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**Evaluation of YouTube™ Videos as a Patient Education Source for Postoperative Care After Tooth Extraction**

**Diş Çekimi Sonrası Postoperatif Bakım İçin Hasta Eğitim Kaynağı Olarak Youtube™ Videolarının Değerlendirilmesi**

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## ABSTRACT

**Objectives:** This study will assess the quality, understandability and actionability of YouTube™ videos relating to postoperative care, using tooth extraction as a point of focus.

**Materials and Methods:** As keywords, ‘postoperative care after tooth extraction’ and ‘postoperative instructions after tooth extraction’ were used. After selection of the videos, a 16-point usefulness index was used in order to evaluate the content of the videos. Modified DICERN and Global Quality Scale (GQS) were used for assessing quality of the videos and in order to evaluate understandability and actionability of the selected videos, Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V) were used. The relationship and correlation between the descriptive data of the videos and the findings of scoring systems and the correlation between scoring systems were evaluated.

**Results:** Totally, 55 videos were selected for evaluation. Duration of the videos was the sole variable affecting the usefulness and quality of the videos ( $p<0.05$ ). Among evaluated videos 27.3% were very useful and 54.5% were moderately useful. There was a relationship between usefulness and quality-measuring scoring systems, but no relationship between usefulness and PEMAT-A/V scores of the videos ( $p<0.001$ ;  $p=0.064$  respectively).

**Conclusion:** It could be concluded that videos on YouTube™ about the topic ‘postoperative care after tooth extraction’ might be useful in an acceptable level, but these selected videos might not be satisfyingly understandable and action-motivating.

**Keywords:** Healthcare, Postoperative care, Postoperative procedures, Tooth extraction, Social media

## ÖZET

**Amaç:** Bu çalışmada, diş çekim işlemi sonrası postoperatif bakım ile ilgili YouTube™ videolarının kalitesinin, anlaşılabilirliğinin ve eyleme geçirilebilirliğinin değerlendirilmesi planlandı.

**Gereç ve Yöntemler:** Anahtar kelimeler olarak, ‘diş çekimi sonrası postoperatif bakım’ ile ‘diş çekimi sonrası postoperatif talimatlar’ kullanıldı. Videolar seçildikten sonra videoların içeriklerini değerlendirmek için 16 puanlık kullanılabilirlik indeksi kullanıldı. Videoların kalitesini değerlendirmek için Modifiye DICERN ve Global Quality Scale (GQS), seçilen videoların anlaşılabilirliğini ve uygulanabilirliğini değerlendirmek için Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V) kullanıldı. Videoların tanımlayıcı verileri ile puanlama sistemlerinin bulguları arasındaki ilişki ile korelasyonu ve puanlama sistemleri arasındaki korelasyon değerlendirildi.

**Bulgular:** Toplamda değerlendirme için 55 video seçildi. Videoların kullanılabilirliğini ve kalitesini etkileyen tek değişken videoların süresiydi ( $p<0,05$ ). Değerlendirilen videoların %27,3’ü çok yararlı ve %54,5’i orta derecede yararlıydı. Kullanılabilirlik ile kalite ölçüm puanlama sistemleri arasında ilişki bulunurken, videoların kullanılabilirlik ile PEMAT-A/V puanları arasında ilişki bulunmadı (sırasıyla  $p<0,001$ ;  $p=0,064$ ).

**Sonuç:** YouTube™’deki ‘diş çekimi sonrası postoperatif bakım’ konulu videoların kabul edilebilir düzeyde yararlı olabileceği, ancak bu seçilen videoların tatmin edici derecede anlaşılır ve harekete geçirici olmayabileceği sonucuna varıldı.

**Anahtar Kelimeler:** Sağlık, Postoperatif bakım, Postoperatif prosedür; Diş çekimi, Sosyal media

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## Introduction

A successful wound healing process after a surgical operation relies on several factors. Alongside the clinician's ability for performing the procedure, adequate patient education is crucial for reducing postoperative morbidity and complications, and increasing patient satisfaction during the early healing period.

Tooth extraction is the most common resective procedure in routine dental practice.<sup>1</sup> Giving adequate and understandable instructions to the patient after oral surgical procedures could increase patient satisfaction and reduce morbidity.<sup>2</sup> Such instructions include the use of the medications, care of the surgical wound in the postoperative period, and warnings regarding potential complications. Understanding of post-operative care instructions depends on how they are presented (verbal and/or written) and the socioeconomic status of the patient.<sup>3,4</sup> In dentistry, oral and/or written instructions after tooth extraction should be understandable, including illustrations for patients, to ensure compliance.<sup>2,5</sup>

Today, the Internet is frequently used because of its ability to provide easy and fast access to information about health services. Widespread use of the Internet has provided patients with the opportunity to search and collect medical information they could not obtain before; in an area whose accuracy and reliability are unknown. An estimated 74% of adults in the United States reportedly have regular internet access, and up to 80% of them search for health information online.<sup>6</sup> Online health information searches can also serve as an alternative to more traditional methods of obtaining health information, such as directly asking health care providers, especially for those who have trouble accessing health care immediately when needed.<sup>7,8</sup> Cline and Haynes report patients obtaining health information online do so in three ways; (a) seeking health information directly, (b) participating in support groups, and (c) consulting healthcare professionals.<sup>9</sup> The most common among these is the use of online tools, the most popular of which is YouTube™.<sup>10,11</sup> However, since the uploaded videos are not evaluated objectively and anyone can upload any type of video, viewers may encounter misleading or incorrect information. Studies evaluating the quality of online health-related information in the health field often report low-quality information.<sup>12,13</sup>

Although there are many studies in the literature that evaluate the accuracy of online information about

various surgical procedures, at the time of writing, there was no other study evaluating the reliability of videos with post-surgery instructions for the simplest and most common resective procedure, namely tooth extraction. The aim of this study is to evaluate videos on YouTube™ one of the most popular online platforms---about postoperative care after tooth extraction. This study will assess the videos' quality, understandability, and actionability.

## Materials and Methods

This study was designed in order to evaluate the informative qualifications, understandability, and actionability of videos regarding postoperative care after tooth extraction on YouTube™ (www.youtube.com). First, on September 3.2022, at 10:00 AM, a Google Trends search was performed to specify the keywords. The result of the keywords search was "Your search does not have enough data to display here." Because of that, keywords for searches in YouTube™ were determined as 'postoperative care after tooth extraction' and 'postoperative instructions after tooth extraction.' On September 3.2022 at 10:30 AM, a YouTube™ search was performed using keywords 'postoperative care after tooth extraction' and 'postoperative instructions after tooth extraction.' Both searches listed according to relevance and no filters were applied. For both searches, 200 videos' specific addresses, or Uniform Resource Locators (URL), (in total 400 videos) were recorded. Exclusion criteria were as follows:

- i. Duplicated videos
- ii. Language other than English
- iii. Videos with a too general topic
- iv. Videos with a too specific topic
- v. Videos about complications
- vi. Live surgery videos
- vii. Irrelevant videos
- viii. Low-quality videos

Selected videos were independently analyzed by two researchers (GMYÜ and GD) experienced in oral surgical procedures, blinded to prevent bias. Demographic data of the selected videos, including total views, video length (seconds), the total number of likes, dislikes, and comments, number of days since upload, upload source, and the target audience, were recorded. Viewer interaction and viewing rate were analyzed using the formula as previously defined:  $14 \text{ Interaction index} = (\text{number of likes} +$

number of dislikes/total number of views)×100%  
 Viewing rate = (number of views/number of days since upload) ×100%

A usefulness index with a 16-point scoring system was created in order to analyze the videos' contents

(Table 1). Video contents were labelled as very useful (12<), moderately useful (9-12), slightly useful (5-8) and not useful (4>) according to the number of the met criteria. If the criterion was met, the material got one (1) point for each criterion.

**Table 1.** Usefulness score criteria and the rates of the met criteria.

Criteria Number	Criteria	Point	Rate Observed (%)
1	Keep pressing folded gauze for 30-45 minutes after extraction.	1	96.36
2	Avoid rinsing with any liquid for the first 24 hours.	1	92.73
3	Do not spit.	1	90.91
4	You will probably remain numb for several hours after surgery.	1	21.82
5	Do not apply negative pressure, do not use drinking straws.	1	80
6	Take a soft or semi-liquid diet at a low or warm temperature.	1	92.73
7	Apply ice wrapped in a cloth on the outside of the face at the extraction site.	1	76.36
8	Maintain proper oral hygiene. After one day, begin brushing and rinsing.	1	81.82
9	Avoid smoking during the postoperative period and do not consume alcoholic/soft drinks during the week after.	1	87.27
10	No extreme or vigorous physical activity	1	61.82
11	Pain	1	89.09
12	Haemorrhage (Bleeding)	1	83.64
13	Oedema (Swelling)	1	61.82
14	Trismus (Difficulty in opening the mouth)	1	<b>3.64</b>
15	Postoperative Infection	1	16.36
16	Dry Socket	1	49.09

DISCERN is a scoring system intended to provide users with a consistent method to evaluate the quality of printed health information.<sup>15</sup> DISCERN system was modified for the evaluation of videos on YouTube™, using a scoring system consisting of

five factors (Table 2).<sup>16</sup> These five factors are bias/balance, clarity, provision of additional information sources, reliability, and whether or not uncertainty areas aimed to be evaluated.

**Table 2.** Modified DISCERN16 (Yes: 1; No:0). Observed rates of each criterion in this study.

Questions	Rate Observed (%)
1 Are the aims clear and achieved?	85.5
2 Are reliable of information used (i.e. publication cited, speaker is a board certified practitioner)?	45.5
3 Is the information presented balanced and unbiased?	69.1
4 Are additional sources of information listed for patient reference?	1.8
5 Are areas of uncertainty mentioned?	12.7

GQS is a ubiquitous scoring system utilized for analyzing patient education contents. It consists of a five-point scale, grading the quality and content of the evaluated material. In order to evaluate overall video quality, a five-point GQS analysis was performed (Table 3).<sup>17</sup>

**Table 3.** GQS Criteria<sup>17</sup>

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

Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V), Shoemaker et al.<sup>18</sup> developed PEMAT, which evaluates the domains of ‘understandability’ and ‘actionability’.<sup>18</sup> The power of the PEMAT is that not only printed materials but also audiovisual materials (PEMAT-A/V) could be evaluated. This scoring system offers mutual and exclusive evaluation criteria for printed and audiovisual materials. PEMAT-A/V system consists of 17 scoring criteria, 13 of them are for evaluating the understandability of the audiovisual material; four of them are for evaluating the actionability of the same. In this study, PEMAT-A/V scoring criteria were applied (Table 4; Part 1, 2).

**Table 4 (Part 1).** PEMAT- A/V scoring criteria for understandability. Observed rates of each criterion in this study.

Item #	Item	Response Options	Rate Observed %	
<b>Topic: Content</b>				
1	The material makes its purpose completely evident.	Disagree=0, Agree=1	90.9	
<b>Topic: Word Choice &amp; Style</b>				
3	The material uses common, everyday language.	Disagree=0, Agree=1	96.4	
4	Medical terms are used only to familiarize audience with the terms. When used, medical terms are defined.	Disagree=0, Agree=1	96.4	
5	The material uses the active voice.	Disagree=0, Agree=1	50.9	
<b>Topic: Organization</b>				
Understandability	8	The material breaks or "chunks" information into short sections.	Disagree=0, Agree=1, Very short material=N/A	40.0
	9	The material’s sections have informative headers.	Disagree=0, Agree=1, Very short material=N/A	41.8
	10	The material presents information in a logical sequence.	Disagree=0, Agree=1	83.6
	11	The material provides a summary.	Disagree=0, Agree=1	9.1
<b>Topic: Layout &amp; Design</b>				
12	The material uses visual cues (e.g., arrows, boxes, bullets, bold, larger font, highlighting) to draw attention to key points.	Disagree=0, Agree=1, Video=N/A	10.9	
13	Text on the screen is easy to read.	Disagree=0, Agree=1, No text or all text is narrated=N/A	63.6	
14	The material allows the user to hear the words clearly (e.g., not too fast, not garbled).	Disagree=0, Agree=1, No narration=N/A	76.4	
<b>Topic: Use of Visual Aids</b>				
18	The material uses illustrations and photographs that are clear and uncluttered.	Disagree=0, Agree=1, No visual aids=N/A	25.5	
19	The material uses simple tables with short and clear row and column headings.	Disagree=0, Agree=1, No visual aids=N/A	9.1	

**Table 4 (Part 2).** PEMAT- A/V scoring criteria for actionability. Observed rates of each criterion in this study.

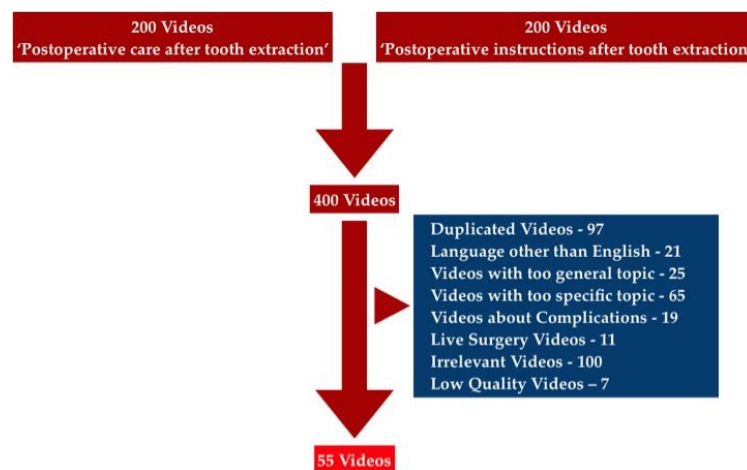
Item #	Item	Response Options	Rate Observed %
Actionability	20	The material clearly identifies at least one action the user can take.	Disagree=0, Agree=1 90.9
	21	The material addresses the user directly when describing actions.	Disagree=0, Agree=1 38.2
	22	The material breaks down any action into manageable, explicit steps.	Disagree=0, Agree=1 Disagree=0, Agree=1 10.9
	25	The material explains how to use the charts, graphs, tables, or diagrams to take actions.	No charts, graphs, tables, diagrams=N/A 0

Data analysis was performed with IBM® SPSS® V23 (IBM®, Armonk, NY, USA). The Kolmogorov-Smirnov and Shapiro-Wilk tests were used for conformity to normal distribution. Normally distributed data according to two dependent groups was compared with a paired two-sample t-test. The Wilcoxon test was used to compare data that were not normally distributed according to two dependent groups. The relationship between non-normally distributed quantitative data was examined with Spearman’s rho correlation coefficient. The intra-class correlation coefficient was used to examine the interobserver agreement. Analysis results were presented as mean ± standard deviation and median (minimum–maximum) for quantitative data and as frequency and percentage for categorical data. The significance level was determined as p<0.05.

**Results**

The aim of this study was to evaluate the usefulness, the understandability and the actionability of YouTube™ videos regarding postoperative care after tooth extraction. For both searches (‘Postoperative care after tooth extraction’ and ‘Postoperative

instructions after tooth extraction’), 400 videos were analyzed. After analyzing the videos according to exclusion criteria and the existence of duplication, 55 videos were selected for evaluation (Figure 1). Descriptive data, including total views, video length (seconds), the total number of likes, dislikes, and comments, number of days since upload, upload source, and the target group of the videos were collected. The interaction index and viewing rate were calculated. The mean of the total views of the videos was 27,977.35±118,018.21. The mean duration of the videos was 208.35±115.49 seconds. On average, 313.85 likes, no dislikes, and 52.71 comments were recorded in the videos included in this study. On average, 1,490.95 days have passed since the videos were uploaded (Standard Deviation=1,079.95). Healthcare companies uploaded 31 of the 55 videos; 19 were uploaded by individual users who were medical professionals (dentists); and five were uploaded by individual, nonprofessional users. Patients were the target audience of all the videos. The calculated interaction index of the evaluated videos was 0.01±0.03 and viewing rate of the videos was 17.5±58.94.



**Fig 1.** Videos selection process

For interobserver agreement, there was no statistically significant difference between DISCERN scores ( $p=0.267$ ). There was a statistically significant agreement between the observers in terms of DISCERN scores ( $ICC=0.934$ ;  $p<0.001$ ). A statistically significant difference was found between the PEMAT-A/V scores according to the observers ( $p=0.007$ ). While the mean PEMAT-A/V score of the 1st observer was 8.35, the mean

score of the 2nd observer's PEMAT-A/V score was 7.05. There was a statistically significant and very good agreement between the observers in terms of the PEMAT score ( $ICC=0.964$ ;  $p<0.001$ ). For interobserver agreement of GQS, there was no statistically significant difference between the two observers ( $p=0.317$ ). There was near-perfect agreement between the observers in terms of GQS scores ( $ICC=0.955$ ;  $p<0.001$ ), (Table 5).

**Table 5.** Interobserver agreement values for DISCERN, PEMAT and GQS.

	1st Observer		2nd Observer		Test Statistics	p	ICC (%95 CI)	p
	Mean ± SD	Median (min-max)	Mean ± SD	Median (min-max)				
<b>DISCERN</b>	2.15 ± 0.99	2 (0 - 4)	1.85 ± 1.27	2 (0 - 5)	1.143	0.267*	0.934 (0.832 – 0.974)	<0.001
<b>PEMAT</b>	8.35 ± 2.73	8 (3 - 15)	7.05 ± 2.26	7,5 (3 - 11)	3.040	0.007*	0.964 (0.909 – 0.986)	<0.001
<b>GQS</b>	2.85 ± 1.01	3 (1 - 5)	2.85 ± 1.09	3 (1 - 5)	7.500	0.317**	0.955 (0.887 – 0.982)	<0.001

\* Paired two sample t test, \*\*Wilcoxon test; Abbreviations: SD: Standart Deviation, min: Minimum, max: Maxiumum, ICC: Interclass Corelation

In order to evaluate the quality, DISCERN and GQS systems were used. In the total scoring obtained from the DISCERN scoring system, three of the 55 videos received 0 points (5.5%), 10 of them one point (18.2%), 22 of them two points (40%), 16 of them three points (29.1%) and four of them four points (7.3%). None of the videos get five points. Observed rates of each met criterion were shown in Table 2. In the GQS scoring system, five of the 55 videos received score 1 (9.1%), 15 of them score 2 (27.3%), 20 of them score 3 (36.4%), 13 of them score 4 (23.6%) and two of them score 5 (3.6%). For evaluating the understandability and actionability of the videos, PEMAT-A/V scoring system was used. Mean values and percentage values of the videos were calculated, cumulating each criterion, together for calculating the total PEMAT-A/V score, and separately for understandability and actionability. Totally, the mean PEMAT-A/V score was  $8.35 \pm 2.73$  ( $49.1\% \pm 16.1\%$ ). Averagely, selected videos have got  $53.4\% \pm 16.7\%$  for understandability and  $35\% \pm 19.6\%$  for actionability. Observed rates of each met criterion are shown in Table 4.

According to the usefulness scoring criteria, 15 of the 55 videos were very useful (27.3%), 30 of the 55 videos were moderately useful (54.5%), nine of the 55 videos were slightly useful (16.4%) and one of the 55 videos was not useful (1.8%). The rates of each met the criteria have been shown in Table 1. The results showed that the videos had a lack of information about potential postoperative complications, e.g. dry socket, infection, numbness, oedema, and trismus. A comparison of the usefulness classes revealed a statistically significant difference between usefulness classes regarding the duration of the videos (Table 6). It has been found that longer videos were more useful than shorter videos ( $p=0.013$ ). Other variables including total views, number of likes, number of comments, and views since upload, did not cause any statistically significant difference ( $p>0.05$ ). Furthermore, there was no statistically significant relationship between the usefulness of the videos and the interaction index and viewing rate ( $p>0.05$ ).

**Table 6.** Comparison of usefulness index classes with other parameters.

	<b>MODERATELY USEFUL</b>	<b>SLIGHTLY USEFUL</b>	<b>VERY USEFUL</b>	<b>Test Stat.</b>	<b>p*</b>
<b>Total View</b>	42024.87 ± 157675.03 397.5 (10 - 796857)	13408.33 ± 29938.49 504 (5 - 91885)	10488 ± 27743.96 836 (102 - 107128)	2.075	0.354
<b>Duration</b>	205.9 ± 88.61 176.5 (67 - 452)ab	142.11 ± 93.34 106 (59 - 360)b	261.87 ± 151.77 242 (138 - 743)a	8.681	0.013
<b>Like</b>	407.57 ± 1635.41 1.5 (0 - 8600)	176.89 ± 460.13 4 (0 - 1400)	229.53 ± 794.9 2 (0 - 3100)	0.455	0.796
<b>Number of Comments</b>	70.47 ± 287.04 0 (0 - 1491)	66.33 ± 195.26 0 (0 - 587)	12.53 ± 42.29 0 (0 - 165)	0.596	0.742
<b>Number of Days since Upload</b>	1616.2 ± 1158.06 1415 (9 - 4521)	956.44 ± 590.05 836 (321 - 2228)	1638.27 ± 1088.8 1587 (180 - 3148)	2.398	0.301
<b>Interaction Index</b>	0.01 ± 0.01 0 (0 - 0.06)	0.02 ± 0.06 0.01 (0 - 0.17)	0.01 ± 0.01 0 (0 - 0.05)	0.001	1.0
<b>Viewing Rate</b>	20.91 ± 74.88 0.42 (0.03 - 392.15)	16.23 ± 33.89 0.33 (0.02 - 104.06)	12.61 ± 32.47 0.57 (0.06 - 122.57)	1.627	0.443
<b>DISCERN</b>	2.33 ± 0.92 2 (1 - 4)a	1 ± 0.87 1 (0 - 2)b	2.53 ± 0.64 2 (2 - 4)a	13.432	0.001
<b>PEMAT (Total)</b>	8.97 ± 2.83 9 (4 - 15)	7 ± 2.92 7 (3 - 12)	8.13 ± 2.1 7 (5 - 13)	3.375	0.185
<b>PEMAT - Understandability</b>	7.03 ± 1.88 7 (3 - 11)	5.67 ± 2.4 6 (2 - 9)	6.47 ± 1.6 6 (3 - 10)	2.715	0.257
<b>PEMAT - Actionability</b>	2.05 ± 1.23 2 (1 - 5)	1.8 ± 1.1 1 (1 - 3)	1.27 ± 0.65 1 (1 - 3)	3.846	0.146
<b>GQS</b>	3.03 ± 0.85 3 (2 - 5)a	1.56 ± 0.53 2 (1 - 2)b	3.4 ± 0.74 3 (2 - 5)a	20.16	<0.001

Kruskall Wallis H test, a-b: There is no difference between classes with the same letter. mean ± s. deviation, median (min.-max)

A statistically significant difference was found between the total DISCERN scores (median values) according to the usefulness index classes (p=0.001). This difference was due to the difference in the median values between the moderately useful and very useful classes and the slightly useful class. Slightly useful videos were scored with lower DISCERN scores than other groups; this difference was statistically significant. Additionally, a statistically significant difference was found between the GQS scores (median values) according to the usefulness index classes (p<0.001). This difference was due to the difference in the median values between the moderately useful and very useful classes, and the slightly useful class. Slightly useful videos were scored with lower GQS scores than other groups and this difference was statistically significant. Finally, there was no statistically significant difference

between the median values of other variables according to the usefulness index classes (p>0.05).

A statistically significant positive and moderate correlation was found between the usefulness index and the duration of the videos (r=0.496; p<0.001). A statistically significant positive and weak correlation was found between total DISCERN scores and the duration of the videos (r=0.277; p=0.041). A statistically significant positive and weak correlation was found between GQS scores and the duration of the videos (r=0.324; p=0.016). Other variables were not statistically significant (p>0.05). There was a statistically significant positive and weak correlation between the Total PEMAT score and interaction index (r=0.283; p=0.036). There was no statistically significant relationship between PEMAT scores and other quantitative variables (p>0.05), (Table 7).

**Table 7.** Evaluation of the relationship between quantitative demographic information and scoring systems.

	Usefulness Index		DISCERN		GQS		Total PEMAT		Understandability		Actionability	
	r	p	r	p	r	p	r	p	r	p	r	p
<b>Total View</b>	0.07	0.611	-0.253	0.062	-0.114	0.406	-0.012	0.928	0.002	0.99	-0.076	0.654
<b>Duration</b>	0.496	<0.001	0.277	0.041	0.324	0.016	0.213	0.119	0.181	0.186	0.083	0.624
<b>Like</b>	-0.017	0.9	-0.007	0.961	0.019	0.893	0.185	0.176	0.119	0.386	-0.03	0.859
<b>Dislike</b>	---	---	---	---	---	---	---	---	---	---	---	---
<b>Number of Comments</b>	-0.071	0.607	-0.128	0.353	-0.08	0.562	0.029	0.834	0.029	0.833	0.03	0.861
<b>Number of Days since Upload</b>	0.173	0.206	-0.124	0.368	0.11	0.424	-0.233	0.087	-0.215	0.115	-0.062	0.717
<b>Interaction Index</b>	-0.021	0.878	0.179	0.19	0.087	0.525	0.283	0.036	0.189	0.166	-0.026	0.88
<b>Viewing Rate</b>	0.076	0.581	-0.118	0.392	-0.034	0.806	0.128	0.351	0.105	0.447	-0.082	0.628

r: Spearman’s rho correlation coefficient

A statistically significant positive and moderate correlation was found between the usefulness index and DISCERN scores ( $r=0.546$ ;  $p<0.001$ ). A statistically significant positive and high correlation was found between the usefulness index and GQS scores ( $r=0.679$ ;  $p<0.001$ ). A statistically significant positive and moderate correlation was found between total PEMAT and total DISCERN scores ( $r=0.448$ ;  $p=0.001$ ). A statistically significant positive and moderate correlation was found between total

PEMAT score and GQS scores ( $r=0.556$ ;  $p<0.001$ ). A statistically significant positive weak correlation was found between understandability (PEMAT) and total DISCERN scores ( $r=0.359$ ;  $p=0.007$ ). A statistically significant positive and moderate correlation was found between understandability and GQS scores ( $r=0.497$ ;  $p<0.001$ ). There was no statistically significant relationship between PEMAT scores and other quantitative variables ( $p>0.05$ ), (Table 8).

**Table 8.** Evaluation of the relationship between different scoring systems.

	Usefulness Index		DISCERN		GQS		PEMAT	
	r	p	r	p	r	p	r	p
<b>DISCERN</b>	0.546	<0.001						
<b>GQS</b>	0.679	<0.001	0.693	<0.001			0.556	<0.001
<b>PEMAT</b>	0.252	0.064	0.448	0.001				
<b>Understandability</b>	0.23	0.092	0.359	0.007	0.497	<0.001		
<b>Actionability</b>	-0.283	0.089	-0.199	0.238	-0.265	0.114		

r: Spearman rho correlation coefficient.

## Discussion

Throughout history, many inventions have been made and these inventions have changed the way human needs are met. These innovations, which are created based on historical conditions and human expectation, in turn, shape the world and the human experience of it. With the introduction of the Internet, human needs and their manner of fulfillment changed, and have evolved over the

years in parallel with this innovation. The Internet has provided a wide range of services, from ordering food or basic needs to performing academic research, and with these services, personal habits have also changed. In particular, people meet their need for information by consulting professionals with whom they have a working relationship. Due to its speed and convenience, however, this practice has largely shifted to the Internet. It does not only work for information needs alone; it also works as a



multidisciplinary tool, which enables every human being to create and share content. Some web pages provide especially simple content release for their users, e.g., YouTube™.

One of the most used sites on the internet today is YouTube™. In 2022, it was one of the top two most-visited web pages in the world and the United States.<sup>19,20</sup> YouTube™ is a free platform where information cannot be controlled, so users can upload the content they want. Given the free and uncontrolled sharing of health-related information, it has been seen that many researchers have conducted studies examining the quality of videos with specific health content presented on YouTube™ regarding dental and oral surgical procedures.<sup>10-14,21-29</sup>

Most of the studies created a usefulness index regarding the topic in a scientific-based manner.<sup>10,14,23-26</sup> This study applied a 16-question usefulness index scoring system in order to evaluate the content of the videos specifically about postoperative care after tooth extraction (Table 1). While dos and don'ts were included in most of the videos, it has been observed that complications or conditions such as oedema, trismus, infection, dry socket or numbness, which could be experienced by the patient during postoperative period, were mostly unaddressed. In this study, the videos were also classified according to the number of met criteria. In this study, 81.8% of the videos were very useful or moderately useful regarding their content about postoperative instructions after tooth extraction. Comparing other dentistry-related videos on YouTube™, this result was notably positive.

Among variables, duration was the sole variable that affected the level of usefulness and quality of the videos. As previously mentioned, many studies have been conducted about the qualifications of videos regarding health-related issues about oral and maxillofacial surgery. A study conducted by Gaş et al. evaluated the qualifications of YouTube™ videos targeting patients about botulinum toxin injection for bruxism.<sup>10</sup> In this study, the only significant variable affecting the usefulness of the videos was the duration. Similarly, longer videos were more useful than shorter videos. In another study evaluating the content of dental implant education for patients, Menziletoglu et al. observed that very useful videos were longer than less useful videos, in a statistically significant manner.<sup>21</sup> Based on the data in the literature and this current study, it could be interpreted that more content has been included in the videos with longer duration.

In a literature review of the studies evaluating the quality of the information for patients, specifically regarding oral and maxillofacial surgery, it has been observed that the Global Quality Scale (GQS), the modified DISCERN scoring system, The Health on the Net Foundation Code of Conduct (HONCODE) and Ensuring Quality Information for Patients (EQIP) tool were used for evaluation.<sup>15-17,30-32</sup> Modified DISCERN and GQS tools were commonly used in many of the studies. In order to obtain comparable data, this study primarily used these assessment tools.

Likewise, there was a significant relationship between the duration of the videos and quality assessment tools' results, according to the usefulness index. Longer videos were more qualified than shorter videos. These findings are consistent with the related literature. For other variables, there was no relationship with the videos' quality. Evaluating the scoring systems in terms of quality level, none of the videos have been scored with 5 points in DISCERN and only two videos earned a score of 5 in GQS. According to the findings of DISCERN, more than half of the videos' lacked certified practitioners or evidence-based data. Evidence-based data is crucial, because it provides the most current care, which enables better-quality patient outcomes. Patients should ideally receive the most efficient care based on the best available data. A meta-narrative systematic review by Daraz et al. evaluated the quality of health information on the Internet in general via quality assessment tools like DISCERN.<sup>33</sup> According to the Daraz's study, there were no excellent videos in the included 153 studies. The current study's findings were consistent with the related literature.

This study argues that in order to understand the quality level of videos about specific health conditions or recommendations like postoperative care after tooth extraction, evaluating topic-related criteria is very important. Because of that, a usefulness index was created based on the scientific data. However, assessing only the content of the audiovisual materials would be insufficient. Because of that, using internationally recognized, evidence-based scoring systems like DISCERN and/or GQS for quality control is a useful analytical approach. Furthermore, by using universally known tests, the resulting data could be understood in a wider context. Because quality assessment tools like DISCERN give a general idea of the quality, according to this study, it is also important to share

each met criterion as observed rates. In this way, factors affecting quality could be understood and discussed, and quality could therefore be improved. Therefore, in the related literature and current study, these quantitative scoring systems were used in combination with a usefulness index.

Another issue for educational materials in general and also specific for patients, whether printed or audiovisual, is understandability and actionability. Determining the general quality of content is especially important for content containing information for patients. However, no matter how accurate, thorough and high-quality the content is, its value will decrease to the extent it cannot be understood and used by the target audience. For this reason, it is important to evaluate the understandability and actionability of the examined samples, as well as the quality and content, especially in such studies. In this study, the PEMAT-A/V tool scoring developed by Shoemaker et al.<sup>18</sup>, which was used to evaluate the understandability and actionability of audiovisual materials, was used to evaluate these two parameters<sup>18</sup>. The advantage of this evaluation method is that it gives a general quality level result and gives an idea to the researcher in separate criteria such as understandability and actionability. In evaluating the videos, this study found an insufficiency of visual aids. Though the steps to be taken in the postoperative period were listed, the videos lacked visual demonstrations, thereby hindering understandability (Table 4).

This study also evaluated the correlation between scoring systems. Notably, while usefulness and quality scores correlated with each other, the videos that included high usefulness and quality levels did not correlate with understandability and actionability according to the PEMAT-A/V evaluation. These findings raise the question of whether videos with high scores in terms of content and quality are understandable and motivating for action.

Last but not the least, another crucial issue is that today, sharing content such as patient education continues to be released without regulation or oversight. Because of this, patients and/or users should be educated about choosing the right information, and they should be guided as to which criteria they should look for. As a result, these scoring systems have taken their place in the scientific literature for professionals. Understandable and easy criteria for users should be determined and disseminated. Providing and controlling knowledge--especially for health-related content should be the

duty of governments or educational institutions. Even if these organizations cannot control data, they should educate and inform the public on how to choose reliable information sources.

There were some limitations in this study. Firstly, this study evaluated videos only in the English language. Further studies should be conducted in order to evaluate videos in other languages so that these phenomena might be understood on a country-by-country basis. Furthermore, this study investigated a limited timeline on the Internet. Because the Internet is a dynamic source, constantly evolving, such studies regarding the same topics should be conducted in the future. Finally, via this study, it could not be evaluated the watch durations of the videos on YouTube™ by the users. In order to investigate this point, a questionnaire study should be conducted on the users which are using the Internet as a source of healthcare information.

One strength of this study is that multiple different scoring systems have been used in order to evaluate different aspects of the videos' content regarding postoperative care after tooth extraction. In this way, videos about the topic could be evaluated in terms of usefulness, quality, understandability and actionability. Furthermore, the correlation between these different evaluation methods has been investigated. This will motivate future studies in which different scoring systems will be used in order to obtain data from different aspects of Internet materials targeting patients.

## Conclusion

This study has found duration was the only variable affecting the usefulness and quality of the videos regarding postoperative care after tooth extraction. Among the evaluated videos, 27.3% were very useful and 54.5% were moderately useful. There was a correlation between the usefulness of the videos and GQS and DISCERN scores, but there was no correlation between the usefulness of the videos and PEMAT-A/V scores which provides insight regarding the understandability and actionability of the videos. It could be concluded that videos on YouTube™ about the topic 'postoperative care after tooth extraction' might be useful at an acceptable level, but these videos might not be satisfyingly understandable and action-motivating.

## Conflict of interest

None of the authors of this article has any relationship, connection or financial interest in the subject matter or

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