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Assessment of the Content and Quality of Youtube Videos Related Subperiosteal Implants: A Cross-Sectional Study

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ABSTRACT

Objectives: This study aimed to evaluate the content and quality of YouTube videos related to subperiosteal implants, focusing on their educational value and reliability for both patients and healthcare professionals.

Materials and Methods: A total of 150 YouTube videos were identified using the keyword "subperiosteal implant" and filtered by English language. The videos have no audio; non-English language; off-topic content; duration exceeding 30 minutes; YouTube. The demographic data of videos as source of upload, comments, likes, interaction index, viewing and duration were recorded, and the videos were divided into low (LCG) and moderate-high content (MHG) groups according to their contents. The videos content quality was assessed using the DISCERN tool and Global Quality (GQ) scale.

Results: In this study, 69 YouTube videos on subperiosteal implants were analyzed, with 72.5% uploaded by commercial organizations and only one video by a university. The primary target audience of the analyzed YouTube videos predominantly comprised healthcare professionals. The moderate-high content group (MHG) had mean DISCERN and GQ scores of 42.89 and 2.97, respectively, compared to 31.4 and 1.82 in the low-content group (LCG) (p=0.001). The most frequently discussed topics included implant definitions and procedural steps, while postoperative care, complications, and contraindications were underrepresented. Statistical differences were observed in video length (p=0.021), but no significant differences were found for other demographic data.

Conclusions: YouTube videos related to subperiosteal implants are generally inadequate for educational purposes, especially for patients. To improve content quality, healthcare professionals and academic institutions should actively contribute accurate, evidence-based videos. Enhanced video resources could better serve as reliable educational tools in clinical dentistry.

Keywords: Subperiosteal implants, YouTube videos, content, quality

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Introduction

After tooth extraction, patients often seek rehabilitation options. In traditional approaches, dental implants are the most commonly selected treatment; however, bone resorption is an inevitable part of the physiological process, sometimes limiting the feasibility of implants.[1] Rehabilitation of severely atrophic jaws presents significant challenges. Various augmentation procedures, such as distraction osteogenesis, onlay grafts, and inferior alveolar nerve lateralization, are well-documented in the literature.[2,3] Although these methods demonstrate high success rates, their complexity, extended treatment timelines, and associated postoperative discomforts have led researchers in recent years to explore alternative options, including zygomatic implants, subperiosteal implants, and the All-on-4 system.[4,5]

In past decades, subperiosteal implants were largely abandoned due to fitting challenges and the need for two-stage surgical procedures.[6,7] However, with advances in 3D scanning and CAD-CAM technology, subperiosteal implants have regained popularity as a viable option for patients with severely atrophic jaws.[8] Although subperiosteal implants provide advantages such as reduced treatment duration and the ability to bypass complex augmentation techniques, achieving successful outcomes requires thorough planning, accurate placement, and diligent follow-up."[9,10] Given the rising interest in subperiosteal implants, dental students, professionals, and the public are increasingly seeking information on this topic, often turning to social media platforms like YouTube.[11,12] As YouTube is one of the most widely accessed sources of information for the public, identifying and verifying health-related content that may mislead viewers is essential.[12]

While several studies have evaluated YouTube content on dental procedures such as sinus lifts, zygomatic implants, and the All-on-4 system, to our knowledge, no study has yet assessed the content of YouTube videos specifically focused on subperiosteal implants.[13-15] Therefore, the aim of this study

was to evaluate the content and quality of subperiosteal implant videos on YouTube. The study hypothesized that the information in these videos related to subperiosteal implants may be inadequate or potentially misleading.

Materials and Methods

This study evaluated YouTube videos on subperiosteal implants. Videos were located by conducting a search on YouTube (www.youtube.com; Google, San Bruno, CA), using "subperiosteal implant" as the keyword and filtering results in English. According to Google Trends data (2021), "subperiosteal implant" is the most common search term for addressing extreme maxilla atrophy in oral implantology across various languages and regions. A new Google account was created to prevent recommendations based on prior viewing history. To ensure a broad selection, search parameters were restricted to videos from "the last five years" on a "worldwide" setting.

Only the relevance filter was applied in the YouTube search, without filtering for attributes such as duration or video type. The search results were confined to the first 150 videos, as prior studies suggest that 95% of users only view the first three pages of results, with recommendations to limit viewing to between "30 to 60" or "60 to 200" videos.[16,17] Furthermore, after the initial 150 videos, irrelevant content began to appear, so the analysis was limited to this range. To maintain consistent data as new content was added, a playlist was created, and videos from this list were systematically recorded after viewing as presented previous studies.[13,14]

Exclusion criteria included the following: (1) absence of audio; (2) non-English language; (3) off-topic content; (4) duration exceeding 30 minutes; (5) YouTube Shorts; and (6) duplicate entries. Multipart videos were treated as single entries. Attributes like the number of days since upload, relevant jaw, origin country, video length in seconds, like/dislike counts, and viewer comments were noted. Viewer engagement was assessed using interaction index and viewing rate as described in previous research.[11]

Two independent evaluators (IA, AY) analyzed the content of these videos for the following topics: (1) subperiosteal implant definition; (2) indications; (3) contraindications; (4) procedural steps; (5) advantages; (6) disadvantages; (7) complications; (8) implant design; (9) postoperative care; (10) interim restoration protocol; (11) definitive prosthesis protocol; (12) material selection; (13) anatomical information; (14) oral hygiene; (15) maintenance and (16) post-operative discomfort. Each topic was scored as 1 point, with a maximum total score of 16. Videos with 11–16 points were rated high content, 6–10 moderate content, and 0–5 low content. Any disagreements during evaluation were resolved in a consensus meeting.

Upload sources were divided into four categories: healthcare professionals (e.g., dentists, specialists), hospitals/universities, commercial entities (e.g., dental product companies), general individuals. Target audiences were classified as healthcare professionals, patients or both.

Qualitative assessment was conducted independently by two evaluators (IA, AY) using the DISCERN tool and GQ scale. The GQ scale is a 5-point system assessing the educational quality of videos, with scores of 1–2 considered "low," 3 as "moderate," and 4–5 as "high."[16] The DISCERN tool comprises three main sections across 16 questions: reliability (questions 1–8), quality of information (questions 9–15), and an overall score (question 16). Each question was scored from 1 to 5, with 1 indicating unmet criteria and 5 indicating full criteria. Based on total average scores, videos were classified as "very poor" (16–26), "poor" (27–38), "fair" (39–50), "good" (51–62), or "excellent" (63+).[14] In cases of evaluator disagreement, videos were rewatched, and consensus was reached. Since this study used publicly available data, ethical approval was not necessary.

The data analysis was conducted using IBM SPSS Statistics version 26. Categorical variables were calculated as frequencies and percentages. For numerical variables, normality was assessed by evaluating skewness and kurtosis values. According to the rules of normal distribution, skewness and kurtosis values should fall within the range of ±1.5.[18] Within this framework, GQ scores, DISCERN scores, and total content scores followed a normal distribution, whereas other variables did not.

Based on these findings, parametric tests (independent samples t-test and Pearson correlation analysis) were applied to variables exhibiting normal distribution. Non-parametric tests (Mann-Whitney U test and Spearman correlation analysis) were employed for variables that did not meet normality assumptions. Throughout the study, significance levels were evaluated at 0.05 and 0.01 thresholds.[19]

Results

In this study, 150 YouTube videos were evaluated. A total of 81 videos were excluded after applying the established criteria (Table 1). Consequently, a total of 69 videos were included in the analysis. The most common source of video uploads, by continent, was Asia, with 31 videos originating from India (Figure 1). Most of the videos (n=62) were uploaded between 2019 and 2024, although the upload years ranged from 2010 to 2024.

The descriptive statistics of videos were showed in Table 2. There wasn't observed any dislike in the videos. While the mean viewing rate was 176.3 (range 0.4-784) the mean interaction index was observed 2.9 (range 0-80). The mean total content, DISCERN and GQ scores were found 5.9 (low), 37.4 (low) and 2.4 (low), respectively. (Table 2)

The content of the videos was categorized into low, moderate, and high content groups. There were 33 videos in the low-content group, 32 in the moderate-content group, and only 4 in the high-content group. Due to the limited number of high-content videos, the moderate and high-content groups were combined and analyzed as a single moderate-high content group (MHG). The mean total content scores of 7.75 and 3.91 observed for the MHG and LCG, respectively. The average number of days since upload was 1297 days for the LCG and 1039 days for the MHG. While no statistically significant differences were found between the groups in terms of views, comments, likes, viewing rate, or interaction index, a significant difference was observed in video length between groups (p=0.021*, Table 3).

According to DISCERN analysis, all question scores were higher in the MHG compared to the LCG (Figure 2). The mean DISCERN scores for the MHG and LCG were 42.89 (classified as fair) and 31.4 (classified as poor), respectively. Moreover, the DISCERN scores of the MHG were significantly higher than

those of the LCG (p=0.001*, Table 4). Similarly, the GQ scores were notably greater in the MHG, with a mean value of 2.97 (moderate), compared to 1.82 (low) in the LCG (p=0.001*, Table 4). Positive and strong correlations were observed between total content scores, and both DISCERN and GQ scores (r=0.714, p<0.001*; r=0.852, p<0.001*, Table 5). Additionally, a strong positive correlation was found between DISCERN and GQ scores (r=0.814, p<0.001*, Table 5).

The most frequently addressed video topics were subperiosteal implant definitions, indications, procedural steps, implant designs, and anatomical information. Conversely, the least addressed topics included maintenance, postoperative discomfort, contraindications, complications, disadvantages, postoperative care, and oral hygiene (Table 6). Content related to subperiosteal implant definitions, indications, procedural steps, implant designs, interim restoration protocols, and anatomical information was significantly more prevalent in the MHG compared to the LCG (p=0.009*, Table 7).

The primary target audience of the analyzed YouTube videos predominantly comprised healthcare professionals (n=48), with a minority targeting only patients (n=3) and a subset addressing both dental professionals and patients (n=18). Statistical analysis revealed no significant differences regarding the intended audience across groups (p=0.107, Table 8). In terms of upload sources, commercial organizations represented the majority (n=50), followed by healthcare professionals (n=18). Universities contributed minimally, with only one video identified, and no uploads were attributed to the general public. Furthermore, the comparison of upload sources between groups demonstrated no statistically significant differences (p=0.579, Table 8)

Table 1: The exclusion criteria of youtube videos.

Criteria	n	%
No audio	19	23.8
Longer than 30 minutes	4	4.9
Language other than English	14	17.2
Duplicates	7	8,6
Unrelated subjects	20	24.6
YouTube shorts	17	20.9
Total	**81**	**100**

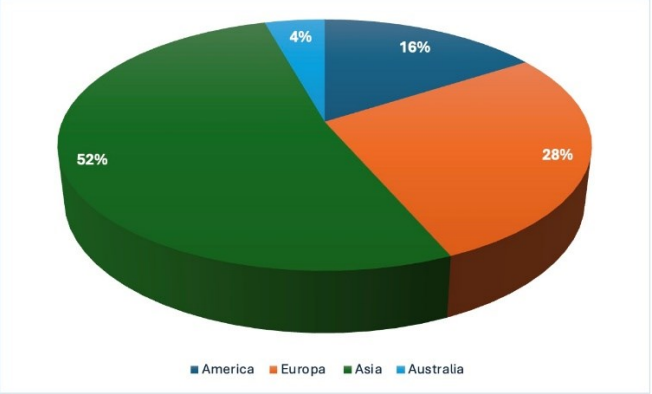

Figure 1: Distribution of videos uploading source according to continent.

Table 2: Descriptive statistics of the videos.

	Mean	Standard Deviation	Minimum	Maximum	Median
Viewing	1791.5	3807.3	15	29717	962
Video length (seconds)	291.6	319.3	15	1815	171
The number of days since upload	1162.3	889.9	14	4106	1035
Comment	1.9	3.4	0	19	0
Like	21.5	29.8	0	176	10
Dislike	0	0	0	0	0
Viewing rate	176.3	189.2	0.4	784	109
Interaction index	2.9	9.7	0	80	1.5
DISCERN	37.4	9.9	16	58	36
GQ score	2.4	0.8	1	4	2
Total content score	5.9	2.5	0	13	6

Table 3: Comparison of the demographic data of the videos according to groups.

Variables	Groups								U	p
	Low Content				Moderate-High Content Group					
	n	Mean	SD	Median	n	Mean	SD	Median		
Viewing	33	2249	5269	858	36	1372	1549	986	568.0	0.755
Video length (seconds)	33	191	180	150	36	384	387	226	402.0	**0.021***
Comment	33	1	2	0	36	2	4	0	566.5	0.719
Like	33	20.3	23.7	7	36	22.6	35	11	569.5	0.962
Viewing rate	33	155.5	159.9	107.2	36	195.3	213.1	112.5	575.5	0.824
Interaction index	33	1.84	3.39	1.3	36	3.93	13.1	1.6	479.0	0.167

n: sample U: Mann Whitney U-test; SD: Standard deviation; n: sample size; *: p<0.05

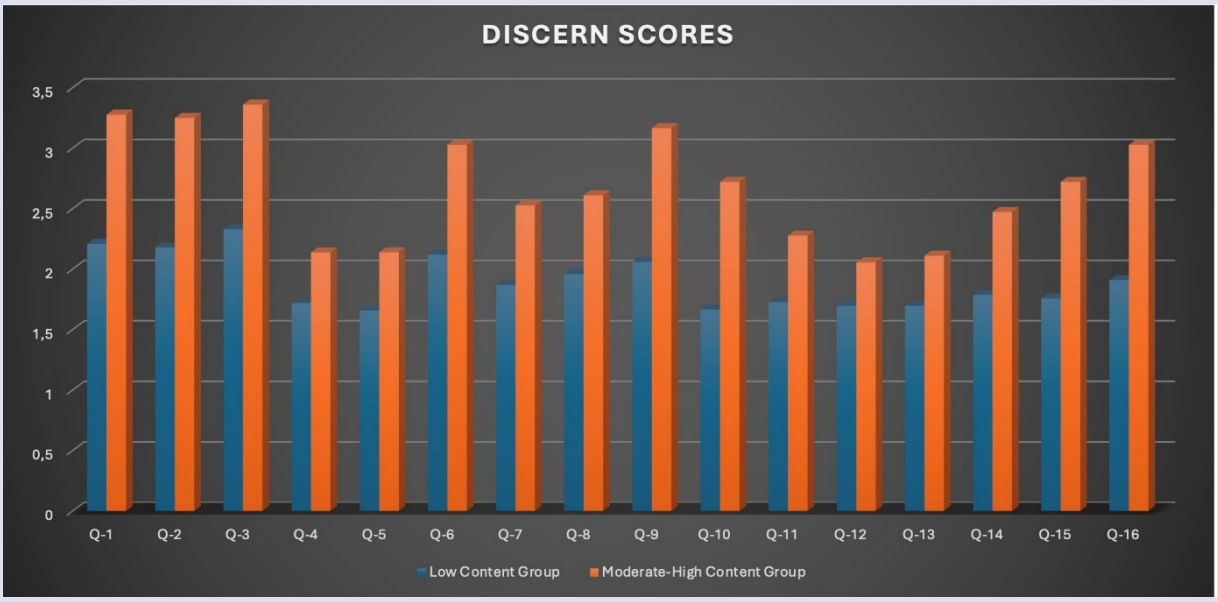

Figure 2: DISCERN question scores of videos according to low and moderate-high content groups.

Table 4: Comparison of groups according to GQ and discern scores.

Variables	Group	n	Mean	Standard Deviation	t	p
DISCERN	Low content group	33	31.4	7.444	-5.887	**0.001****
	Moderate-high content group	36	42.89	8.737		
GQ	Low content group	33	1.82	0.392	-8,379	**0.001****
	Moderate-high content group	36	2.97	0.696		

n: sample t: independent sample t-test; *: p<0.001

Table 5: The correlation levels between total content score, GQ, and discern scores.

Variables	Coefficient	DISCERN	GQ score
DISCERN	r	1	
	p		
	n	69	
GQ score	r	0.814**	1
	p	0.001	
	n	69	69
Total content score	r	0.741**	0.852**
	p	0.001	0.001
	n	69	69

n:sample; r: Pearson correlation coefficient, **:p<0,01

Table 6: The distribution of video contents' presence according to groups.

Video Contents	Group			
	Low Content		Moderate-High Content Group	
	n	%	n	%
Subperiosteal implant definition	30	43.5	36	52.2
Indications	28	40.6	36	52.2
Contraindications	0	0.0	1	1.4
Procedural steps	18	26.1	35	50.7
Advantages	1	1.4	22	31.9
Disadvantages	0	0	3	4.3
Complications	0	0	1	1.4
Postoperative care	0	0	3	4.3
Implant design	27	39.1	36	52.2
Oral hygiene	0	0	4	5.8
Interim restoration protocol	2	2.9	27	39.1
Definitive prosthesis protocol	0	0	22	31.9
Material selection	0	0	13	18.8
Anatomical information	23	33.3	35	50.7
Post-operative discomfort	0	0	0	0
Maintenance	0	0	5	7.2

n: sample, %: percentage

Table 7: The video contents which were mentioned significantly higher in MHG than LCG.

Content	Group				X^2	p
	Low Content		Moderate-High Content			
	n	%	n	%		
Subperiosteal implant definition	30	45.5	36	54.5	15.334	**0.009****
Indications	28	43.8	36	56.3		
Procedural steps	18	34.0	35	66.0		
Implant design	27	42.9	36	57.1		
Interim restoration protocol	2	6.9	27	93.1		
Anatomical information	23	39.7	35	60.3		

n: sample, %: percentage, X^2= Ki square, **:p<0,01

Table 8: Comparison of the targeted audience and source of uploaded according to groups

The targeted audience	Group				X2	p
	Low Content Group		Moderate-High Content Group			
	n	%	n	%		
Patients	2	66.7	1	33.3	4.116	0.107
Healthcare professionals	26	54.2	22	45.8		
Both	5	27.8	13	72.2		
The uploaded source	**Group**					
	Low Content Group		**Moderate-High Content Group**		**X2**	**p**
	n	%	n	%		
Healthcare professionals	8	44.4	10	55.6	1.094	0.579
Commercial entities	25	50	25	50		
Hospitals/universities	0	0	1	100		

n: sample, %: percentage, X^2= Fisher's Exact value

Discussion

According to this study results suggested that the YouTube videos related subperiosteal implants were found low depending on the total content score. Furthermore, both DISCERN and GQ scores also observed poor and low, respectively. Thus, YouTube videos related to subperiosteal implants were detected unreliable. Hence, the hypothesis that the information in these videos related to subperiosteal implants may be inadequate or potentially misleading was accepted.

The literature highlights that the majority of videos in medical and dental fields are produced in the United States by healthcare professionals.[13,15] However, the demographic analysis in this study shows a significant deviation from this trend, with most videos on subperiosteal implants being uploaded from Asia,

particularly India, and primarily by commercial entities. This shift may explain the observed deficiencies in content, especially in critical areas such as complications, contraindications, oral hygiene, postoperative care, and disadvantages of subperiosteal implants. These findings underscore the need for high-quality, evidence-based videos produced by healthcare professionals and academic institutions to address these gaps and ensure the dissemination of reliable and comprehensive information to both patients and clinicians.

In this study, the target audience of the analyzed videos predominantly consisted of healthcare professionals, with content primarily focusing on the indications, advantages, and procedural steps of subperiosteal implant surgeries. While procedural steps are indeed critical for the successful application of subperiosteal implants, adequate knowledge of postoperative care and effective patient-surgeon collaboration are equally essential for improving treatment success and long-term survival rates. According to the literature, one of the most commonly reported complications associated with subperiosteal implants is total or partial peri-implant mucositis.[9,20] In severe cases, this condition may require extended follow-up periods or even implant removal. Such complications, if not communicated beforehand, could adversely impact the patient-physician relationship. Furthermore, prior studies suggest that low-quality YouTube content can further harm this relationship by spreading incomplete or misleading information.[21,22] It is therefore important that the information in the video content is presented in an accurate and unbiased manner so that patients can understand it. Ensuring that both patients and surgeons are well-informed about the potential adverse aspects of treatment before the procedure is crucial. A comprehensive understanding of these risks can improve patient outcomes, enhance trust, and minimize the dissemination of inaccurate or insufficient knowledge.

In this study, the average video duration of the moderate-high content group (MHG) was approximately 6 minutes, significantly longer than the low-content group (LCG), which averaged 3 minutes. However, no statistical differences were observed between the groups in terms of views, comments, likes, viewing rates, or interaction index. According to the literature, as video duration increases, viewer attention tends to decline, with attention typically peaking within the first 10–15 minutes for educational videos before gradually decreasing.[23,24] The findings of this study suggest that videos shorter than 6 minutes are insufficient to provide comprehensive information on subperiosteal implants. Even within the MHG, critical topics were often inadequately addressed. To enhance the educational value of YouTube videos, it may be beneficial to incorporate missing information into future content, with an optimal duration of approximately 10 minutes for high-quality videos. This approach could balance detailed content delivery with maintaining viewer attention effectively.

Although YouTube can serve as a valuable research tool when approached with appropriate considerations, there remains a lack of standardized methods for evaluating YouTube video content.[14,25] Recent studies have employed various tools for video assessments, including DISCERN, m-DISCERN, the Video Information Quality Index (VIQI), and the Global Quality (GQ) scale.[13,14,26] In this study, the DISCERN and GQ scales were chosen as the primary evaluation tools. The preference for these criteria aligns with the study's focus on assessing the reliability and educational effectiveness of health-related videos. DISCERN is specifically designed to evaluate the reliability, accuracy, and impartiality of health information, while the GQ scale emphasizes educational quality, including content clarity and viewer utility.[14,27] In contrast, tools like VIQI primarily assess visual and overall quality attributes, which were less relevant to the study's objectives.[28] As the purpose of this study is to analyze the informational content of videos on subperiosteal implants, DISCERN and GQ, which directly measure content and informational quality, were chosen as the most appropriate tools. In this presented study results GQ and DISCERN scores were strongly and positively correlated with total content scores. Also, GQ and DISCERN scores were statistically higher in MHG than LCG. These results were suggested that both tools could be realizable for video assessments. Nevertheless, different assessment tools could be evaluated in future studies.

The dynamic and evolving nature of YouTube content results in continuous changes in viewer preferences, video viewing patterns, and search algorithms, making it challenging to consistently track video streams and sequences. While Google Trends was employed in this study to identify the most frequently used keywords for subperiosteal implants, it is crucial to recognize that alternative keywords, such as "additively manufactured subperiosteal implants" or "customized subperiosteal implants," may provide access to a broader and more diverse range of videos. This variability underscores the inherent difficulty in conducting a comprehensive and consistent analysis of YouTube content, highlighting the need for adaptive methodologies and keyword strategies in future research.

Conclusions

The content of YouTube videos related to subperiosteal implants has been found to be insufficient for both patients and healthcare professionals. Most of these videos are uploaded by dental companies, which may contribute to gaps in comprehensive and balanced information. To enhance the quality and quantity of video content on subperiosteal implants, university hospitals and healthcare professionals should actively contribute by creating and sharing evidence-based, detailed videos. This would not only improve the educational value of such content but also ensure the dissemination of accurate and reliable information to a broader audience.

Consent for Publication

Approval for publication has been granted.

Availability of Data and Materials

No data and material is available.

Competing Interests

There are no competing interests.

Authors' Contributions

IA: Concept/Design, Data analysis/interpretation, Drafting article, Critical revision of article, Approval of article, Statistics.

AY: Concept/Design, Drafting article, Critical revision of article, Funding, Data collection, Other.

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