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The Evaluation of YouTube™ Videos as an Option for Informing Patients on Postoperative Care Following Periodontal Plastic Surgery

Periodontal Plastik Cerrahi Sonrası Postoperatif Bakım Konusunda Hastaların Bilgilendirilmesi için Youtubetm Videolarının bir Seçenek Olarak Değerlendirilmesi

Serap Karakış Akcan^{1*}, Büşra Terzioğlu^{2,3}

ABSTRACT

Objectives: The aim of this study was to evaluate the reliability and quality of YouTube™ videos on postoperative care with a focus on periodontal soft tissue surgery.

Materials and Methods: A YouTube™ search was performed using three keywords: “Post-op instructions gingival surgery”, “post-operative patient information gingival surgery”, and “What to do after gum surgery.” Video length, duration, total views, number of likes, dislikes, and comments were recorded. The interaction index, view rates, and video power index (VPI) were calculated. The Global Quality Scale (GQS) and Mod-DISCERN scales were used to assess the reliability and quality of the videos. Postoperative instructions were categorized for bleeding, medications, diet, daily activities, and oral hygiene, and an overall content usefulness score was also calculated.

Results: A total of 210 videos were evaluated and 32 videos were included in the study. While 29 of the videos were useful videos, one video had misleading video content. In addition, two videos were patient views. The mean GQS score of the videos was 3.53±0.94. According to the Mod-DISCERN score, 90.6% of the videos showed reliable sources and the purposes were clearly stated. The total content usefulness score was 3.22±1.68 for all videos, and the total Mod-Discern score was 2.87±1.09 and was higher for useful videos.

Conclusion: It can be concluded that videos on “postoperative care after periodontal plastic surgery” on YouTube™ can be reliably useful. Content produced by non-professional users needs to be improved in terms of reliability and quality.

Keywords: Autografts, Plastic surgery, Postoperative period, Social media

ÖZET

Amaç: Bu çalışmanın amacı, periodontal yumuşak doku cerrahisine odaklanarak postoperatif bakımla ilgili YouTube™ videolarının güvenilirliğini ve kalitesini değerlendirmektir.

Gereç ve Yöntemler: YouTube™ araması için üç anahtar kelime kullanıldı: “diş eti cerrahisi sonrası yapılması gerekenler”, “postoperatif diş eti cerrahisi hasta bilgileri” ve “Dişeti cerrahisi sonrası ne yapılır”. Video uzunluğu, süresi, toplam görüntülenme sayısı, beğenme sayısı, beğenme sayısı ve yorumlar kaydedildi. Etkileşim indeksi, görüntüleme oranları ve video güç indeksi (VPI) hesaplanmıştır. Videoların güvenilirliğini ve kalitesini değerlendirmek için Global Kalite Ölçeği (GQS) ve Mod-DISCERN ölçekleri kullanıldı. Ameliyat sonrası talimatlar kanama, ilaçlar, diyet, günlük aktiviteler ve ağız hijyeni için kategorize edildi ve genel kullanılabilirlik puanı da hesaplandı.

Bulgular: Toplam 210 video değerlendirildi ve 32 video çalışmaya dahil edildi. Videoların 29'u faydalı iken bir video yanıltıcı video içeriğine sahipti. Ayrıca iki video da hasta görüşüydü. Videoların ortalama GQS puanı 3,53±0,94 idi. Mod-DISCERN puanına göre videoların %90,6'sında güvenilir kaynaklar gösterilmiş ve amaçlar açıkça belirtilmiştir. Toplam içerik kullanılabilirlik puanı tüm videolar için 3,22±1,68 ve toplam Mod-Discern puanı 2,87±1,09 idi ve kullanılabilir videolar için daha yüksekti.

Sonuç: YouTube™'deki “periodontal plastik cerrahi sonrası postoperatif bakım” konulu videoların güvenilir bir şekilde faydalı olabileceği sonucuna varılabilir. Profesyonel olmayan kullanıcılar tarafından üretilen içeriklerin güvenilirlik ve kalite açısından iyileştirilmesi gerekmektedir.

Anahtar Kelimeler: Ototograft, Plastik cerrahi, Postoperatif dönem, Sosyal medya

¹ İstanbul Gelişim University, Faculty of Dentistry, Department of Periodontology, İstanbul, Turkey.

² Kutahya Health Sciences University, Tavşanlı Vocational School of Health Services, Kutahya, Turkey.

³ Kutahya Health Sciences University Faculty of Dentistry, Department of Periodontology, Kutahya, Turkey.

***Sorumlu Yazar** Serap Karakış Akcan, e-posta: skarakis@gelisim.edu.tr, ORCID: 0000-0003-4371-5455, İstanbul Gelişim University, Faculty of Dentistry, Department of Periodontology, İstanbul, Turkey.

Introduction

Periodontal plastic surgery involves surgical procedures to prevent or correct disease-related defects in the gingiva, alveolar mucosa, or bone.¹⁻⁴ These procedures include gingival augmentation, root closure, correction of mucosal defects in implants, frenulum surgeries, and soft and hard tissue arrangements in extraction sites or edentulous crests. Soft tissue grafting has been increasingly used in clinical practice for augmenting tissue thickness, correcting mucogingival deformities, and improving esthetics at teeth and dental implant sites.¹⁻³ However, patient morbidity and postoperative complications have been reported, including hemorrhage at the donor site, palatal sensory dysfunction, infection, and increased surgical time.^{2,5-8} In today's society, the advancement of treatment planning and options in periodontology has been driven by the growing aesthetic demands of dental patients. This includes a heightened emphasis on the aesthetic integration of treated gingiva with contiguous tissue and full coverage of exposed root surfaces. Clinical trials should primarily address patient-based outcomes.^{3,8} The factors that can affect the outcome of periodontal surgical treatments are divided into three categories: patient, dental, and surgical, as classified by Jepsen et al.⁹ The researchers identified various factors that contribute to patient outcomes, including patient selection, oral hygiene, systemic health status, and smoking. Additionally, they highlighted the significance of home care, antibiotics, antiplaque mouthwashes, and specific oral hygiene recommendations before and after surgery.⁹ Maintenance treatments in the postoperative period were also found to be crucial.⁹ Periodontists possess the necessary expertise to develop optimal treatment plans for patients. However, the actual implementation of these plans may be hindered by patients who do not adhere to the advice provided by the periodontist. Hence, the patient's decision-making process heavily relies on the quality and constructive nature of the patient-physician relationship.^{10,11} A study conducted by Blinder et al. emphasized the significance of patient compliance with treatment in relation to following dentist recommendations following surgical procedures.¹² It has been reported that clear and comprehensive verbal and written instructions play a crucial role in ensuring patient compliance and minimizing postoperative stress and discomfort.¹²

YouTube™ is one of the most popular web-based platforms with more than two billion daily views since 2005.¹³⁻¹⁶ With the advantage of easy access to information not only about health but about any subject, YouTube™ can provide users with accurate content as well as misleading information. The content produced is not only from professionals in health or other fields, anyone can upload content to YouTube™, so the reliability and accuracy of the content should be questioned.^{15,17} Mohamed and Shoufan reported that users consult YouTube™ not only for health information but also as a decision-making tool.¹⁸ However, these platforms can also be very misleading for patients due to too much information flow and lack of verifiability.^{19,20}

There are many studies related to medical and dental conditions using YouTube™, such as dental caries, dentin sensitivity, denture care, peri-implantitis, periodontal disease awareness, gingival enlargement, laser-assisted gummy smile treatment, orthodontic aligners, halitosis, oral candidiasis, and oral cancer/oral leukoplakia.^{13,14,21-30} However, no study has evaluated postoperative care after periodontal soft tissue surgery.

The null hypothesis of this study is that YouTube™ videos cannot be relied upon as a source of information for patients post-operative periodontal soft tissue surgery. The purpose of this study was to evaluate whether YouTube™ videos providing information on patient care after periodontal soft tissue surgery can be used as a high-quality, useful, and accurate source of information.

Materials and Methods

This is a descriptive cross-sectional study evaluating post-soft tissue periodontal surgery instructions on the YouTube™ website. The research did not need to be approved by an ethics board. To eliminate bias when evaluating videos, the search engine cleared its entire search history and created a new YouTube™ account with a new email address. To evaluate the information accessed by lay YouTube™ users regarding post-periodontal soft tissue surgery instructions, three keywords were identified: "Post-op instructions gingival surgery", "post-operative patient information gingival surgery", and "What to do after gum surgery." The study adhered to the PRISMA guidelines, displaying the video search outcomes and selection process in Figure 1.

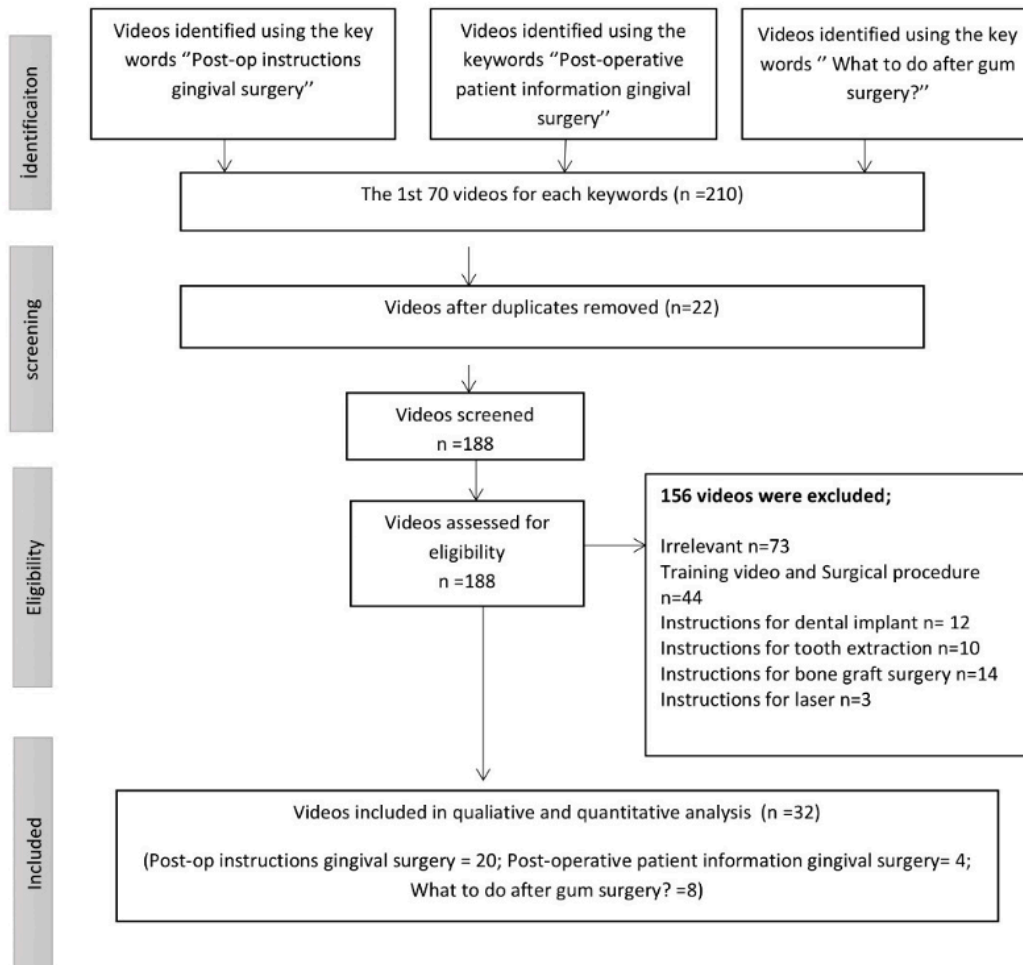


Figure 1. Prisma Flow Chart Search Strategy

All three searches were listed by relevance, and no filters were applied. The study analyzed the first 70 videos for each keyword. All videos were recorded on a separate YouTube™ account and evaluated between January 24th and January 26th, 2024. The same researcher (B.T.), assessed all of the videos and for intraexaminer reliability, the researcher evaluated ten videos for each keyword twice over two weeks, using MODIFIED-DISCERN (Mod-DISCERN) scores. (Cohen's kappa: 0.97). All of the videos were viewed on the same computer screen, with standard brightness and volume, at a distance of one meter from the screen. Each video was evaluated immediately, and there was a break before moving on to the next one. The videos were watched in a suitable room environment, free from any external disturbances.

The study includes English videos that provide instructions to patients after periodontal soft tissue surgeries such as frenectomy, gingivectomy, free gingival graft, and connective tissue graft. The

included videos were expected to cover instructions on oral hygiene, bleeding control, medication use, diet, daily activity, or patient view.

The criteria for exclusion are as follows: 1. non-English, 2. Irrelevant videos, 3. Duplicated videos, 4. About surgical techniques and giving information in academic language to professionals; 5. Instructions for a dental implant, 6. Instructions for tooth extraction, 7. Instructions for bone graft surgery, 8. Instructions for laser.

To gather quantitative information, each term was searched separately using the following criteria: number of likes, number of dislikes, number of comments, video length (minutes), duration on YouTube™ (month), view count, video quality, video source, and category (useful, misleading, personal experience).

The following formulas were used to calculate the video's interaction index, viewing rate, and video power index (VPI).^{13,2}

Viewing rate(%) = [number of views/ number of days since upload] x 100,

Interaction index(%) = [number of likes – number of dislikes/total number of views]x100.

Video power index(VPI) = (number of likes/ number of dislikes + number of likes)x100

The videos included were in two classified systems:²⁴ Based on the useful, misleading, or personal experience-based; a. Useful: Scientifically accurate information about post-operative instructions, b. Misleading: containing scientifically unproven and false information currently available, c. Personal experience: after personal periodontal soft tissue surgery.

Based on video source: a. independent users, b. government/news agencies, c. university channels/ professional organizations, d. health information websites, e. medical advertisements/for-profit companies.

Global Quality Scale (GQS)²⁹ and Mod-DISCERN²⁵ scoring system were used to evaluate the quality of the videos. With the GQS survey, the quality of the video was evaluated based on the usability of the information and its usefulness for patients and was scored on a 5-point Likert scale. (5 = good quality criteria, 2–4 = partly good quality criteria, 1 = poor quality criteria).

Mod-DISCERN is a scoring system used to evaluate the quality of health information provided to users and consists of five factors; 1. clarity in objectives, 2. reliability of the information source, 3. bias/balance, 4. provision of additional sources of information, 5. evaluation of areas of uncertainty. The Mod-DISCERN scoring system assigns a score of 1 for "yes" and 0 for "no" for each factor.

To evaluate the usefulness of videos for patients, post-operative instructions were assessed in five categories: 1. bleeding control, 2. medication use, 3. diet, 4. daily activities, and 5. oral hygiene. The content usefulness Index assigns a score of 1 for "yes" and 0 for "no" for each factor.

Statistical analysis was carried out on the IBM SPSS Statistics for Windows, Version 22.0 statistical software (IBM Corporation, New York, NY, USA). The Cohen J statistical method was used to calculate

intra-examiner reliability. In this study, descriptive statistics of the data, including number, percentage, mean, standard deviation, minimum, and maximum were provided.

Results

A total of 210 videos, 70 for each keyword, were evaluated, 178 videos were excluded, and characteristic data of a total of 32 videos that met the inclusion criteria were recorded. The flowchart in Figure 1 shows the video selection process and how the excluded videos are distributed according to the exclusion criteria. Out of the included videos, 29 (90.6%) were deemed useful, while 2 (6.3%) were classified as patient view, and 1 (3.1%) was found to be misleading. The mean-like values were determined as 390.27±1354.5 for useful videos, 67 for misleading videos, and 582±287.79 for patient views. The mean dislike values were determined as 13.41±55.08 for useful videos, 30 for misleading videos, and 12±4.24 for patient views. The total view mean for useful videos is 21713±63393.57, while 1674 for misleading videos and 22062.78±61291.60 for patient views. While the mean video length was 5.89±7.38 minutes in all videos, it was 4.50±3.92 minutes in useful videos, 3.43 minutes in misleading videos, and 27.13±17.16 minutes in patient views. The mean duration on YouTube™ was 54.72±40.20 months for useful videos, seven months for misleading videos, and 39±29.69 months for patients' views. Mean comment values were 43.79±145.47 for useful videos, 37 for misleading videos, and 81±41.01 for patient views.

The mean interaction index (%) for useful videos is 1.25±0.77%, misleading videos 0.22%, and patient views 1.54±0.81%. The mean viewing rate (%) is 2153.34±61.56% for useful videos, misleading videos 734.20%, and 3739.25±3132% for patient views videos. The mean video power index is 95.07±18.44% for useful videos, 69.07% for misleading videos, and 96.80±2.69% for patient views videos (Table 1).

Table 1. Video Characteristics

	Useful videos Mean ± SD (min-max)	Misleading videos Mean ± SD (min-max)	Patient views Mean ± SD (min-max)	Total
Number of videos (%)	29(90.6%)	1 (3.1%)	2 (6.3%)	32
Total view	21713±63393.57 (3-341146)	16740	29793±3340 (27431-32155)	22062.78±61291.60 (3-341146)
Video length (minutes)	4.50±3.92 (0.59- 14.25)	3.43	27.13±17.16 (15-39.27)	5.89±7.38 (0.59-39.27)
Duration on YouTube(month)	54.72±40.20 (1- 144)	76	39±29.69 (18-60)	54.40±38.97 (1-144)
Number of likes	390.27±1354.5 (0- 7300)	67	582±287.79 (279-686)	385.93±1289.89 (0-7300)
Number of dislike	13.41±55.08 (0- 298)	30	12±4.24 (9-15)	13.84±52.4 (0-298)
Interaction index%	1.25±0.77 (0- 3.15)	0.22	1.54±0.81 (0.96-2.11)	1.24±0.77 (0-3.15)
Viewing rate %	2153.34±61.56 (3.80- 31587)	734.20	3739.25±3132 (1523.90-5954.60)	2208.11±5896.95 (3.80-31587)
Number of comments	43.79±145.47 (0- 775)	37	81±41.01 (52-110)	45.90±138.76 (0-775)
Video Power Index	95.07±18.44 (0-100)	69.07	96.80±2.69 (94.89-98.70)	94.37±18.13 (0-100)
Global Quality Scale	3.68±0.84 (2-5)	2	2	3.53±0.94
Total-Content Usefulness Score	3.39±1.68	2	1.5±0.70	3.22±1.68
Total Mod-DISCERN Score	3.13±0.74 (2-4)	0	1	2.87±1.09 (0-4)

Of the videos included in the study, 13(41%) were independent users, and 19(59%) were published by medical advertisements/for-profit companies (Figure 2).

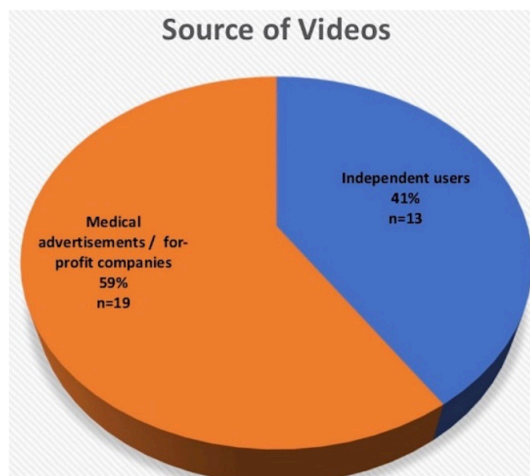


Figure 2. Source of Videos

The quality assessment of all videos regarding instructions after periodontal soft tissue surgery was made with GQS, and 6 of the videos (18.7%) were defined as excellent quality and flow, very useful for the patient, and received a score of 5. 10 (31.5%) of the videos received a score of 4 with good quality and generally good flow, while 13 (40.6%) received a score of 3 with a description of medium quality, and

3 (9.3%) received a score of 2 with a description of generally poor quality and flow. No video received the GQS score of 1, which is defined as poor quality and poor flow and not useful to patients. (Table 2). While the mean GQS was 3.53 ± 0.94 , it was found to be 3.68 ± 0.84 in useful videos, 2 in misleading videos, and two in patient views videos (Table 1).

Table 2. Global Quality Scale (GQS) Scores

Score	Definition	Number of videos (%)
1	Poor quality, poor flow of the video, most information missing, not at all useful for patient	0 (0%)
2	Generally poor quality and flow, some information listed but many important topics missing, of very limited use to patients	3 (9.3%)
3	Moderate quality, suboptimal flow, some important information adequately discussed but others poorly discussed, somewhat useful for patient	13 (40.6%)
4	Good quality and generally good flow. Most of the relevant information is listed but some topics are not listed. Useful for patient	10 (31.5%)
5	Excellent quality and flow, very useful for patient	6 (18.7%)

The evaluation of the questions in the Mod-DISCERN scoring system is presented in Table 3. It was found that the goals were clear and achieved in 29 videos (90.6%). While 90.6% of the videos used reliable sources of information, none of the videos listed additional sources of information for the patients. While the information presented in 22 videos (68.8%) was found to be balanced and unbiased, areas of uncertainty were mentioned in 12 videos (37.5%).

When the usefulness of the content of the videos was evaluated for patients, it was seen that 53.1%

of the videos contained instructions for bleeding control, and 62.5% contained instructions for medicine use. While 21 (65.6%) videos included instructions for nutrition, 12 videos (37.5%) offered recommendations for daily activities. Additionally, 78.1% of the videos included post-operative instructions for oral hygiene and oral care. (Table 4). The mean total content usefulness score of all included videos was determined as 3.22 ± 1.68 . While the mean total content usefulness score was 3.39 ± 1.68 in useful videos, it was 2 in misleading videos and 1.5 ± 0.70 in patient views videos (Table 1).

Table 3. MODIFIED-DISCERN questions scores

	0 (No)	1 (Yes)
1. Are the aims clear and achieved?	3(9.3%)	29(90.6%)
2. Are reliable sources of information used? (i.e., speaker is specialist in periodontology?)	3(9.3%)	29(90.6%)
3. Is the information presented both balanced and unbiased?	10(31.3%)	22(68.8%)
4. Are additional sources of information listed for patient reference?	32(100%)	0(0%)
5. Are areas of uncertainty mentioned?	20(62.5%)	12(37.5%)

Table 4. Evaluation of the content usefulness of the videos

	Number of videos (%)
Instructions for bleeding control	17 (53.1%)
Instructions for medicine use	20 (62.5%)
Instructions for diet	21 (65.6%)
Instructions for daily activity	12 (37.5%)
Instructions for oral hygiene	25 (78.1%)

Discussion

Recent studies have evaluated videos on YouTube™ on a wide range of topics such as oral hygiene education, orthodontic and implant treatment, student education, and oral mucosal diseases. The present study is the first to evaluate the quality and usefulness of postoperative information content of periodontal soft tissue surgery on the YouTube™ platform.

In most studies using YouTube™, the sample size is between 60-200 videos.³¹ It has been reported that most YouTube™ users scan only the first 30 videos.³² Similarly, in our study, we started with 210 videos from our three key search terms (the first 70 for each), and after removing duplicates, videos with dental implant, resective or regenerative flap surgery, laser-assisted surgery, periodontal-implant surgery for educational purposes, and tooth extraction content were excluded and the last 32 videos were evaluated.²⁴ Of the videos included in the study, 13 (41%) were independent users and 19 (59%) were published by medical advertising/for-profit companies. Of the included videos, 29 (90.6%) were found to be useful, while 2 (6.3%) were classified as patient view and 1 (3.1%) was found to be misleading. The videos were mostly uploaded by healthcare professionals.^{25,33} This is to be expected for this type of surgical treatment, which is performed within the periodontal discipline on a very limited patient population.

While the mean video length was 5.89±7.38 minutes for all videos, it was 4.50±3.92 minutes for useful videos, 3.43 minutes for misleading videos, and 27.13±17.16 minutes for patient views. In addition to studies reporting that long videos distract viewers²³ and that a mean of seven minutes is sufficient,³³ there are also studies reporting that video duration is not related to other parameters.¹⁴ Other studies reported that the longer the video duration, the more useful the videos were.³⁴⁻³⁶ In our study, we found that videos longer than 15 minutes were uploaded by non-expert

users to explain their postoperative procedures. In our study, for these two videos, video length, number of likes, view rate, number of comments, and video power index appear to be higher on mean than for useful videos. YouTube™ metrics such as subscribers, likes, and dislikes can potentially be manipulated.^{26,37,38} However, given the popularity of YouTube™ and its potential use as an important source of medical information, it is important to direct patients to appropriate resources.^{26,37,38} Videos uploaded by individuals often serve a social function, allowing them to share personal experiences, whereas those produced by a medical organization are more likely to contain educational content.^{26,37} Kovalski et al. reported that high-quality videos receive more likes and views, whereas Hassona et al. reported that the most viewed videos were the least helpful videos.^{13,14} In our study, in support of this information, patients who view videos without a professional opinion were generally rated as low quality in the GQS scores. The remaining videos (72.5%) were rated as moderate and good quality, and six were rated as excellent. The limited data in our study contradicts the findings in the literature. This conflict in the literature suggests that "video topic" seems to influence the relationship between usefulness and duration.

Recent studies have also evaluated the reliability of videos on platforms such as TikTok and Chatgpt in the health field.^{20,39} Bengi et al. reported in a comparative study that although the video duration on TikTok for gingival enlargement is shorter than on YouTube™, the rates of views, likes, and interactions are higher.²⁰ They reported that the content on YouTube™ was more reliable, accurate, and educational regarding gingival enlargement compared to TikTok; however, videos on both platforms were generally of low reliability and quality.²⁰ As the population grows due to rapid advances in technology and the need for quick answers to their questions, very long videos may not be preferred for information needs.^{29,40} Our

study was conducted for YouTube™ only. Different results may be obtained on different platforms.

This study used the Mod DISCERN scoring system for video reliability. In another YouTube™ study on gingival recession, it was reported that 37% of the videos had reliable sources, according to DISCERN scores.²⁷ Güler and Özaltun reported that it was not clear which information sources were used in 91.1% of the videos on YouTube™ as a patient information tool for periodontal disease awareness.²⁴ In our study, it was observed that the videos had reliable sources (90.6%), the information provided was generally unbiased and free of bias (68.8%), but none of the videos included additional resources for patient application and conditions that may vary from patient to patient were not widely mentioned.

Usefulness indexes created in the context of the topic evaluated in different studies have also been used to evaluate video content.^{13,34,35} In their study, Ülker and Duygu grouped YouTube™ videos according to their inclusion of 16-item titles created for patient care after tooth extraction, including topics such as bleeding control, nutrition, physical activity, pain, edema, and smoking.³⁴ They found that video length had an impact on the usefulness and quality of the videos.³⁴ In our study, the things to consider in the postoperative period after periodontal soft tissue surgery were evaluated under the headings of bleeding control, medication use, daily activities, oral hygiene, and nutrition according to the literature.^{41,42} In this study, the mean score for all included videos was determined to be 3.22±1.68. For the patient view, the score for including recommendations in the videos is lower than for the useful videos. In the videos in our study, the least content was found on daily activities (37.5%) and the most on oral care (78.1%). Similar to Ülker and Duygu,³⁴ both the transfer of the individual-specific process and the long video duration may have affected the quality and usefulness of these videos.

Our study has several limitations. The evaluation was not based on measurable quantitative data but on the rating of a single observer. Also, the evaluation of only English videos can be considered as a limitation.²⁵ Our sample size is quite insufficient for the analysis. Although the search history was deleted and a new email account was used in order not to influence the search results on YouTube™, the geographical region

where the search was conducted may influence the results.²⁴ Articles on YouTube™ and dentistry do not typically use filters, but the application of these filters may produce different results. The dynamic nature of platforms such as YouTube™, where new videos are constantly being added and deleted, means that video quality and content may change depending on the time of the search.²⁴

It is recommended that dental professionals create informative and educational videos about postoperative care for periodontal soft tissue surgery, and such videos may be uploaded to the widely utilized video-sharing platform, YouTube™. Patients may be directed to these videos for enhanced collaboration and to improve overall treatment outcomes. By leveraging the benefits of digital media, dentists can increase patient education and engagement while promoting overall wellness and optimal health.²⁶

Conclusion

Within the very limited evaluation of this study, relevant YouTube™ videos describing postoperative care for periodontal soft tissue surgery may be useful and reliable in terms of content, but the content is generally of medium to high quality. The few videos in which people share their postoperative experiences also have remarkably high rates of views, likes, and interactions. Videos of people's postoperative experiences need to be improved and monitored for content, quality, and usefulness. Keeping in mind that each patient's postoperative period is special and subjective, the team and physician who performed the surgical procedure should make postoperative care understandable to the patient verbally and in writing.

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Conflict of interest

The authors declare that they have no conflict of interest.

Authorship Contributions

Idea/Concept: A.S.K Design: A.S.K Control/Supervision: A.S.K Literature Review: T.B Data Collection and/or Processing: T.B Analysis and/or Interpretation: A.S.K Writing the Article: A.S.K Critical Review: T.B.

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