independent specialist dentists, 14.3% by private clinics or specialist practitioners, 5.7% by general dentists, and 11.4% by television channels (Fig. 4).

Spearman correlation analysis revealed a moderate positive correlation between GSEV and total video duration ($p<0.05$), suggesting that longer videos tend to have higher educational value. A weak correlation was observed between GSEV and mDISCERN, but it was not statistically significant ($\rho=0.21$, $p=0.229$). Similarly between video duration and mDISCERN scores ($\rho=0.23$). Also no statistically significant association found between the number of likes and either the GSEV or mDISCERN scores ($\rho=-0.06$, $p=0.738$ and $\rho=-0.06$, $p=0.733$, respectively). These results suggest that user engagement, as measured by the number of likes, does not reliably reflect the educational quality or informational reliability of You-

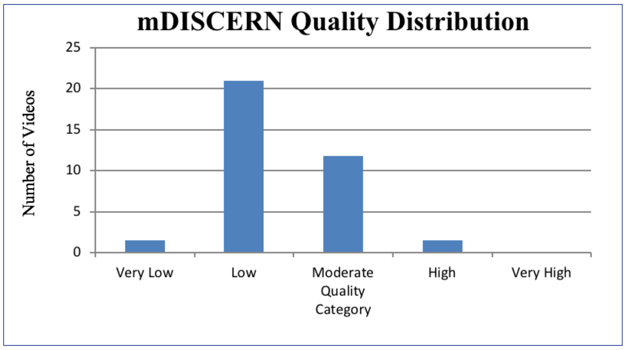

Fig. 3. Modified DISCERN quality distribution.

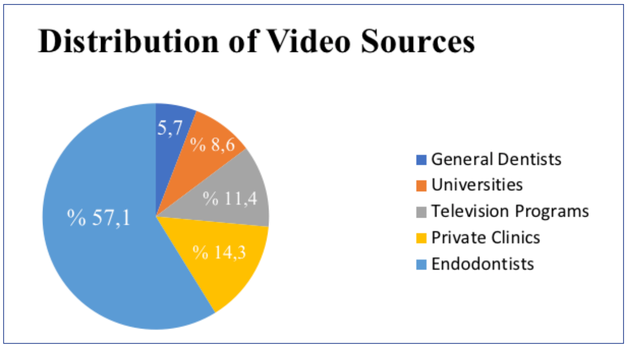

Fig. 4. Distribution of video sources.

Tube videos related to endodontic retreatment.

However, the correlation between video duration and viewing rate was negligible ($\rho=-0.02$), showing no meaningful association. Additionally, the mean GSEV score of the videos sourced from television programs (6.33±2.52) appeared higher than that of other sources (5.07±2.34). Although the difference was not statistically significant ($t=1.80$, $p=0.159$).

Discussion

Social media has become an increasingly popular resource for dental students to connect theoretical learning with clinical practice (20). Nawar et al. (23) found that many students see platforms like Instagram and YouTube as helpful for viewing and presenting clinical cases, even though they are aware of the limited scientific accuracy of such content. Similarly, Fu et al. (24) reported that students preferred short and comprehensible videos, especially those showing real clinical procedures, with YouTube being the most commonly used platform for learning about endodontic treatments (25).

While dental students may develop some level of critical awareness, patients and the general public often struggle to differentiate between high-quality, evidence-based content and videos that are biased or incorrect. The influence of social media on patient behavior has become increasingly evident, particularly in how patients participate in their own treatment processes. As noted by Yağcı, information obtained through these platforms can shape patients' decisions and engagement with dental care. Therefore, it is crucial that endodontic professionals engage in patient education and direct them toward high-quality, evidence-based alternatives (15).

This study aimed to evaluate the quality and educational value of YouTube videos related to endodontic retreatment using both objective content criteria and standardized scoring tools. A substantial level of interobserver agreement ($\kappa=0.70$) supports the objectivity of the content-based evaluation process.

The results showed that while topics such as indications and clinical procedures were frequently addressed, key elements like treatment duration, contraindications, and intraoperative pain were largely overlooked. Among the 35 YouTube videos analyzed, the average comment-to-view ratio was approximately 0.2%. A few videos exceeded 0.7%, indicating much higher viewer engagement. These highly interactive videos often focused on patient-centered topics and addressed common concerns such as pain after root canal treatment. In contrast, content designed for professionals or students tended to receive fewer comments, possibly due to a more passive viewing style or narrower audience.

Most of the videos were uploaded by independent endodontists (57.1%), followed by private clinics (14.3%), television programs (11.4%), universities (8.6%), and general dentists (5.7%). Additionally, when the search was conducted using the Turkish layperson's term for retreatment, the results included shorter and simpler videos, many of which were clips taken from television programs.

While viewer engagement was primarily assessed through likes, views, and comment frequency, more refined feedback tools such as polls and surveys were not available in the included videos. Moreover, most comments lacked substantive feedback on educational value or accuracy. However, two videos created by a general dentist targeted specifically at patients stood out with significantly higher comment-to-view ratios, with users often sharing personal experiences or concerns. Though informal, such interactions can offer useful insights into patient expectations and should be considered in future studies.

There are several ways to evaluate information and content shared online. These approaches allow for the assessment of online content based on different criteria (17). In many studies evaluating the quality of information on YouTube in the context of patient education, the Global Quality Scale (GQS) has been commonly used (17,26). This scale was specifically designed to assess the quality of information aimed at patients. However, the present study aimed to evaluate the quality and reliability of YouTube videos not only for patients, but also for professionals, dentists, and dental students. Therefore, we employed the Global Score for Educational Value (GSEV), a scale closely adapted from GQS by Fischer et al. (21).

The mDISCERN score was originally developed by Singh et al. (17) to assess reliability, bias, clarity, reference citation, and the presence of potentially misleading information in YouTube videos (27). This scoring system has since been widely used to evaluate the reliability of online video content (26). For these reasons, both GSEV and mDISCERN were utilized in the present study to ensure a comprehensive evaluation of educational quality and reliability.

The overall educational value, as measured by the Global Score for Educational Value (GSEV), was moderate, with only a small percentage of videos classified as having good or excellent quality.

The mDISCERN tool, which assesses the reliability of health-related content, revealed lower average scores, indicating limited transparency, source citation, and comprehensiveness. The average mDISCERN score of 2.44

shows that the videos were generally of low reliability. None of the evaluated videos met the fourth and fifth criteria of mDISCERN, which assess the inclusion of alternative source options and acknowledgment of areas of uncertainty. While the mDISCERN scale provides a structured approach to evaluating reliability, its criteria may not fully align with the informal, visually driven nature of YouTube videos. Therefore, reliance on this tool alone could be seen as a methodological limitation in the context of evaluating open-access, user-generated content.

A statistically significant moderate positive correlation was found between video length and GSEV scores, indicating that longer videos tended to provide more comprehensive educational content. However, the weak correlation between GSEV and mDISCERN scores suggests that longer or more detailed videos are not necessarily more reliable.

Additionally, although video segments from television programs had slightly higher average GSEV scores than other sources, this difference was not statistically significant, implying that source alone may not determine educational quality. Although our study did not directly assess the impact of video content on viewer learning outcomes or clinical behavior, it is plausible that such content plays a substantial role especially for dental students and general practitioners who use YouTube informally for education. Case-based videos prepared by endodontists often demonstrated the use of chemical solvents during retreatment, and many clinicians opted for high-quality rotary or reciprocating files operating at high RPMs rather than dedicated retreatment systems. This may reflect advanced expertise or personal preference but also risks influencing viewer tendencies. The consistent use of rubber dam isolation further underscores their educational value. These videos, therefore, serve not only to display clinical techniques but may also affect decision-making in practice. One limitation of this study is that it focused only on the presence or absence of 13 predefined content categories, without evaluating the depth or scientific accuracy of the material. For example, although "success criteria" were mentioned in 45.7% of videos, the quality of the explanations was not assessed. Still, it is notable that most videos (57.1%) were uploaded by endodontists, with 8.6% coming from universities and 14.3% from private clinics employing specialists, suggesting a degree of professional reliability. Another limitation lies in the evaluator profile: two residents with two years of experience conducted the assessments. Although expert guidance was sought when needed, the absence of formally specialized reviewers may have influenced scoring.

Overall, these findings suggest that while YouTube videos on retreatment may offer basic visual support, they are generally not sufficient as educational resources, especially for students or patients seeking reliable information.

Conclusion

This study demonstrates that YouTube videos on endodontic retreatment often lack consistency and depth in presenting essential clinical information. Given the increasing reliance on online platforms for dental education and patient awareness, the variability in content quality underscores the importance of guiding viewers toward accurate and comprehensive resources on retreatment procedures.

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