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Educational Quality and Reliability of YouTube Videos on Periodontal Regeneration: A Cross-Sectional Content Analysis

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Abstract

Background: Periodontal regeneration is a biologically and technically demanding treatment modality, and incomplete online information may influence patient expectations and self-directed learning. This study evaluated the educational quality and reliability of English-language YouTube videos on periodontal regeneration procedures. Materials and Methods: A cross-sectional content analysis was performed on YouTube on 10 May 2026 using five search terms: "Periodontal Regeneration Therapy", "Guided Tissue Regeneration", "Periodontal Regeneration Surgery", "Periodontal Regeneration Procedures", and "Intrabony Defect Treatment". The first 100 videos for each term were screened. After exclusion of duplicate, irrelevant, non-English, promotional, financial advice, and non-dental videos, 89 videos were independently assessed by the four author-investigators. Video characteristics, upload source, uploader's country, and periodontal regeneration-specific content domains were recorded. Educational quality was assessed using a content-based Global Score for Educational Value (GSEV), and reliability was evaluated using the Modified DISCERN instrument. Results: Interobserver agreement for Modified DISCERN total scores was high (mean pairwise weighted $\kappa = 0.87$; range: 0.84–0.90). Most videos were uploaded by periodontologists' channels ($n = 55$, 61.8%). The mean GSEV and Modified DISCERN scores were 1.55 ± 1.06 and 1.31 ± 1.83, respectively. Most videos demonstrated very limited coverage of the predefined educational content domains (66.3%), while 73.0% were classified as having poor reliability according to the Modified DISCERN instrument. Procedural information was frequently presented (94.4%), whereas contraindications, complications, and cost were rarely addressed. Upload source was significantly associated with both GSEV ($p = 0.025$) and Modified DISCERN score ($p < 0.001$), with dentistry faculty channels showing the highest scores. Conclusions: YouTube videos on periodontal regeneration generally demonstrated limited educational content coverage and low information reliability. Although YouTube may support visual learning, it should not be used as a stand-alone educational source. Evidence-based, balanced, and patient-centered videos are needed to address indications, limitations, risks, prognosis, and cost-related considerations.

Keywords: continuing dental education; educational assessments; guided periodontal tissue regeneration; online learning

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1. Introduction

Periodontitis is a chronic, biofilm-mediated inflammatory disease affecting the tooth-supporting tissues. It is initiated by a dysbiotic dental biofilm and modified by host susceptibility, behavioral factors, and systemic conditions [1]. If left untreated, progressive periodontal breakdown may lead to clinical attachment loss, periodontal pocket formation, alveolar bone resorption, tooth mobility, and ultimately tooth loss [1]. Accordingly, periodontal therapy aims not only to control inflammation and arrest disease progression but also, in appropriately selected defects, to reconstruct the lost periodontal attachment apparatus through regenerative treatment approaches [2].

Regenerative periodontal therapy is an established treatment modality for selected periodontal defects, particularly intrabony and furcation defects with favorable anatomical characteristics. Its primary clinical objectives include clinical attachment level (CAL) gain, probing pocket depth (PPD) reduction, radiographic bone fill, and improvement of tooth prognosis through the reconstruction of periodontal supporting tissues. However, the predictability of regenerative outcomes depends on appropriate case selection and several biologic, patient-related, and surgical determinants, including defect morphology, residual periodontal support, root surface debridement, plaque control, smoking status, systemic risk factors, flap design, wound stability, space provision/maintenance, primary wound closure, and the selection of regenerative biomaterials or biologic mediators [3]. Although long-term clinical studies indicate that the clinical improvements achieved after regenerative periodontal therapy may remain stable over several years, complete periodontal regeneration and clinical success cannot be expected in all defects or patients [4].

Given its technical complexity, biologic sensitivity, and clinical relevance, periodontal regeneration represents a particularly important topic in online health education. Patients may seek information before periodontal consultation, dental students may use surgical videos to understand operative steps, and clinicians may access audiovisual resources for continuing professional development [5]. Digital platforms increasingly influence how patients obtain and interpret health-related information before interacting with healthcare professionals [6]. Among these platforms, YouTube has become a prominent source of audiovisual health information, particularly for procedure-oriented disciplines, because it enables complex surgical interventions to be demonstrated visually and accessed without financial or temporal restrictions [7]. However, YouTube is primarily a general-purpose video-sharing platform rather than a dedicated educational or peer-reviewed resource. Although it can serve as a supplementary tool for health education, the scientific accuracy, clinical balance, transparency, completeness, and educational value of its content may vary considerably [7].

A systematic review indicated that YouTube is an inconsistently reliable source of health information and that engagement metrics, such as views, likes, and comments, do not necessarily reflect scientific accuracy or educational quality [7]. In line with this concern, health literacy literature emphasizes that clinicians should help patients identify accurate, balanced, and evidence-based digital resources rather than allowing algorithm-driven platform visibility alone to guide patient education [5].

Recent studies in dentistry have shown that online oral health videos may be useful in selected contexts but often lack comprehensive, balanced, and reliable evidence-based content [8]. A recent content analysis of oral health misinformation reported that more than half of the evaluated YouTube videos contained misleading information and that such videos could still generate substantial positive user engagement [9]. In periodontology, a 2025 study evaluating YouTube videos retrieved using the term “Guided Tissue Regeneration” reported limitations in the quality, reliability, and educational usefulness of the available content [10]. However, periodontal regeneration encompasses a broader range

of procedures and concepts than guided tissue regeneration alone. Therefore, analyses based on a single search term may not fully represent the information encountered by users searching for periodontal regenerative procedures online.

Against this background, the present study aimed to evaluate the content, educational quality, and reliability of English-language YouTube videos on periodontal regeneration procedures using a comprehensive search strategy based on multiple periodontal regeneration-related keywords. The primary hypothesis was that videos on periodontal regeneration would frequently provide incomplete educational information, particularly regarding clinical indications, contraindications, defect selection, potential complications, long-term prognosis, maintenance requirements, and treatment costs.

2. Materials and Methods

2.1. Study Design

This study was designed as a cross-sectional content analysis of publicly available YouTube videos related to periodontal regeneration procedures. The study aimed to evaluate the educational completeness and reliability of English-language videos retrieved using commonly used periodontal regeneration-related search terms. The four individuals who assessed the videos were the four authors of the study and performed the assessments solely in their capacity as investigators; no external experts or other human participants were recruited or enrolled. As the study exclusively involved the analysis of publicly accessible online videos and did not involve human participants, patient data, clinical records, human tissue, or identifiable private information, ethics committee approval was not applicable and was not sought.

2.2. Search Strategy and Video Selection

A systematic search was performed on YouTube on 10 May 2026 between 09:00 and 18:00. To minimize the potential influence of personalization, all searches were conducted using the same computer and internet connection. Searches were performed in private mode, with browser history, cookies, and cache cleared before the search, and without logging into a YouTube or Google account. The default YouTube search ranking was used, and no additional filters were applied.

The following five search terms were used: “Periodontal Regeneration Therapy”, “Guided Tissue Regeneration”, “Periodontal Regeneration Surgery”, “Periodontal Regeneration Procedures”, and “Intrabony Defect Treatment”. These search terms yielded 17,000, 8660, 2330, 1230, and 239 results, respectively. For each search term, the first 100 videos were screened, resulting in an initial pool of 500 videos. This approach was selected because previous studies have reported that most YouTube users view only the first several pages of search results and rarely access videos ranked much lower in the search output [11].

All retrieved videos were screened according to predefined eligibility criteria. When the same video appeared under more than one search term, it was considered a duplicate, and only the first occurrence was retained. The screening and selection process is summarized in Figure 1. Of the 500 video entries initially screened across the five search terms, 411 were excluded, leaving 89 videos eligible for the final analysis. Specifically, 213 entries were excluded as duplicates, 44 videos were excluded because they were not in English, and 154 videos were excluded based on the remaining content-related eligibility criteria. The latter group included videos unrelated to periodontal regeneration, non-dental content, promotional or advertising material, and financial-advice videos. These content-related exclusion reasons were grouped together in the screening flowchart rather than reported as separate numerical categories. The selection process and corresponding exclusion counts are illustrated in Figure 1.

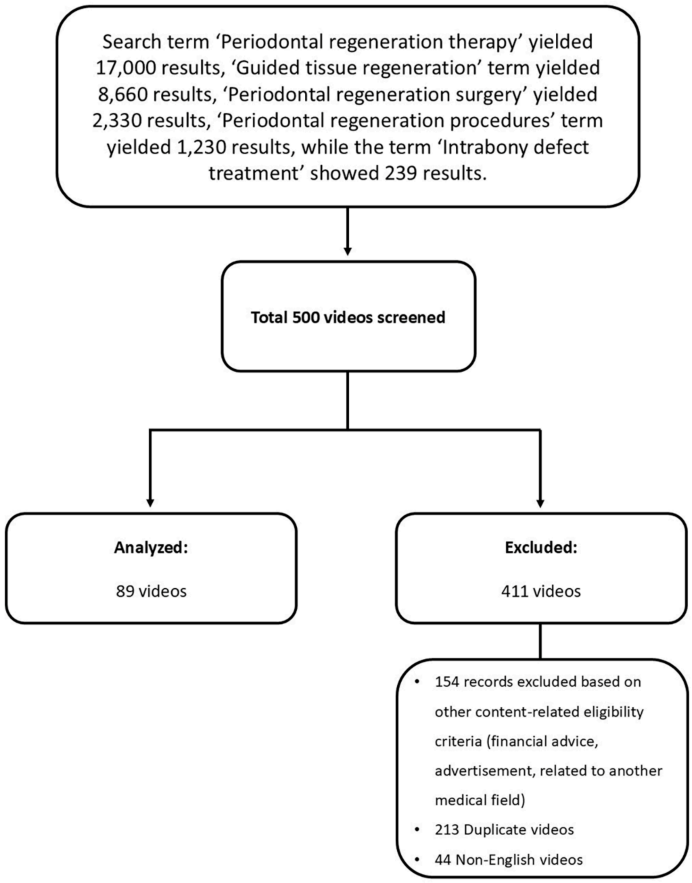


Figure 1. Flowchart illustrating the identification, screening, exclusion, and final selection of YouTube videos for the analysis of periodontal regeneration-related content.

Although these standardized search conditions were intended to minimize personalization-related variability, they could not completely eliminate potential influences of geographical location and YouTube's algorithmic ranking. Consequently, identical searches conducted at different times or from different geographical locations may not retrieve the same videos in the same order.

2.3. Eligibility Criteria

Videos were included if they met all of the following criteria:

English-language content; direct relevance to periodontal regeneration, guided tissue regeneration, periodontal regeneration surgery, periodontal regenerative procedures, or intrabony defect treatment; publicly accessible video format at the time of analysis; and sufficient visual or verbal content to permit educational and reliability assessment.

Videos were excluded if they were duplicates, non-English videos, irrelevant to periodontal regeneration, related to non-dental or unrelated medical fields, primarily promotional or advertising content, financial-advice videos, or inaccessible at the time of evaluation. After applying these criteria, 89 videos were included in the final analysis.

2.4. Data Extraction

A standardized data extraction form was used for all included videos. The following variables were recorded for each video: video title, URL, upload date, total duration in minutes, number of days since upload, number of views, number of likes, number of comments where available, uploader's country, and source of upload.

The number of days since upload was calculated as the interval between the upload date and the date of data collection. The viewing rate was calculated using the following formula:

- Viewing rate = number of views/number of days since upload × 100

Because public dislike counts are no longer directly available on YouTube, dislike-based variables were interpreted with caution. The interaction index was calculated using the following formula:

- Interaction index = [number of likes/number of views] × 100

For videos in which comments were disabled, comment data were recorded as unavailable and were analyzed only among videos with accessible comment sections.

2.5. Classification of Upload Source and Uploader's Country

Videos were categorized according to the source of upload. The upload source was classified into one of the following groups: periodontologist channels, dental clinic channels, dentistry faculty or university channels, dental organization channels, and information or health company channels. Classification was based on the channel name, channel description, institutional affiliation, professional identity of the uploader, linked websites, and publicly available channel information.

The uploader's country was determined based on publicly available information, including the channel's declared location, institutional affiliation, official website, and channel description. When the uploader's country could not be reliably identified, it was classified as "unknown". Importantly, this classification reflected the geographical affiliation of the uploader rather than the actual location of video production. Video eligibility was based on the availability of English-language audiovisual content for assessment; the original language of production was not independently verified.

The intended target audience of the videos (e.g., patients, dental students, or periodontal specialists) was not systematically categorized as a separate variable during data extraction. All eligible videos were evaluated using the same predefined content assessment framework to ensure consistency across the study sample. Importantly, the source of upload was not considered equivalent to the intended audience, as videos originating from the same professional or institutional category may address different viewer groups.

2.6. Evaluation of Video Content and Educational Value

The educational content of each video was evaluated using a structured, content-based assessment approach adapted from previously published studies on the educational value of YouTube videos [12]. A similar eight-domain checklist and scoring approach was previously employed by Durmazpınar et al. [13] to evaluate the educational quality of YouTube videos on regenerative endodontics. In the present study, this approach was adapted to periodontal regeneration-related information, with an emphasis on clinically adequate content coverage.

The previously published content-based assessment framework was adapted to the specific objectives of the present study and has not undergone independent psychometric validation for periodontal regeneration-related content. Therefore, it was intended to assess the extent of educational content coverage rather than to serve as a validated measure of overall educational quality or scientific accuracy.

Each domain was scored dichotomously, with 1 point assigned when the topic was explicitly and meaningfully addressed and 0 points assigned when the information was absent, unclear, or insufficiently explained. All eight domains were assigned equal weight to ensure a transparent, standardized, and reproducible assessment of content completeness. This approach was selected to avoid introducing subjective weighting assumptions in the absence of established, validated weights for the individual domains. Importantly, equal

weighting does not imply that all domains have equivalent clinical importance or educational relevance. In the present study, an adapted GSEV-based scoring approach was used as a content-based indicator of educational value, focusing on the coverage of clinically relevant information regarding periodontal regeneration.

The raw content completeness score ranged from 0 to 8 and was converted to a five-point Global Score for Educational Value (GSEV) using the following formula:

$$\text{GSEV} = (\text{Raw content completeness score}/8) \times 5$$

Higher scores indicated broader coverage of the predefined content domains. However, the resulting score should be interpreted as a study-specific indicator of content completeness rather than a comprehensive assessment of educational effectiveness, clinical accuracy, or evidence quality. The score categories were defined for descriptive purposes and should not be interpreted as externally validated quality thresholds. Video assessments were based on direct examination of the audiovisual content. Written scripts or transcripts were not analyzed separately, and no automated or artificial intelligence-assisted content analysis was performed. The operational definitions, scoring procedures, and descriptive classifications applied in the present study are summarized in Table 1.

Table 1. Content-based Global Score for Educational Value and Modified DISCERN Instrument.

Global Score for Educational Value		
Assessment Component	**Scoring Procedure**	**Interpretation**
GSEV-based content assessment	Eight domains: definition, indications, contraindications, advantages, procedural information, complications, prognosis/survival, and cost. Each scored 0 or 1.	Raw content score: 0–8. Converted GSEV = (raw score/8) × 5.
Raw score 0–2	Converted score 0–1.25	Poor quality—very limited content coverage
Raw score 3	Converted score 1.88	Generally poor quality: Limited content coverage
Raw score 4–5	Converted score 2.50–3.13	Moderate quality: Moderate content coverage
Raw score 6–7	Converted score 3.75–4.38	Good quality: Extensive content coverage
Raw score 8	Converted score 5.00	Excellent quality: Complete coverage of predefined domains
Modified DISCERN assessment	Five binary criteria covering clarity of aims, credibility of information sources, balanced presentation, additional references, and acknowledgment of uncertainty. Each scored 0 or 1.	Total score: 0–5. Higher scores indicate greater information reliability.
Modified DISCERN 0–1	Sum of five criteria	Poor reliability
Modified DISCERN 2–3	Sum of five criteria	Generally sparse/average reliability
Modified DISCERN 4–5	Sum of five criteria	Good to excellent reliability

The content-based scoring framework was adapted to periodontal regeneration using previously published approaches [12,13]. The Modified DISCERN assessment was based on previously described reliability criteria [12,14]. Score categories are descriptive and should not be interpreted as independently validated measures of overall educational quality or scientific accuracy. For Modified DISCERN Item 2, a score of 1 was assigned when the presenter was identifiable as a relevant specialist or when scientific publications were explicitly referenced. These indicators reflect apparent source credibility rather than independently verified scientific accuracy.

2.7. Reliability Assessment Using the Modified DISCERN Instrument

The reliability of each video was assessed using the Modified DISCERN instrument, which has been used in previous evaluations of YouTube health-information videos [12] and was adapted from the original DISCERN tool developed for judging the quality of written consumer health information on treatment choices [14]. The Modified DISCERN instrument included the following five items: clarity and achievement of aims; use of reliable sources of information; balanced and unbiased presentation; listing of additional sources for patient reference; and mention of areas of uncertainty.

Regarding the second Modified DISCERN item, "Are reliable sources of information used?", a score of 1 was assigned when at least one of the following criteria was fulfilled: (1) the individual presenting the information was identifiable as a specialist in the relevant field, or (2) the information was presented with explicit reference to relevant scientific publications or research evidence. When neither criterion was fulfilled, a score of 0 was assigned. These criteria were used as indicators of apparent source credibility within the applied assessment framework. Importantly, professional expertise or references to scientific publications were not considered definitive evidence of scientific accuracy. The Modified DISCERN assessment did not involve an independent, claim-by-claim verification of the scientific information presented in the videos.

Each Modified DISCERN item was scored dichotomously, with 1 point assigned when the criterion was fulfilled and 0 points assigned when it was absent or insufficiently addressed. The total Modified DISCERN score was calculated by summing the five items, resulting in a score ranging from 0 to 5 (Table 1). Higher scores indicated greater reliability. For categorical analysis, videos were classified as poor reliability, generally sparse or average reliability, or good to excellent reliability according to predefined total score intervals. Scores of 0–1 were classified as Poor Reliability, scores of 2–3 as Generally Sparse/Average Reliability, and scores of 4–5 as Good to Excellent Reliability.

2.8. Investigator Calibration and Assessment Procedure

All four authors of the present study served as investigators responsible for video assessment. Each investigator had at least eight years of academic experience in dentistry, providing a substantial background in dental education, clinical practice, and scientific research. At the time of the study, two investigators were affiliated with university departments of periodontology, and one was affiliated with a university department of endodontics. The fourth investigator, Emine Adalı Pekcan, was the co-owner of a private dental practice and had previously served in academia for eight years. All four investigators independently evaluated the included videos using the predefined content checklist and Modified DISCERN criteria.

Before the final assessment, the four author-investigators underwent a calibration process using a pilot sample of videos that was not included in the final analysis. The calibration exercise was based on total Modified DISCERN scores, and differences in scoring were discussed to standardize the assessment procedure before the evaluation of the final 89 videos.

During the final assessment, the investigators were blinded to one another's scores. Video popularity and engagement metrics, including views, likes, and comments, were recorded separately and were not made available to the investigators during the educational quality and reliability assessments. However, blinding to the identity of the uploading channels could not be guaranteed because identifying information may be apparent within the video content itself. Disagreements were resolved by consensus after completion of the independent evaluations. None of the 89 videos included in the analysis were produced by the study authors or their affiliated institutions.

2.9. Interobserver Agreement

Interobserver agreement was assessed using the total Modified DISCERN scores (0–5) independently assigned by the four author-investigators to all 89 videos included in the final analysis. Pairwise Cohen's kappa coefficients with linear weighting were calculated for all six possible investigator pairs. The overall interobserver agreement was summarized using the arithmetic mean of these six coefficients and their observed range. The mean linearly weighted kappa coefficient was 0.87 (range: 0.84–0.90), indicating high interobserver agreement for Modified DISCERN total scores. This agreement estimate was specific to the Modified DISCERN assessment and should not be interpreted as representing interobserver agreement for the GSEV-based content evaluation.

2.10. Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated for all variables. Continuous variables were presented as mean ± standard deviation and median with interquartile range, as appropriate. Categorical variables were presented as frequencies and percentages.

The normality of continuous variables was assessed using the Shapiro–Wilk test. As the variables did not show a normal distribution, non-parametric tests were used. The Kruskal–Wallis test was used to compare continuous and ordinal variables among upload-source groups. When a statistically significant difference was detected using the Kruskal–Wallis test, post hoc pairwise comparisons were performed using the Mann–Whitney U test with Bonferroni correction. As five upload-source groups were compared, a total of ten possible pairwise comparisons were considered, resulting in a Bonferroni-adjusted significance threshold of $p < 0.005$ (0.05/10).

Categorical variables were compared using the chi-square test. When expected cell counts were low, Fisher's exact test or the Fisher–Freeman–Halton test was used as appropriate. Correlations between video characteristics, educational value scores, and Modified DISCERN scores were assessed using Spearman's rank correlation coefficient. A conservative significance threshold of $p < 0.001$ was applied to the correlation analyses to account for multiple testing. For all other analyses, a two-sided p value of <0.05 was considered statistically significant, except for the Bonferroni-adjusted pairwise comparisons. For the eight exploratory comparisons of individual educational content domains across upload-source groups, Bonferroni correction was applied to control for multiple testing, resulting in an adjusted significance threshold of $p < 0.00625$ (0.05/8). The original unadjusted p values were retained in the tables, and statistical significance was interpreted according to the adjusted threshold.

To complement statistical significance testing, effect sizes for the Kruskal–Wallis analyses were calculated using rank-based eta-squared (η^2H), defined as $(H - k + 1)/(N - k)$, where H represents the Kruskal–Wallis test statistic, k the number of groups, and N the number of valid observations. Given the unequal sample sizes across upload-source categories, statistical comparisons were interpreted cautiously, particularly for groups with relatively few observations.

3. Results

The first 100 videos of each term were screened based on our inclusion criteria. After initial screening, 411 videos were excluded (Figure 1). The remaining 89 videos were analyzed by the four author-investigators (Table S1). Interobserver agreement for Modified DISCERN total scores was high (mean pairwise weighted $\kappa = 0.87$; range: 0.84–0.90). According to the source of upload, most videos were uploaded by periodontologists' channels

($n = 55$, 61.8%), followed by dental organizations' channels ($n = 16$, 18.0%), dentistry faculty channels ($n = 8$, 9.0%), dental clinic channels ($n = 6$, 6.7%), and information channels ($n = 4$, 4.5%).

The most common uploader's country was the United Kingdom ($n = 30$, 33.7%), followed by India ($n = 16$, 18.0%) and the United States of America ($n = 14$, 15.7%). Other countries included South Korea ($n = 7$, 7.9%), China ($n = 6$, 6.7%), Canada and Israel (each $n = 3$, 3.4%), Guyana and Italy (each $n = 2$, 2.2%), Switzerland, Spain, Portugal, and Greece (each $n = 1$, 1.1%). The uploader's country was unknown for two videos (2.2%) (Figure 2).

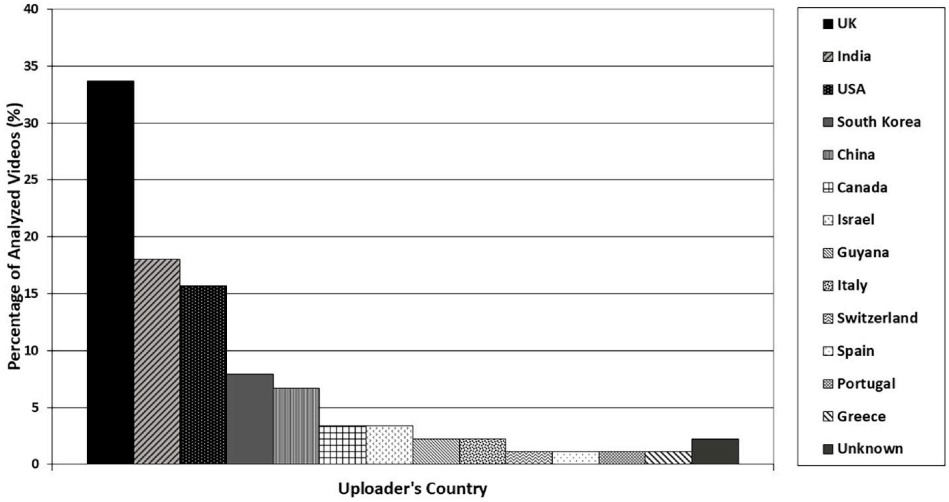


Figure 2. Percentage distribution of the analyzed YouTube videos according to the uploader's country ($n = 89$).

The descriptive characteristics of the included videos are presented in Table 2. The mean time since upload was 2657.84 ± 1442.36 days, with a median of 2883.00 days (Q1–Q3: 1342.50–3750.00). Mean video duration was 8.69 ± 10.03 min, with a median of 5.00 (2.00–11.25). The mean numbers of views and likes were 27,816.64 ± 83,580.37 and 175.26 ± 560.49, with medians of 4091.00 (1040.50–14,483.50) and 31.00 (12.50–104.00), respectively. Comment counts were available for 64 videos (mean, 7.09 ± 22.16; median, 1.00 (0.00–4.00)). The interaction index averaged 1.18 ± 1.21 (median, 0.88 (0.44–1.48)), and the viewing rate averaged 904.37 ± 2510.59 (median, 165.70 (54.11–593.78)) (Table 2).

Regarding educational quality, the mean Global Score for Educational Value (GSEV) was 1.55 ± 1.06, with a median of 1.25 (0.63–1.88). Most videos were classified as poor quality ($n = 59$, 66.3%), followed by generally poor quality ($n = 10$, 11.2%), moderate quality ($n = 15$, 16.9%), good quality ($n = 4$, 4.5%), and excellent quality ($n = 1$, 1.1%). Similarly, the mean Modified DISCERN score was 1.31 ± 1.83, with a median of 0.00 (0.00–2.00). According to the Modified DISCERN classification, 65 videos (73.0%) were categorized as having poor reliability, 8 videos (9.0%) as having generally sparse or average reliability, and 16 videos (18.0%) as having good to excellent reliability (Table 2).

Video characteristics differed across upload-source groups. Kruskal–Wallis tests identified significant differences in days since upload ($p = 0.004$), comments ($p = 0.039$), views ($p = 0.003$), likes ($p = 0.016$), video duration ($p = 0.007$), and viewing rate ($p = 0.004$), but not in interaction index ($p = 0.192$). Dentistry faculty videos had the longest median duration, while dental organization videos had the highest median number of days since upload. Following Bonferroni correction ($p < 0.005$), dentistry faculty channels differed from dental organization channels in days since upload and video duration, and from periodontologist channels in views, video duration, and viewing rate. Other pairwise comparisons did not meet the adjusted threshold. Rank-based eta-squared effect sizes are provided in Table 3.

Table 2. Descriptive characteristics of the analyzed YouTube videos. Continuous variables are presented as mean ± standard deviation and median (Q1–Q3), while categorical variables are presented as *n* (%).

	Analyzed Videos	
	Mean ± SD	**Median (Q1–Q3)**
Number of Days ($n = 89$)	2657.84 ± 1442.36	2883.00 (1342.50–3750.00)
Number of Comments ($n = 64$)	7.09 ± 22.16	1.00 (0.00–4.00)
Number of Views ($n = 89$)	27,816.64 ± 83,580.37	4091.00 (1040.50–14,483.50)
Number of Likes ($n = 89$)	175.26 ± 560.49	31.00 (12.50–104.00)
Video Duration (min) ($n = 89$)	8.69 ± 10.03	5.00 (2.00–11.25)
Interaction Index ($n = 89$)	1.18 ± 1.21	0.88 (0.44–1.48)
Viewing Rate ($n = 89$)	904.37 ± 2510.59	165.70 (54.11–593.78)
Mean Global Score for Educational Value ($n = 89$)	1.55 ± 1.06	1.25 (0.63–1.88)
Poor Quality *n* (%)	59 (66.3)	—
Generally Poor-Quality *n* (%)	10 (11.2)	—
Moderate Quality *n* (%)	15 (16.9)	—
Good Quality *n* (%)	4 (4.5)	—
Excellent Quality *n* (%)	1 (1.1)	—
Mean Modified DISCERN Score ($n = 89$)	1.31 ± 1.83	0.00 (0.00–2.00)
Poor Reliability *n* (%)	65 (73.0)	—
Generally Sparse/Average Reliability *n* (%)	8 (9.0)	—
Good to Excellent Reliability *n* (%)	16 (18.0)	—

Table 3. Comparison of video characteristics according to source of upload. All data were expressed as median (Q1–Q3) unless otherwise noted.

	Periodontologist Channels ($n = 55$)	**Dental Clinic Channels ($n = 6$)**	**Dentistry Faculty Channels ($n = 8$)**	**Dental Organization Channels ($n = 16$)**	**Information Channels ($n = 4$)**	***p*-Value**
Number of days ($n = 89$)	2935.00 (1378.00–3708.00)	1285.00 (596.50–1946.50)	1416.50 (1255.50–1689.25)	3910.50 (2557.00–4739.00) †	3043.00 (2722.25–4828.50)	0.004 * $\eta^2H = 0.136$
Number of comments ($n = 64$)	2.00 (0.00–10.00)	1.00 (0.00–5.00)	0.00 (0.00–0.00)	0.00 (0.00–3.25)	1.00 (0.00–1.00)	0.039 * $\eta^2H = 0.104$
Number of views ($n = 89$)	6177.00 (2460.00–23,391.00) †	2495.00 (420.75–5812.25)	487.50 (329.00–1096.50)	3752.00 (810.00–12,520.50)	1194.00 (980.75–29,005.00)	0.003 * $\eta^2H = 0.141$
Number of likes ($n = 89$)	43.00 (18.00–137.00)	22.00 (12.75–53.50)	6.50 (2.75–23.75)	29.00 (10.75–96.25)	15.00 (3.75–20.25)	0.016 * $\eta^2H = 0.098$
Video duration (min) ($n = 89$)	4.00 (2.00–9.00) †	3.25 (1.00–11.50)	25.75 (16.50–35.13)	5.00 (2.00–8.00) †	8.00 (3.25–14.25)	0.007 * $\eta^2H = 0.120$
Interaction index ($n = 89$)	0.73 (0.36–1.28)	1.28 (1.00–3.64)	1.58 (0.65–1.77)	0.71 (0.56–1.28)	1.51 (0.37–1.59)	0.192 $\eta^2H = 0.025$
Viewing rate ($n = 89$)	239.13 (98.38–1031.20) †	128.33 (56.23–420.36)	38.74 (29.41–64.43)	108.03 (50.90–348.85)	40.34 (34.84–542.15)	0.004 * $\eta^2H = 0.133$

Values are median (Q1–Q3). Omnibus comparisons: tie-corrected Kruskal–Wallis test (* $p < 0.05$). $\eta^2H = (H - k + 1)/(N - k)$, where k = 5. † Significant pairwise difference from dentistry faculty channels (two-sided asymptotic Mann–Whitney U, Bonferroni threshold $p < 0.005$ for ten possible comparisons).

Procedural information was the most frequently addressed domain (84/89 videos, 94.4%), followed by prognosis and survival (41/89, 46.1%), definition (35/89, 39.3%), advantages (25/89, 28.1%), and indications (23/89, 25.8%). Contraindications and complications were each addressed in six videos (6.7%), and treatment cost in one video (1.1%). Fisher–Freeman–Halton tests with Monte Carlo estimation revealed statistically significant differences across upload-source groups in definition ($p = 0.005$), indications ($p < 0.001$), advantages ($p < 0.001$), and complications ($p < 0.001$), following Bonferroni correction for eight comparisons (adjusted significance threshold: $p < 0.00625$). Although nominal differ-

ences were observed for contraindications ($p = 0.013$) and procedural content ($p = 0.008$), these associations did not remain statistically significant after correction for multiple testing. No significant differences were observed for prognosis and survival ($p = 0.148$) or cost ($p = 0.383$) (Table 4).

Table 4. Content analysis and comparison of global score for educational value according to source of upload. All data were expressed as median (Q1-Q3) unless otherwise noted.

	Periodontologist Channels ($n = 55$)	Dental Clinic Channels ($n = 6$)	Dentistry Faculty Channels ($n = 8$)	Dental Organization Channels ($n = 16$)	Information Channels ($n = 4$)	*p*-Value
Definition	15 (27.3)	2 (33.3)	7 (87.5)	9 (56.3)	2 (50.0)	0.005 *
Indication	8 (14.5)	1 (16.7)	7 (87.5)	6 (37.5)	1 (25.0)	<0.001 *
Contraindication	1 (1.8)	0 (0.0)	0 (0.0)	4 (25.0)	1 (25.0)	0.013
Advantages	7 (12.7)	2 (33.3)	7 (87.5)	8 (50.0)	1 (25.0)	<0.001 *
Procedure involved	55 (100.0)	5 (83.3)	6 (75.0)	14 (87.5)	4 (100.0)	0.008
Complications	0 (0.0)	0 (0.0)	0 (0.0)	5 (31.3)	1 (25.0)	<0.001 *
Prognosis and survival	28 (50.9)	0 (0.0)	4 (50.0)	8 (50.0)	1 (25.0)	0.148
Cost	0 (0.0)	0 (0.0)	0 (0.0)	1 (6.3)	0 (0.0)	0.383
Global score for educational value	1.25 (0.63–1.25) †	0.63 (0.63–1.88)	2.81 (1.88–3.13)	1.56 (0.63–3.59)	1.25 (0.63–3.28)	0.025 ** $\eta^2H = 0.085$

Binary content domains are presented as *n* (%). * Fisher–Freeman–Halton exact conditional test with Monte Carlo estimation (250,000 draws). For the eight educational content-domain comparisons, statistical significance was determined using the Bonferroni-adjusted threshold of $p < 0.00625$ (0.05/8). Reported *p* values are unadjusted. ** Kruskal–Wallis test ($p < 0.05$). † GSEV score significantly lower than that of dentistry faculty channels (Mann–Whitney U test, two-sided asymptotic $p < 0.005$ following Bonferroni correction for ten pairwise comparisons). η^2H represents the rank-based eta-squared effect size for the GSEV omnibus comparison, calculated as $(H - k + 1)/(N - k)$, where H is the Kruskal–Wallis statistic, k is the number of groups, and N is the number of valid observations.

The Global Score for Educational Value also differed significantly according to source of upload ($p = 0.025$). Dentistry faculty channels had the highest median Global Score for Educational Value [2.81 (1.88–3.13)], followed by dental organization channels [1.56 (0.63–3.59)]. Periodontologists' channels had a median score of 1.25 (0.63–1.25), which was significantly lower than that of dentistry faculty channels. Dental clinic channels showed the lowest median Global Score for Educational Value [0.63 (0.63–1.88)] (Table 4). The corresponding rank-based eta-squared effect size for the comparison of GSEV scores across upload-source groups was 0.085.

All Modified DISCERN items differed significantly among upload sources ($p < 0.001$ for all items). Dentistry faculty channels had the highest proportion of videos fulfilling the criteria for clear aims (87.5%), use of reliable information sources (100.0%), balanced and unbiased presentation (87.5%), listing additional sources for patient reference (62.5%), and mentioning areas of uncertainty (62.5%). Dental clinic channels also showed a high proportion of videos using reliable sources (100.0%), whereas periodontologist channels showed low proportions for most Modified DISCERN items, particularly balanced presentation, additional sources, and uncertainty. The total Modified DISCERN score differed significantly among upload-source groups ($p < 0.001$), with the highest median total score observed in dentistry faculty channels [5.00 (3.00–5.00)] (Table 5). The corresponding rank-based eta-squared effect size for the comparison of total Modified DISCERN scores across upload-source groups was 0.277.

Spearman's rank correlation analysis revealed several significant associations between video characteristics and the assessment scores. Using the predefined conservative significance threshold of $p < 0.001$, GSEV was negatively correlated with viewing rate ($r_s = -0.345$, $p < 0.001$), whereas no significant correlations were detected between GSEV and the other evaluated video characteristics or engagement parameters at this threshold. A positive correlation was also observed between GSEV and the total Modified DISCERN score ($r_s = 0.445$,

$p < 0.001$). The total Modified DISCERN score was negatively correlated with days since upload ($r_s = -0.499$, $p < 0.001$), number of views ($r_s = -0.597$, $p < 0.001$), number of likes ($r_s = -0.446$, $p < 0.001$), and viewing rate ($r_s = -0.458$, $p < 0.001$). Significant positive correlations were identified between the total Modified DISCERN score and video duration ($r_s = 0.397$, $p < 0.001$) and interaction index ($r_s = 0.368$, $p < 0.001$). These findings describe unadjusted associations and should not be interpreted as evidence of causal relationships.

Table 5. Comparison of Modified DISCERN items and total Modified DISCERN scores according to source of upload. Dichotomous items are presented as n (%), and total Modified DISCERN scores are presented as median (Q1–Q3).

	Periodontologist Channels ($n = 55$)	Dental Clinic Channels ($n = 6$)	Dentistry Faculty Channels ($n = 8$)	Dental Organization Channels ($n = 16$)	Information Channels ($n = 4$)	*p*-Value
Are the aims clear and achieved?	6 (10.9)	1 (16.7)	7 (87.5)	9 (56.3)	1 (25.0)	<0.001 *
Are reliable sources of information used?	19 (34.5)	6 (100.0)	8 (100.0)	9 (56.3)	1 (25.0)	<0.001 *
Is the information presented balanced and unbiased?	3 (5.5)	1 (16.7)	7 (87.5)	7 (43.8)	1 (25.0)	<0.001 *
Are additional sources of information listed for patient reference?	2 (3.6)	1 (16.7)	5 (62.5)	8 (50.0)	1 (25.0)	<0.001 *
Are areas of uncertainty mentioned?	1 (1.8)	1 (16.7)	5 (62.5)	6 (37.5)	1 (25.0)	<0.001 *
Modified DISCERN Score	0.00 (0.00–1.00)	1.00 (1.00–2.00)	5.00 (3.00–5.00) †	2.00 (0.00–5.00) †	0.00 (0.00–3.75)	<0.001 ** $\eta^2H = 0.277$

Binary items are *n* (%). * Fisher–Freeman–Halton exact conditional test, Monte Carlo estimate (250,000 draws; $p < 0.05$). ** Kruskal–Wallis test ($p < 0.05$). † Total Modified DISCERN greater than periodontologist channels (Mann–Whitney U, two-sided asymptotic $p < 0.005$). η^2H is the rank-based effect size for the total-score omnibus comparison.

4. Discussion

This study evaluated the educational quality and reliability of English-language YouTube videos on periodontal regeneration procedures. The main finding was that most videos were educationally incomplete and demonstrated low reliability, even though procedural steps were frequently shown. Both the mean Global Score for educational value (GSEV) and the mean Modified DISCERN score were low, and the majority of videos failed to address clinically important domains such as indications, contraindications, complications, prognosis, survival, and cost-related considerations.

This imbalance is clinically meaningful because periodontal regeneration is not simply a surgical sequence. It is a biologically demanding process that involves control of inflammation and infection, support of stem and progenitor cells, and the coordinated regeneration of cementum, periodontal ligament, and alveolar bone, each of which requires distinct biological cues [15]. Although engineered scaffolds and biologic agents have made the reconstruction of periodontal defects of various sizes increasingly feasible, restoring the normal structure and function of tooth-supporting tissues remains a challenge, and a successful outcome is not guaranteed in every defect [16]. Because treatment success depends on defect morphology, plaque and inflammation control, patient-level risk factors, wound stability, and the appropriate selection of biomaterials, videos that focus predominantly on intraoperative steps without explaining patient selection, limitations, and expected outcomes may create an incomplete understanding for patients, dental students, and non-specialist clinicians [3].

The low frequency of information on contraindications and complications is particularly noteworthy. In clinical practice, regenerative procedures require realistic risk communica-

tion, including the possibility of membrane exposure, impaired wound healing, residual periodontal pockets, patient-related risk modifiers, uncertain long-term stability, and the need for supportive periodontal care [3]. Recent long-term data indicate that the clinical benefits achieved after periodontal regeneration can be maintained over a seven-year period, but that complete success is not achieved in every defect, which reinforces the need for balanced explanations of prognosis and uncertainty [4]. In the present sample, contraindications and complications were each addressed in only six videos and cost in a single video, leaving viewers without the information they most often seek before agreeing to surgery.

These observations are consistent with the broader literature evaluating the educational value of YouTube videos in other clinical fields. Studies of videos on knee arthrocentesis [17], cardiac auscultation [18], and pulmonary lobectomy [19] have similarly reported that, although such platforms host abundant procedural content, only a minority of videos reach a standard suitable for formal education and that their quality should be improved before routine instructional use. In dentistry, an analysis of videos on botulinum toxin for bruxism found no significant difference in usefulness according to upload source [20]; in the present study, by contrast, the GSEV for educational value differed significantly between sources. As in these earlier reports, most periodontal regeneration videos in our sample described the surgical procedure itself while providing insufficient information on the definition, indications, and broader clinical context of treatment, which limits their usefulness as stand-alone learning resources.

Upload source was associated with both educational quality and reliability. Videos uploaded by dentistry faculty channels demonstrated the highest GSEV and Modified DISCERN scores, although they represented a relatively small proportion of the analyzed sample ($n = 8$). One possible explanation for this finding may be the differing primary objectives of academic institutions and clinical practices. University-affiliated channels may place greater emphasis on structured educational content, scientific evidence, and comprehensive knowledge transfer, whereas videos produced by private dental practices may primarily focus on patient communication, clinical procedures, and the demonstration of available treatment services. Nevertheless, these objectives are not mutually exclusive, and videos originating from clinical practices may also provide valuable educational information. Furthermore, the intended purpose of each video was not independently investigated in the present study. Therefore, differences in educational priorities and content production practices should be regarded as possible explanations rather than established determinants of video quality. Importantly, the lower educational and reliability scores observed among periodontologist channels should not be interpreted as evidence that specialist-generated content is inherently inadequate. Instead, these findings highlight the importance of assessing the educational completeness and scientific reliability of individual videos, regardless of their source of upload.

The production process of YouTube videos represents another important consideration when interpreting the reliability of online health information. Although videos are published under specific channels, their content may involve multiple contributors responsible for scriptwriting, narration, filming, and editing. In some cases, these tasks may be outsourced to individuals without specialized clinical expertise or to contributors located in different countries. Consequently, the professional qualifications and geographical affiliation of the uploading channel may not necessarily reflect those of the individuals involved in developing the educational content. Furthermore, the extent to which such content undergoes professional verification or scientific review may vary. Since the production processes and qualifications of individual contributors were not investigated in the present study, no conclusions can be drawn regarding their influence on the observed educational quality and reliability scores. Future studies could explore the relationship between content

production practices, professional oversight, and the scientific reliability of online dental education videos.

The reliability shortcomings identified by the Modified DISCERN instrument also mirror those reported elsewhere. Evaluations of YouTube videos on abdominal aortic aneurysm [21] and on anterior cruciate ligament injury and reconstruction [22] have likewise documented important deficiencies in clarity, source reliability, balance, and the acknowledgment of uncertainty. Whereas one analysis of abdominal aortic aneurysm videos found no significant difference in reliability according to upload source [21], a study of videos on systemic lupus erythematosus reported that professionally produced content was more reliable than that of other groups [23]. Our results align more closely with the latter, as videos uploaded by dentistry faculty and dental organizations were more reliable than those from other sources. The high interobserver agreement observed for Modified DISCERN total scores (mean pairwise weighted $\kappa = 0.87$) supports the consistency of reliability assessments across investigators. However, this agreement estimate should not be extrapolated to the GSEV-based content assessment.

Recent investigations focusing specifically on periodontal and mucogingival procedures provide further context for the present findings. Aljoghaiman et al. [24] evaluated 50 YouTube videos addressing gingival grafting procedures and reported that 27 videos (54%) were classified as having low-quality content. Interestingly, an inverse association was observed between viewing rate and content scores, suggesting that frequently accessed surgical videos may not necessarily provide more comprehensive educational information. Similarly, Yelbay et al. [25] assessed 109 Turkish- and English-language YouTube videos concerning gingival recession treatment and reported that approximately 97% demonstrated low-quality content. The authors also identified differences in content and reliability scores between the two language groups, emphasizing the potential influence of linguistic and contextual factors on the characteristics of online periodontal information. Although these studies focused on mucogingival procedures rather than periodontal regeneration, their findings support the broader concern that the availability of visually informative surgical videos does not necessarily ensure comprehensive coverage of clinically relevant information.

Nevertheless, recent findings indicate that the educational quality of periodontal-related YouTube content may vary considerably according to the clinical topic, video characteristics, and assessment approach. Bozoklu et al. [26] compared videos addressing gingival recession from 2019 and 2024 and demonstrated that videos classified as useful generally achieved higher educational quality and reliability scores in both periods. Their findings also highlighted the importance of considering temporal changes when evaluating digital health information. More recently, Akram and Abood [27] investigated 20 YouTube videos concerning gingival recession and its management and reported moderate-to-good overall educational quality, with expert-generated videos demonstrating significantly higher scores than non-expert content. However, despite relatively favorable overall findings, information regarding prevention and practical patient-related considerations remained insufficient. These observations suggest that professional involvement may contribute to educational quality in certain contexts but does not necessarily guarantee that videos comprehensively address all clinically relevant domains. Furthermore, differences in search strategies, sample characteristics, intended audiences, and assessment instruments should be considered when comparing the results of individual studies.

Particularly relevant to the present investigation, Altug et al. [28] recently evaluated the educational quality, reliability, and procedure-specific content of 22 YouTube videos demonstrating the periodontal tunnel technique. Although essential technical components, including tunnel preparation and papilla preservation, were consistently represented, information concerning postoperative care and complications was absent. Moreover, no

statistically significant differences in educational quality according to uploader type were identified. These findings are consistent with the pattern observed in the present study, in which procedural information was frequently available, whereas contraindications, complications, and other aspects supporting clinical decision-making were insufficiently addressed. Importantly, the different results regarding uploader categories also highlight that the relationship between professional affiliation and informational reliability may depend on the procedure investigated and the characteristics of the evaluated sample. In addition, comparisons across studies should remain cautious because instruments such as the Global Quality Scale, Video Information and Quality Index, DISCERN, and study-specific content checklists assess related but non-identical dimensions of educational quality, informational completeness, and reliability.

The relationship between video popularity and informational reliability also deserves consideration in the context of other social media platforms. In a comparative investigation of YouTube and TikTok videos concerning gingival enlargement, Bengi et al. [29] reported substantially higher engagement metrics for TikTok videos, whereas YouTube content demonstrated comparatively better educational quality and reliability. Nevertheless, the overall quality and reliability of information on both platforms remained limited. These findings provide additional support for distinguishing user engagement from educational or scientific value. In the present study, the negative correlations between Modified DISCERN scores and several popularity-related parameters similarly indicate that frequently viewed content should not automatically be regarded as more trustworthy. However, because these associations were unadjusted and cross-sectional, they should not be interpreted as evidence that higher engagement contributes to lower reliability. Collectively, these observations reinforce the importance of promoting evidence-based, professionally reviewed, and appropriately targeted audiovisual resources rather than relying primarily on platform-generated popularity indicators.

In the present study, GSEV was negatively correlated with viewing rate, while the total Modified DISCERN score showed negative correlations with days since upload, number of views, likes, and viewing rate. These findings are consistent with concerns that popularity and visibility metrics are not necessarily reliable indicators of the educational quality or trustworthiness of online health information [7]. Similar concerns have been reported in research on oral health misinformation, where misleading videos may still attract substantial engagement [9], and in studies showing variability in the quality of dental YouTube content [8]. Conversely, Modified DISCERN scores were positively associated with video duration and interaction index. However, these correlations were unadjusted and cross-sectional; factors such as upload date, channel type, intended audience, video format, and platform visibility may influence both engagement measures and content scores. Therefore, no causal inference can be made regarding the relationship between video popularity and educational content or information reliability.

Compared with a recent study restricted to the single search term “Guided Tissue Regeneration”, the present work used a broader set of periodontal regeneration-related search terms and incorporated multiple procedural concepts, while reaching a similar overall conclusion regarding limited quality and reliability [10]. Taken together, these findings indicate that periodontal regeneration videos should be appraised not only for visual clarity but also for whether they provide a complete educational framework encompassing case selection, supporting evidence, treatment alternatives, risks, prognosis, areas of uncertainty, and guidance on when to consult a specialist [3].

From an educational standpoint, YouTube should not be dismissed entirely [5,7]. Well-designed videos can support visual learning, help patients understand the stages of treatment, and prepare students for clinical observation [5]. However, videos intended for

patient education should ideally state clear aims, cite evidence-based references, discuss benefits and limitations in a balanced manner, and signpost professional consultation [7]. Videos aimed at dental students or clinicians should distinguish general principles from technique-sensitive steps and make clear that surgical decision-making cannot be reduced to a single, universally applicable procedural sequence [3].

This study has several strengths. A broad periodontal regeneration search strategy was used, several upload-source categories were compared, the four author-investigators independently assessed the videos, and high interobserver agreement was demonstrated for Modified DISCERN total scores. In addition, both content completeness and reliability were evaluated, which allowed a more nuanced interpretation than engagement metrics alone would permit.

Several limitations should be acknowledged when interpreting the findings of this study. First, the analysis was restricted to English-language YouTube videos retrieved at a single time point using the platform's default search ranking. Although standardized search procedures were employed, potential influences of algorithmic ranking, geographical location, and the dynamic nature of online content could not be completely eliminated. Consequently, the findings may not fully represent all periodontal regeneration-related information available on YouTube. Furthermore, the uploader's geographical affiliation may not reflect the actual location of video production or the original language of the content. Second, the GSEV-based content assessment was adapted from previously published approaches, but its application to periodontal regeneration has not undergone independent psychometric validation. As a measure of content coverage, it does not capture other dimensions of educational quality, such as pedagogical effectiveness, audiovisual presentation, or actual learning outcomes. Lower content coverage scores should not necessarily be interpreted as indicating poor educational suitability for a video's intended audience. Furthermore, the equal weighting of content domains and the application of identical assessment criteria to videos intended for potentially different audiences may have influenced the interpretation of educational content coverage. Similarly, Modified DISCERN scores should be interpreted as indicators of information reliability rather than definitive measures of scientific accuracy. Furthermore, the assessment of source credibility partly relied on the identifiable professional expertise of video presenters, which does not necessarily establish the scientific accuracy of the information provided. Although interobserver agreement was high for Modified DISCERN total scores, it was not independently quantified for the GSEV-based content assessment. Third, the unequal distribution of videos across upload-source categories, particularly the relatively small numbers of dentistry faculty ($n = 8$), dental clinic ($n = 6$), and information channel ($n = 4$) videos, may limit the precision and generalizability of subgroup comparisons. Although independent assessments, investigator calibration, and high interobserver agreement strengthened the evaluation process, potential observer bias related to professional familiarity with periodontal procedures cannot be completely excluded. Additionally, comment data were unavailable for some videos, and the cross-sectional nature of the study precludes causal interpretations of the observed associations between video characteristics and reliability.

Future studies should evaluate non-English videos, compare information quality across platforms such as YouTube, Instagram, TikTok, and professional society websites, and test whether professionally produced videos improve patient understanding and reduce unrealistic expectations. Professional periodontal societies and academic institutions may also consider developing standardized, evidence-based video checklists for periodontal regeneration education to ensure that indications, limitations, risks, prognosis, and cost are consistently addressed. Future studies should prospectively classify videos according to their intended target audiences and consider audience-specific criteria when evaluat-

ing educational content. Furthermore, future investigations could incorporate artificial intelligence-assisted analysis of video transcripts to facilitate the systematic evaluation of informational accuracy, completeness, and consistency across larger video datasets. However, such approaches should be validated against expert assessments, as transcript-based analyses may not adequately capture the educational contribution of visual demonstrations, particularly in technically demanding procedures such as periodontal regeneration.

5. Conclusions

Within the limitations of this cross-sectional analysis, YouTube videos on periodontal regeneration procedures generally demonstrated limited educational content coverage and low information reliability. Procedural content was common, but essential elements such as indications, contraindications, complications, prognosis, survival, and cost were frequently absent. Within the present sample, dentistry faculty channels ($n = 8$) demonstrated the highest educational quality and reliability scores; however, these findings should be interpreted cautiously given the limited number of videos in this subgroup. Furthermore, video popularity metrics were not consistently indicative of educational quality or information reliability. YouTube may be a useful adjunct for visual learning, but it should not be relied upon as a stand-alone educational source for periodontal regeneration. Evidence-based, balanced, and professionally guided videos are needed to support patients, dental students, and clinicians.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/app162110997/s1: Table S1. URLs of the YouTube videos included in the analysis ($n = 89$).

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Institutional Review Board Statement: This study was a cross-sectional content analysis of publicly accessible YouTube videos. It did not involve the recruitment or enrolment of human participants and did not use patient data, clinical records, human tissue, or identifiable private information. The four individuals who assessed the videos were the four authors of the study and performed the assessments solely in their capacity as investigators. They were not recruited or enrolled as research participants, and no personal, clinical, behavioral, or other participant-level research data were collected from them. Their ratings constituted investigator-generated study assessments of the publicly accessible videos, and the interobserver agreement analysis was performed solely to evaluate the reproducibility of the assessment procedure. Accordingly, the study did not constitute research involving human participants; therefore, ethics committee approval and informed consent to participate were not applicable. All methods were carried out in accordance with relevant institutional and national guidelines and regulations and, to the extent applicable to the present study design, with the principles of the Declaration of Helsinki and its later amendments.

Informed Consent Statement: Not applicable. This study does not contain any identifiable personal data, images, or clinical details of participants.

Data Availability Statement: The data supporting the findings of this study are available from the corresponding author upon reasonable request. The URLs of the YouTube videos included in the analysis are provided in Supplementary Table S1.

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Conflicts of Interest: Author Emine Adalı Pekcan is the co-owner of Private Dent-A Clinic, a private dental practice located in Bursa, Türkiye. This commercial affiliation is disclosed in the interest of full transparency. The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. None of the YouTube videos included in the analysis was produced by the study authors or their affiliated institutions.

Abbreviations

The following abbreviations are used in this manuscript:

GSEV	Global Score for Educational Value
GTR	Guided tissue regeneration
SPSS	Statistical Package for the Social Sciences

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