

Quality Assessment of Apical Resection Videos on YouTube: A Joint Study of Oral Surgery and Endodontics

YouTube Platformundaki Apikal Rezeksiyon Videolarının Kalitelerinin Değerlendirmesi:

Oral Cerrahi ve Endodonti Ortak Çalışması

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ABSTRACT

This report evaluated the content quality of videos about the apical resection on YouTube, which is a complex procedure to understand for untrained people. A YouTube search was conducted using the keywords "apical resection", "root-end resection" and "apicoectomy" and the first 100 videos that appeared in the relevance sort for each keyword were listed. The results were evaluated for inclusion and categorized by source, purpose, target, teller, and technical procedure information. An evaluation was made by one oral and maxillofacial surgeon and one endodontist independently. The quality of the videos was measured using Global Quality Score (GQS) and content via usefulness score (US). The adapted DISCERN was used to score the accuracy and reliability of the information source, which ranged from 0 to 5. Results were analyzed and interpreted statistically. Results from 89 videos showed that the doctor was the video source for 53.9% and professional information was the purpose for 70.8%. Root-end cutting information was given in 92.1% and retrograde cavity was mentioned in 38.2%. The usefulness score (US) of 69.3% was poor, 29.5% moderate and 1.1% excellent. Scoring tables analyzing among themselves showed a statistically significant correlation between US and DISCERN ($r=0.623$; $p<0.001$), and between DISCERN and GQS ($r=0.228$; $p=0.032$), but no statistically significant relationship between GQS and US ($p=0.250$). YouTube videos about apical resection included in the study contain poor quality information. Professional organizations and physicians should know about YouTube content and consider creating high-quality videos.

Keywords: apical resection, DISCERN, GQS, quality, YouTube

ÖZET

Bu makalenin amacı; özellikle hastalar için anlaşılması zor bir konu olan apikal rezeksiyon hakkında YouTube’da mevcut olan videoların içerik kalitelerini değerlendirmektir. YouTube platformunda “apikal rezeksiyon”, “kök ucu rezeksiyonu” ve “apikoektomi” anahtar kelimeleri kullanılarak arama yapıldı ve her bir anahtar kelime için sıralamada çıkan ilk 100 video listelendi. Çalışmanın dahil edilme kriterlerine göre videolar değerlendirildi ve kaynak, amaç, hedef, anlatıcı ve teknik bilgi içeriği kategorilerine göre sınıflandırıldı. Bir ağız ve çene cerrahı ile bir endodontist tarafından bağımsız olarak değerlendirme yapıldı. Videoların kalitesi, Küresel Kalite Puanı/ Global Quality Score (GQS) ve Kullanılabilirlik Puanı/ Usefulness Score (US) kullanılarak ölçüldü. Uyarlanmış DISCERN ile bilgi kaynağının doğruluğu ve güvenilirliği 0 ile 5 arasında puanlandı. Sonuçlar istatistiksel olarak analiz edildi ve yorumlandı. 89 videodan elde edilen sonuçlar, %53,9 oranda

videonun kaynağının doktor olduğunu ve %70,8 oranda videonun amacının profesyonel bilgilendirme olduğunu gösterdi. Yönteme ait teknik bilgi olarak videoların %92,1'inde kök ucu kesme bilgisi mevcuttu ve ve %38,2'sinde retrograd kaviteden bahsediliyordu. US deperlendirilmesi, %69,3 oranda zayıf, %29,5 oranda orta ve %1,1 oranda mükemmel içerik sonuçlarını gösterdi. Kendi aralarında puanlama tabloları kıyaslamasında, US ile DISCERN arasında ($r=0,623$; $p<0,001$) ve DISCERN ile GQS arasında ($r=0,228$; $p=0,032$) istatistiksel olarak anlamlı bir korelasyon görüldü, ancak GQS ile US arasında istatistiksel olarak anlamlı bir ilişki yoktu ($p=0.250$). Çalışma sonuçlarına göre YouTube platformunda apikal rezeksiyon ile ilgili videolar içerik olarak düşük kaliteli bilgiler içermektedir. Meslek kuruluşları ve hekimler YouTube içeriğini bilmeli ve yüksek kaliteli videolar oluşturmak için girişimde bulunmalıdır.

Anahtar Kelimeler: apikal rezeksiyon, DISCERN, GQS, kalite, YouTube

1. INTRODUCTION

Apical resection is a surgical operation that involves exposing a periapically located lesion through the osteotomy, surgical curettage of the lesion, the removal of a portion of the root-end tip by cutting, and retrograde closure of the apical end of the remaining root canal (Del Fabbro et al.,2016). In clinical practice, it is mostly performed in the presence of an apical lesion and in cases where the lesion is not completely healed with root canal treatment, but the range of indications is quite wide (Yasin-Ertem et al.,2019). The procedure has always been regarded as the last option before tooth extraction with an unpredictable outcome and a success rate ranging from 25% to 90% reported in the literature (Zuolo et al.,2000). Considering the details of the operation, although it is a procedure that is relatively comfortable for the patient and does not require advanced cooperation, it may be difficult to inform the patient about the surgery. The fact that there are no definite data on the success rate and the knowledge that the tooth may need to be extracted in the future even though there is a surgical procedure, demoralize the patients and causes them to turn to behavior such as consulting other physicians or internet resources.

Recently, it is a very common method to search web sources on health-related issues, and YouTube is a very popular platform because it provides information both visually and audibly (Lena & Dindaroglu, 2018). Although the fact that information has become so easily accessible because of the technological revolution is considered a great advantage today, the lack of any control over the quality, reliability, and objectivity is a matter of concern in the health community because patients sometimes make their decisions on important issues based on this unapproved information (Er & Canakci, 2022). Many studies evaluating the quality of videos available on YouTube on different topics reported conflicting results (Madathil et al., 2015, Sallı & Egil, 2020). In line with this information, this study evaluated the quality of the videos available on YouTube about apical resection, which is a difficult subject for patients to understand and be motivated. The study was conducted with an oral surgeon and an endodontist, considering the branch distribution of the subject. This is, to the best of our knowledge, the first study to assess the quality of apical resection videos.

2. MATERIAL and METHOD

A cross-sectional study on the reliability, informative quality, and clarity of apical resection videos was designed on YouTube (www.youtube.com). On 20.03.2022 at 09.00 AM, keyword tests were conducted on apical resection in the Google Trends application. Google Trends is used to determine the most frequently searched word in YouTube video content quality studies (Yagci, 2023), because it shows how often a particular keyword is investigated at a particular time. However, since warnings

were shown that there was not enough data for apical resection, the three most frequently used words were established by the researchers.

The study was composed on 20.03.2022 at 09.30 AM using the keywords 'apical resection', 'root-end resection', and 'apicoectomy' on YouTube, according to relevancy, and search filters were not applied. Reports showed that most internet users analyze the first 60–200 videos that appear in a search, but usually the first 30 videos are watched (Desai et al.,2013). In this study, the first 100 Universal Resource Locators (URL) of videos (300 videos) were recorded for each search term, and duplicated 80 videos were excluded. The remaining 220 videos were evaluated separately by two researchers.

The criteria for inclusion in this study were that the videos should have an acceptable image and sound quality, be in the English language, and provide information about apical resection. Videos that are not in English, do not have descriptions with audio or text, are longer than 30 min, irrelevant videos, and conference lectures were all excluded. The information presented in the videos was evaluated for accuracy and quality (Fig 1).

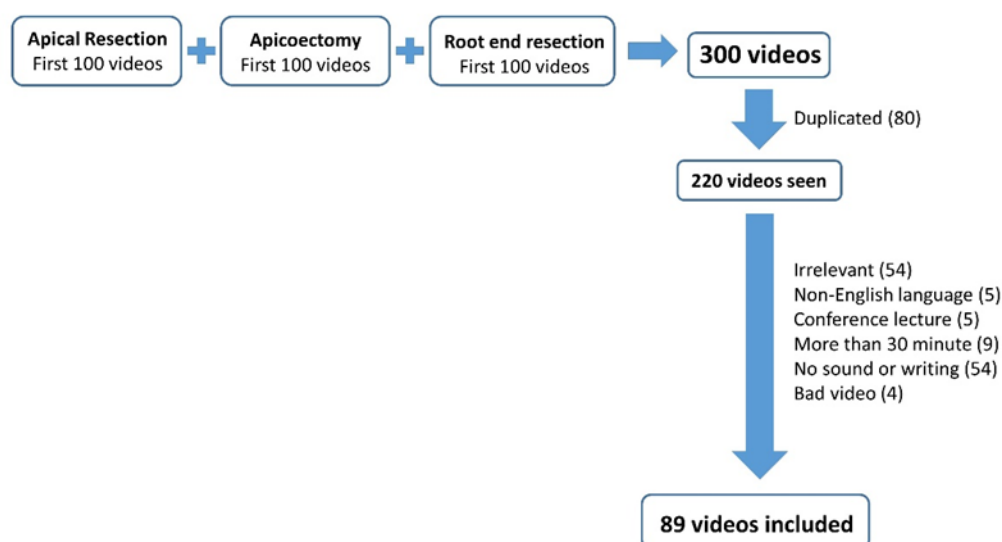


Figure 1. Strategy of the study

Two researchers, an oral surgeon, and an endodontist, independently analyzed 89 acceptable videos. For each video, the total number of views, comments, likes, and dislikes, total video duration, country of origin, upload date, time passed after upload, and the uploader's subscriber number were recorded. Viewers' interaction index and the viewing rate were calculated using the formula as previously described ($\text{Interaction index} = (\text{number of likes} - \text{number of dislikes} / \text{total number of views}) \times 100\%$ and $\text{viewing rate} = (\text{number of views} / \text{number of days since upload}) \times 100\%$) (Hassona et al.,2016).

For each video;

- the source of the upload is categorized as doctor, patient, dental company, YouTube channel, and health institution;
- the purpose of the video is categorized as information for professionals, information for patients, and sharing own experiences,
- the target audience is divided into professionals, non-professionals, and both;
- the video's teller was classified as a doctor, a patient, an external voice, text,

- root-end cutting information as yes or no,
- root cavity information as yes-traditionally, yes ultrasonic instrument, no and unspecified, and,
- retrograde filling material as Mineral Trioxide Aggregate (MTA), amalgam, bioceramic-based pre-mixed paste, and other, unspecified and unfilled.

Videos were analyzed for content in nine non-exclusive domains of apical resection information content, definition, indications, contraindications, root-end cutting information, surgical procedure information, retrograde filling information, complications, and prognosis (Adhikari et al., 2016). Each content was given one point, with a maximum score of nine. Furthermore, each video was given a usefulness rating of poor, moderate, or excellent.

- Poor (P): video with poor information quality, with a score of 0–3 from the evaluated domains, containing incorrect or incomplete information
- Moderate (M): video with moderate information quality, with a score of 4–6 from the evaluated domains, giving accurate but insufficient information about apical resection
- Excellent (E): a detailed, high-quality video with excellent content information, with a score of 7–9 from the evaluated domains.

We performed another video quality analysis with the DISCERN, which is a form that has been previously modified for YouTube studies and is used to assess the quality of written and online health information (Singh et al. 2018) (Table 1).

Table 1. Modified DISCERN (1 point for every ‘yes’, 0 points for ‘no’)

1. Are the aims clear and achieved?
2. Is reliable information used (i.e. publication cited, the speaker is a board-certified practitioner)?
3. Is the information presented balanced and unbiased?
4. Are additional sources of information listed for patient reference?
5. Are areas of uncertainty mentioned?

In the DISCERN form, each criterion received one point, with total scores ranging from 0 to 5. Additionally, the Global Quality Scale (GQS) was used to rate each video (Table 2).

Table 2. Global quality scale (GQS) criteria

GQS Description	GQS Score
Poor quality, poor flow of the video, most information missing, not at all useful for patients	1
Generally poor quality and poor flow, some information listed but many important topics missing, of very limited use to patients.	2
Moderate quality, suboptimal flow, some important information adequately discussed but others poorly discussed, somewhat useful for patients	3

Good quality and generally good flow, most of the relevant information listed but some topics not covered, useful for patients	4
Excellent quality and flow, very useful for patients	5

The GQS consists of a five-item Likert scale to evaluate the usefulness of the video to patients according to the quality and flow of information (Ozbay & Cirakoglu,2021). The literature review and consensus helped to settle disagreements among the two researchers about video scoring. This study's open-source public broadcast does not require the approval of an ethics committee.

Statistical Method

Data were analyzed with IBM SPSS V23. Compliance with the normal distribution was evaluated by the Kolmogorov–Smirnov and Shapiro–Wilk tests. Mann–Whitney U test was used to compare the data that were not normally distributed according to the paired groups. The Kruskal Wallis H test was used to compare the data that were not normally distributed according to groups of three or more, and multiple comparisons were examined using the Dunn test. Yates correction, Pearson Chi-Square, and Fisher's Exact test statistics were used to examine the relationship between categorical variables according to groups. The Bonferroni-corrected Z test was used for multiple comparisons. Spearman's rho correlation was used to analyze the relationship between variables that did not show normal distribution. Analysis results were presented as mean ± standard deviation and median (minimum–maximum) for quantitative data, and frequency (percent) for categorical variables. The significance level was taken as $p < 0.05$.

3. RESULTS

Descriptive statistics of the videos are presented in Table 3.

Table 3. Descriptive Statistics

	Mean	Standard Deviation	Median	Minimum	Maximum
Seen	21401,4	85057,9	1425,0	17,0	749390,0
Duration	5,5	5,5	3,7	0,6	30,8
Likes	132,8	377,9	20,5	0,0	2700,0
Dislikes	7,1	26,6	0,0	0,0	229,0
Comments	14,7	46,4	1,0	0,0	358,0
Time after upload (day)	1516,2	1220,3	1050,0	90,0	6750,0
Subscriber	51889,9	177430,4	1920,0	0,0	1440000,0
Interaction Index	13,8	92,8	0,8	-2,0	857,1
Viewing Rate	1449,3	5087,5	155,0	1,5	37848,0
Usefulness Score	2,6	1,7	2,0	0,0	7,0
DISCERN	1,1	0,8	1,0	0,0	4,0
GQS	1,4	0,8	1,0	1,0	4,0

The first 100 videos for each determined term (n=300) related to the apical resection procedure were scanned, and 211 videos were excluded according to predestined criteria. The remaining 89 videos

showed that the United States of America is the origin country for 46.6%, the doctor is the video source for 53.9%, professional informing is the purpose for 70.8%, professionals are the target audience for 77.5%, and the doctor is the teller of 34.8%. Information about the root-end cutting procedure was given in 92.1%, the retrograde cavity was mentioned in 38.2%, and retrograde filling materials were not mentioned in 43.8%. The usefulness score (US) of 69.3% was poor, 29.5% moderate, and 1.1% excellent. Mentioning rates of nine exclusive domains are content %36, definition %26, indication %10, contraindication %2, root canal treatment involved %6, retrograde filling involved %9, surgical procedures involved %24, complications %6, prognosis %8. The frequency distribution of other categorical variables is presented in table 4.

Table 4. Frequency distribution of categorical variables

	Frequency (n)	Percentage (%)
Country Origin		
USA	41	46,6
India	11	12,5
Canada	4	4,5
England	9	10,2
Germany	4	4,5
Other (total)	20	21,5
Source		
Doctor	48	53,9
Dental Company	3	3,4
YouTube Channel	28	31,5
Health Institution	10	11,2
Purpose		
Information for professionals	63	70,8
Information for patients	20	22,5
Presenting own experiences	6	6,7
Target		
Professionals	69	77,5
Non-professionals	20	22,5
Teller		
Doctor	31	34,8
External Voice	27	30,3
Writing	31	34,8
Root-end cutting information		
Yes	82	92,1
No	7	7,9
Root cavity information		
Yes, traditionally	8	9,0
Yes, ultrasonic instrument	26	29,2
No	34	38,2
Unspecified	20	22,5
Retrograde filling material		
Yes, MTA	14	15,7

Yes, Amalgam	1	1,1
Yes, Bioceramic Based Pre-Mixed	12	13,5
Yes, Other	5	5,6
Yes, Unspecified	18	20,2
No	39	43,8

Interaction index and viewing rate analysis showed that the median values of both according to the video source, target audience, and teller did not differ statistically significantly ($p=0.051$, $p=0.588$, $p=0.577$, $p=0.348$, $p=0.384$, $p=0.161$, respectively). Interaction index median values do not show a statistically significant difference according to the purpose of the video ($p=0.597$), but the median value for informing professionals (184.53) was higher in the viewing rate evaluation ($p=0.025$). Similarly, the presence or absence of resection information did not affect the interaction index results ($p=0.367$), but the median value of the viewing rate (167.53) was higher for those with resection information ($p=0.017$). There is a statistically significant positive and moderate relationship between the interaction index, US, and DISCERN ($r=0.401$; $p<0.001$, $r=0.453$; $p<0.001$, respectively), and there is no statistically significant relationship between the interaction index and GQS ($p>0.05$). Viewing rate evaluation showed a statistically significant positive correlation between viewing rate and likes ($r=0.809$; $p<0.001$) and a statistically significant positive and high correlation between viewing rate, dislikes, and comments ($r=0.665$; $p<0.001$, $r=0.709$; $p<0.001$, respectively). A positive and weak correlation was found between the viewing rate and the US ($r=0.225$; $p=0.035$). There was no statistically significant relationship between other variables ($p>0.05$).

The comparison of the categorical data according to the P/M/E results showed that there was no statistically significant difference between the distribution of the source, teller, and resection information ($p=0,070$, $p=0,176$, $p=0,098$ respectively). There is a statistically significant difference between the purpose distributions ($p=0.003$) and 88.5% of those in the moderate group provided information for professionals. When the target distributions are evaluated, 100% of those in the moderate group are professionals ($p=0.002$) (Table 5).

Table 5. Comparison of categorical data according to P/M/E assessment

	Score		Test statistics	p
	Poor Frequency (Percentage)	Modarate Frequency (Percentage)		
Source			7,076	0,070*
Doctor	29 (47,5)	18 (69,2)		
Dental Company	1 (1,6)	2 (7,7)		
YouTube Channel	22 (36,1)	5 (19,2)		
Health Institution	9 (14,8)	1 (3,8)		
Purpose			11,463	0,003*
Information for professionals	38 (62,3) ^a	23 (88,5) ^b		
Information for professionals	20 (32,8) ^a	0 (0) ^b		
Presenting own experience	3 (4,9) ^a	3 (11,5) ^a		
Target			9,295	0,002**
Professionals	41 (67,2)	26 (100)		
Non-professionals	20 (32,8)	0 (0)		
Teller			3,47	0,176*
Doctor	17 (27,9)	12 (46,2)		
External voice	19 (31,1)	8 (30,8)		

Writing	25 (41)	6 (23,1)		
Root-end cutting information			---	0,098***
Yes	54 (88,5)	26 (100)		
No	7 (11,5)	0 (0)		

* Pearson chi-square test; ** Yates' correction; *** Fisher's Exact test; ^{a-b}No difference between groups with the same letter

Evaluation of demographic data with the US, DISCERN, and GQS showed statistically positive and moderately significant results in the comparison of duration with US and DISCERN ($r=0.439$; $p<0.001$, $r=0.430$; $p<0.001$, respectively), and positive and weak significant results in the comparison of likes with US and DISCERN ($r=0.337$; $p=0.001$, $r=0.317$; $p=0.003$, respectively). There is a statistically significant positive and weak relationship between comments and viewing rate and US ($r=0.233$; $p=0.030$, $r=0.225$; $p=0.035$, respectively). There is no statistically significant relationship between other variables ($p>0.05$).

The median values of US, DISCERN, and GQS did not statistically differ according to the source ($p=0.173$, $p=0.804$, $p=0.565$, respectively). In the score analysis according to the purpose, the median value of informing the patients (1) was found to be lower than the others ($p<0.001$). When evaluated in terms of the target audience, the median value of professionals (3) is higher than non-professionals in the US examination ($p<0.001$). In the teller evaluation, no statistically significant difference was observed in terms of US and DISCERN median values ($p=0.274$, $p=0.218$, respectively), but there is a statistically significant difference in GQS distributions arising from the mean rank ($p=0.013$). In the US analysis of the videos with root-end cutting information, the median value was obtained as 2 ($p=0.048$). Apart from this, the median values of DISCERN and GQS did not show a statistically significant difference ($p=0,231$, $p=0.565$ respectively)(Table 6)

Table 6. Comparison of Score, DISCERN, and GQS values according to source, purpose, target audience, and teller

	Score		DISCERN		GQS	
	Mean \pm SD	Median (Min-Max)	Mean \pm SD	Median (Min-Max)	Mean \pm SD	Median (Min-Max)
Purpose						
Information for professionals	3,03 \pm 1,64	3 (0 - 7) ^a	1,13 \pm 0,92	1 (0 - 4)	1,11 \pm 0,32	1 (1 - 2) ^a
Information for patients	1,15 \pm 0,67	1 (0 - 3) ^b	0,95 \pm 0,39	1 (0 - 2)	2,45 \pm 1,0	3 (1 - 4) ^b
Presenting own experience	3,0 \pm 1,67	3,5 (1 - 5) ^a	0,83 \pm 0,75	1 (0 - 2)	1,0 \pm 0	1 (1 - 1) ^a
Test statistic	23,848		0,804		40,837	
p*	<0,001		0,669		<0,001	
Target						
Professionals	3,03 \pm 1,63	3 (0 - 7)	1,1 \pm 0,91	1 (0 - 4)	1,1 \pm 0,3	1 (1 - 2)
Non-professionals	1,15 \pm 0,67	1 (0 - 3)	0,95 \pm 0,39	1 (0 - 2)	2,45 \pm 1	3 (1 - 4)
Test statistic	201,000		645,000		1179,500	
p**	<0,001		0,629		<0,001	
Teller						
Doctor	3,03 \pm 1,94	2,5 (1 - 7)	1,26 \pm 1,0	1 (0 - 4)	1,29 \pm 0,53	1 (1 - 3) ab
External voice	2,22 \pm 1,50	2 (0 - 6)	1,07 \pm 0,62	1 (0 - 2)	1,81 \pm 1,08	1 (1 - 4) ^a

Writing	2,52 ± 1,46	2 (0 - 6)	0,87 ± 0,76	1 (0 - 3)	1,16 ± 0,52	1 (1 - 3) ^b
Test statistic	2,588		3,049		8,699	
p*	0,274		0,218		0,013	
Root-end cutting information						
Yes	2,70 ± 1,69	2 (0 - 7)	1,10 ± 0,83	1 (0 - 4)	1,41 ± 0,78	1 (1 - 4)
No	1,43 ± 0,53	1 (1 - 2)	0,71 ± 0,76	1 (0 - 2)	1,29 ± 0,76	1 (1 - 3)
Test statistic	158,000		215,000		258,500	
p**	0,048		0,231		0,565	

*Kruskal–Wallis H test; **Mann–Whitney U test; a-b There is no difference between groups with the same letter, SD: Standard Deviation

Median values of likes, dislikes, and comments do not show a statistically significant difference according to the source, purpose, and target audience. When the likes were evaluated according to the teller, the doctor's median value (80) was higher than the others ($p=0.011$). Similarly, in the evaluation of dislikes and comments, the median value of the doctor (2,4, respectively) was found to be higher than the others ($p=0.017$, $p=0.002$, respectively).

When the number of views of the apical resection videos was evaluated according to the purpose of the video, the median value of informing for professionals was 184.53, the median value of informing for patients was 86.94, and the median value of sharing one's own experience was 20.78 ($p=0.025$). The median values of the number of views according to the target audience did not show a statistically significant difference ($p=0.348$).

Scoring tables analyzing among themselves showed a statistically significant positive and high correlation between US and DISCERN ($r=0.623$; $p<0.001$), and there is a statistically significant and weak positive correlation between DISCERN and GQS ($r=0.228$; $p=0.032$). There was no statistically significant relationship between GQS and US ($p=0.250$).

In our study, a statistically significant positive correlation was found between comment and like ($r=0.765$; $p<0.001$). The median values of video duration according to the source do not show a statistically significant difference ($p=0.051$).

4. DISCUSSION

Apical resection is a complex procedure for patients to understand and the fact that definite success cannot be guaranteed despite the surgery also causes patients to feel nervous and wonder about other possible treatments. With the increasing popularity of the internet and social media resources recently, most patients refer to the mentioned platforms for their diseases and treatment options (Hanna et al., 2015). In this study, the intelligibility and content quality of the videos about apical resection on YouTube, one of the first online sources of information, were evaluated.

The video source is important for the reliability of the video. The fact that anyone can upload videos on YouTube in any way they want also affects the reliability of the information. In particular, the videos in which patients share their own experiences contain subjective data, and negative referrals can also affect the decisions of patients who conduct research. Delli et al. (2016) reported that videos about patient experiences contained incorrect information. Strychowsky et al. (2013) reported that the educational value of the videos shared by the patients during the treatment journey is less than other video sources. Gas et al. (2019) on the other hand, found that the video content quality was not

affected by the video source. None of the videos reviewed in our study were uploaded by an individual patient user. This is probably related to the complexity of the treatment steps for untrained people. The most common sources are doctors (53.9%) and a YouTube channel (31.5%), but on YouTube, the information is usually given by professionals. Results of our study showed no difference between US, DISCERN, and GQS in source evaluation, and there was no statistically significant difference in P/M evaluation.

The number of comments is important to evaluate the reaction to the videos. It has been shown in the literature that videos with a high number of comments also have a high interaction index, viewing rate, number of likes, and dislikes (Er & Canakci 2022, Abukaraky et al., 2018). Consistent with the literature, a positive correlation was found between the number of comments and the viewing rate, the number of likes, and the US in our study ($r=0.709$; $p<0.001$, $r=0.765$; $p<0.001$, $r=0.233$; $p=0.030$, respectively; however, the number of comments did not affect the P/M evaluation results ($p=0.089$). Additionally, it was seen that the video source did not statistically differ in terms of the number of comments, but this is probably related to the absence of patient individual user videos. When evaluated in terms of the purpose of the video, the fact that 88.5% of the moderate videos are informative videos for professionals is probably related to the technical information about apical resection mentioned in these videos.

Previous studies evaluating the content of YouTube videos in medical sciences (Madathil et al., 2015, Adhikari et al., 2016) and dentistry (Lena & Dindaroglu, 2018, Er & Çanakçi, 2022, Yagci, 2023) have shown that YouTube videos are inadequate as a source of information and often have poor information quality. The results of our study also support the literature findings with a poor -quality video rate of 69.3%. Additionally, we would like to point out that in this article, excellent comparison data could not be presented in a statistical evaluation because the number of videos evaluated as excellent is only 1.

When the percentages of 9 exclusive domains are evaluated, the situation that the content (36%), definition (26%), surgical procedure (24%), and indication (10%) are the domains with high percentages are probably directly related to containing basic information of the subject. The low percentages of contraindications, complications, and prognosis domains are in line with previous studies (Abukaraky et al., 2018, Ozdal Zincir et al., 2019) and can be explained by detailed topics involving technical information not mentioned in the videos. Considering that the target rate in the videos is 77.5% professionals, we think that the root-end cutting information (6%) and retrograde filling material (9%) domains have a low percentage.

The importance of this article mainly stems from the use of multiple scoring scales for assessing reliability (DISCERN) and quality (GQS and US) (Kunze et al., 2020). While there is a high positive correlation between the US and DISCERN results, there is a positive weak relationship between the DISCERN and GQS. No statistically significant correlation was found between the US and GQS. When the literature is examined, different results emerge in the comparisons between the scoring tables. Aydin and Gunec (2020) showed a positive relationship between DISCERN and total content score (TCE) and GQS, and consistent results between GQS and TCE. Pamukcu and Duran (2021) also showed a positive correlation between the GQS score and DISCERN. However, Kidy et al. (2023) showed weak reliability for the DISCERN and GQS. The difference between the US and GQS in our study is probably due to the specifically evaluated root-end cutting information and retrograde filling information items because these two items are barely mentioned, even in videos with smooth and understandable language for video streaming.

Root-end cavity preparation is one of the critical stages of apical resection. It is traditionally prepared by working under irrigation with a low-speed bur, but the traditional method has disadvantages such as the inability to perform the preparation parallel to the canal, difficulty in transportation, and perforation risk (Sachdeva et al., 2019). For this reason, preparations made with ultrasonic systems

have gained popularity, and studies are reporting that the success of the procedure has increased from 60% to 90% (Rubinstein & Kim 2002, Bernardes et al., 2007, Ling et al., 2021). However, in some reports, it has been shown that the root tip preparation with an ultrasonic system causes apical microcracks (Rashed et al., 2019). In the videos analyzed in our study, the rate of apical resection performed using ultrasonic instruments was 29.2%, while the rate of videos describing the traditional method was 9%, in line with current information. However, the vast majority either did not provide cavity information (38.2%) or did not mention the method (22.5%).

Another issue we analyze in the videos is the information given about the apical filling material. Mineral Trioxide Aggregate (MTA) shows high clinical success compared to other root-tip filling materials with its advantages such as low toxicity, high biocompatibility, and prevention of microleakage (Von Arx, 2011). However, some recent studies indicate that bioceramic-based pre-mixed is a successful alternative to MTA due to MTA's technical disadvantages such as long setting time, difficulty in application, expensiveness, coloration potential, and low flexural strength (Nabeel et al., 2019). In our study, the rate of videos providing information about MTA as a filling material is 15.7%, while the rate of videos about bioceramic-based pre-mixed is 13.5%. The rate of videos that do not mention this issue is 43.8%, and analyzing scores do not differ statistically. Since there is no previous study on this subject, we cannot make a comparison, but even if the videos are prepared for patients, we think that the short and clear information about filling materials is important for the understanding of the procedure.

5. CONCLUSION

The findings of this study indicate that YouTube could not be considered a reliable source of information for patients undergoing apical resection treatment. Because of the visual content, it is obvious that recommending reliable videos identified by clinicians will aid the patient's perception. More research is needed to investigate the quality of knowledge about apical resection treatment on various social media platforms.

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