Youtube Videolarından Cerrahi Operasyon İzlemek Eğitici Olabilir mi? Gözlemsel Bir Çalışma
Can Watching a Surgical Operation From Youtube Videos Be Educational: An Observational Study

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ÖZET

Amaç: Çalışmanın amacı, eksternal sinüs lift prosedürleri ile ilgili YouTube videolarının kalitesini ve öğrenci eğitiminde ve hasta bilgilendirmesinde kullanılabilirliğini değerlendirmektir. **Materyal ve Yöntem:** YouTube'da 22 Kasım 2023 tarihinde "External Sinus Lift" arama terimi kullanılarak bir arama yapıldı. İlk 200 video ön değerlendirmeye alındı ve 100 video çalışmaya dahil edildi. Videoların uzunluğu, izlenme sayısı, beğeni sayısı, animasyon varlığı ve yüklendikten sonraki ay sayısı değerlendirildi. Videoların kalitesi The Global Quality Score (GQS), Usefulness Score (US) ve The Journal of American Medical Association (JAMA) skorları ile değerlendirildi ve analiz edildi. **Bulgular:** İzleyici katılımı, video süresi ve kalite puanları arasında anlamlı bir ilişki bulundu. Kalite puanlarının medyan değerleri GQS için 1, JAMA puanı için 2 ve US için 1'dir. Kalite puanlarının düzeyi yetersiz (kalitesiz) bulunmuştur. JAMA puanı ile US arasında pozitif ve istatistiksel olarak anlamlı bir ilişki vardır (r=0,487 ve p<0,001). **Tartışma ve Sonuç:** Eksternal sinüs lift prosedürünü içeren YouTube videoları hem öğrenci eğitimi hem de hasta bilgilendirme amaçlı olarak yetersiz bulunmuştur.
Anahtar Kelimeler: Eksternal sinüs lift, YouTube, Oral cerrahi, İnternet.

ABSTRACT

Aim: The aim of the study was to evaluate the quality of YouTube videos on external sinus lift procedures and their usability in student education and patient information. **Material and Method:** A search was performed on YouTube on November 22, in 2023, using the search term "External Sinus Lift". First 200 videos were pre-evaluated, and 100 videos were included in the study. The length of the videos, the number of views, the number of likes, the presence of animation and the number of months after uploading were evaluated. The quality of the videos was evaluated and analyzed with The Global Quality Score (GQS), Usefulness Score (US) and The Journal of American Medical Association (JAMA) scores. **Findings:** A significant relationship was found between viewer engagement, video duration, and quality scores. Median values of quality scores were 1 for GQS, 2 for JAMA score, and 1 for US. The level of quality scores was found to be insufficient (poor quality). There is a positive and statistically significant relationship between JAMA score and US (r=0.487 and p<0.001). **Discussion and Conclusion:** YouTube videos containing the external sinus lift procedure were found to be insufficient for both student education and patient information purposes.
Keywords: External sinüs lift, YouTube, Oral surgery, Internet.

Introduction

Today, the expectations of patients in the field of dentistry in terms of aesthetics and function are quite high. In order to meet this expectation, implant applications in the field of oral surgery have become the routine of physicians (1). With the developing technology and increasing material quality, successful implant restorations can be performed even if the amount of bone is insufficient. However, insufficient bone quantity requires additional surgical procedures before implant placement (2).

Elevation of the maxillary sinus floor is a common surgical procedure to increase bone volume in the atrophic posterior maxilla. This procedure allows for simultaneous or delayed implant placement according to the thickness of the residual bone. A window is created in the lateral wall of the maxillary sinus and the Schneiderian membrane is carefully elevated (3). The resulting space is filled with bone graft or a material that can function as bone4. The implant is then placed and the flap is closed. In cases where the residual bone is very insufficient, a second operation is planned for implant placement (3,4). Sinus lift and implant placement is a procedure with a very high chance of success when performed by a professional surgeon with a careful technique (5).

Applications in the field of dentistry are generally worrying for patients. Patients want to be informed before the procedure and understand the application to be performed. This situation is most commonly encountered in oral surgery (6). Since they are relatively invasive, long-lasting procedures, patients are concerned about the operation and the complications that may occur afterwards. This situation forces them to get information in some way (7).

In terms of being easy and accessible, people first turn to online tools to access information. YouTube is the most popular online platform that offers visual and auditory information on medical issues (8). However, it is worrying that anyone can upload videos and these videos are not filtered scientifically. Any misinformation given at this point may affect the treatment decision, and moreover, it may disrupt the physician-patient relationship (9).

The use of social media tools as an educational tool in health sciences has been a topic of discussion in recent times (10). However, comprehensive research and evaluations are needed to consider non-real-time online videos as part of education. Incorrect, incomplete or outdated information will lead students and inexperienced physicians who will step into the profession to errors (11).

Due to the widespread viewing of YouTube videos by all segments and the concerns it brings, this issue has started to find a place in the literatüre (8-12). In this study, the issues of information quality, patient information and student education through external sinus lift videos, which is an advanced surgical application, were discussed for the first time.

Material and Method

No human or animal data were used in this study; therefore, no informed consent or ethics committee approval was required.

YouTube search and exclusion criteria

For this study, YouTube was searched on November 22, 2023, using the keyword 'external sinus lift'. The first 200 videos were saved for evaluation according to their relevance to this keyword. Videos that were not related to the title, videos with different procedures, repetitive videos, and videos that did not include all external sinus lift procedures were not included in the study. The videos were carefully reviewed by a single clinician, and the characteristics listed were analyzed. Video length in seconds, number of views, number of likes, video category (animated or not), video content, and number of days since upload were recorded. The usability of the videos in patient education was assessed using the Global Quality Score (GQS) criteria (13), and the usability of the videos in student

education was assessed using the Usability Score (US) (14). In addition, the quality of the videos was assessed using the Journal of American Medical Association (JAMA) scoring system (15).

All data from the 100 selected videos were statistically analyzed.

Quality Scores

Global Quality Score criteria (13): The quality of patient education content was assessed using the GQS. The GQS consists of 5 criteria related to the usability of the video content for patient education. Each of the available criteria is worth 1 point. The most educational video can receive 5 points.

Score Definition of quality:

Score 1. Low quality; cannot be used for patient education.

Score 2. Low quality; limited use for patients as it contains only certain accurate information.

Score 3. Poor quality and flow; partially useful for patients; missing important topics, insufficient information content.

Score 4. Good quality and flow; useful for patients because important topics are covered correctly.

Authorship; the affiliations and identities of authors and contributors should be clearly stated.

Citation; all copyright information is disclosed and references and sources of the content are indicated.

Timeliness; published content should be current or the changed information in the content should be updated.

Disclosure; Conflicts of interest, financial support, advertising and video copyright should be fully disclosed.

Statistical analysis

Data analysis was performed using the IBM SPSS Statistics version 26 package. The Kolmogorov-Smirnov normality test was used to assess the conformity of the data to a normal distribution. Descriptive statistics for the videos and scores are presented as number (n), percentage (%), minimum, maximum and median (Q1-Q3). The relationship between video feature measurements and scores, which did not

Score 5. Excellent quality and flow; completely useful for patients.

Usefulness score for students (14): Eight topics were evaluated in the YouTube videos, including description, indications, contraindications, benefits, related procedures, complications, postoperative, prognosis and survival, and each content was scored 1 point. The total score was 8 and the lowest score was 0.

A score of 0 to 2 indicates poor [1] video content that contains misleading information and is not useful;

A score of 3 to 5 indicates fair [2] video content that gives a positive message about the topic but does not fully address the issue;

A score of 6 to 8 indicates excellent [3] video content that provides detailed, useful and completely accurate information.

JAMA scoring system (15): The JAMA scoring system is an objective assessment consisting of 4 separate criteria. Each criterion is given 1 point. The most reliable and accurate source receives 4 points, while misinformation and poor content receive 0 points.

Criteria Description

show a normal distribution, was shown by the Spearman correlation test. The Kruskal-Wallis test was used to compare GQS and JAMA mean scores according to the three-category usefulness classification. The Mann-Whitneu U test was used to compare the mean scores and the mean scores of the video features according to their type, whether they were anime or not, and whether they were doctors or not. All results were considered statistically significant at $p<0.05$.

Findings

100 videos were selected for the study. 81 of these videos were uploaded by a specialist doctor in the relevant field. 19 of the videos explain the procedures with animation. Descriptive statistics for the videos and quality scores are given in Table 1. The median values of the quality scores are 1 point for GQS, 2 points for JAMA, and 1 point for usability, as shown in Table 1.

Table 1. Descriptive statistics of video-related information and scores

	n (%)	Min-Max	Median (Q1-Q3)
Video source			
Not doctor	19 (19%)		
Doctor	81 (81%)		
Video type			
Not animation	81 (81%)		
Animation	19 (19%)		
Number of views		13-831725	4844 (789-25128.5)
Number of like		0-5421	30 (7-202.5)
Video duration		17-3546	304.5 (168.5-617)
Video upload time		1-137	52.5 (24-84)
Viewer's interaction		0-21.43	0.73 (0.39-1.66)
Viewing rate		21.67-1078833.33	8048.83 (2464.82-50643.35)
GQS Score		1-5	1 (1-2)
JAMA Score		1-3	2 (1-2)
Usefulness		1-3	1(1-2)
Poor	92 (92%)		
Moderate	8 (8%)		
Excellent	-		

Table 2. Correlations between video features and scores

		Number of views	Number of like	Video duration	Video upload time	Viewers' interaction	Viewing rate	USEFULNESS	GQS	JAMA
Number of views	r	1	0,886	0,188	0.299	-0.166	0.913	0.257	0.319	0.224
	p	.	<0.001	0.061	0.003	0.099	<0.001	0.010	0.001	0.025
Number of like	r		1	0.334	0.012	0.243	0.911	0.222	0.249	0.167
	p		.	0.001	0.902	0.015	<0.001	0.026	0.012	0.097
Video duration	r			1	-0.095	0.310	0.226	0.256	-0.236	0.166
	p			.	0.349	0.002	0.024	0.010	0.018	0.098
Video upload time	r				1	-0.658	-0.074	0.150	0.018	0.078
	p				.	<0.001	0.466	0.136	0.862	0.443
V.interaction	r					1	0.075	-0.031	-0.188	-0.039
	p					.	0.456	0.758	0.061	0.698
Viewing rate	r						1	0.231	0.347	0.229
	p						.	0.021	<0.001	0.022

r: Spearman Korelasyon katsayısı

Correlations between video features and Quality scores are given in Table 2. There is a high, positive, and significant correlation between the number of video views and the number of likes (r=0.886 and p<0.001). Similarly, a high, positive, and significant correlation was observed between the number of video views and the viewing rate (r=0.913 and p<0.001). There is a weak, positive, and significant correlation between the number of views and the video upload time (r=0.299, p=0.003). Additionally, a weak, positive and significant relationship was found between the number of views and Usability (r=0.257, p=0.010), GQS (r=0.319, p=0.001) and JAMA (r=0.224, p=0.005) scores.

There is a positive and significant relationship between the number of likes and the duration of the video (r=0.334, p=0.001). There is a positive and significant relationship between the number of likes and the viewer interaction (r=0.243, p=0.015),

while there is a very high and positive relationship between the number of likes and the viewing rate (r=0.911, p<0.001). In addition, a weak and positive relationship was found between the number of likes and the usefulness (r=0.222, p=0.026), GQS (r=0.249, p=0.012) scores. There is a weak and positive relationship between the video duration and the viewer interaction (r=0.310, p=0.002) and viewing rate (r=0.226, p=0.004). There was a weak, positive correlation between video duration and usefulness score (r=0.256, p=0.010), while there was a weak, negative correlation between video duration and GQS score (r=-0.236, p=0.018). A negative and statistically significant correlation was found between video upload time and viewer engagement (r=-0.658, p<0.001). A positive and significant correlation was found between viewing rate and usefulness (r=0.231, p=0.021), GQS (r=0.347, p<0.001) and JAMA (r=0.229, p=0.022) scores.

Table 3. Correlations between scores

		GQS	JAMA	Usefullness
GQS	r	1	0.161	0.028
	p	-	0.109	0.780
JAMA	r		1	0.487
	p		-	<0.001

r: Spearman Korelasyon katsayısı

Correlations between Quality Scores are given in Table 3. While there was no statistically significant correlation between GQS score and JAMA and usefullness scores, there was a weak, positive and statistically significant correlation between JAMA score and usefullness score (r=0.487, p<0.001).

While there was a statistically significant difference between the usefullness poor and moderate classes in terms of JAMA score medians (p=0.033), no statistically significant difference was found in terms of GQS score medians (p>0.05), (Table 4).

Table 4. Comparison of GQS and JAMA scores according to Usefulness classification

		Min-Max	Median (Q1-Q3)	p *
GQS Score	Poor	1-5	1 (1-2)	0.118
	Moderate	1-4	2 (1-2.75)	
	Excellent	-	-	
JAMA Score	Poor	1-3	2 (1-2)	0.033
	Moderate	1-3	2.5 (2-3)	
	Excellent	-	-	

**: Kruskal Wallis test*

When the medians of the scores according to whether the video type is animation or not are analysed, it is seen that there is a statistically significant difference between the videos with and without animation type in terms of GQS and usefullness score medians (p<0,00 and p=0,001, respectively).
When the video characteristics were analysed according to whether the video was animated or not, statistically significant differences were found between animated and non-animated videos in terms of video duration and viewers interaction medians (p<0,001 and p=0,002, respectively).
When the video characteristics were analysed according to whether the video source was a doctor or not, statistically significant differences were found between the videos whose source was a doctor and videos whose source was not a doctor in terms of video duration and viewers interaction medians (p<0,001 and p=0,003, respectively).
When the medians of the scores according to whether the video source is a doctor or not were analysed; it was observed that there was a statistically significant difference between the videos with and without animation type in terms of GQS and Usefullness score medians (p<0,001 and p=0,004, respectively), (Table 5).

Table 5. Comparison of scores by video type and source

	Not Animation		Animation			Not doctor		Doctor		
	Min-Max	Median (Q1-Q3)	Min-Max	Median (Q1-Q3)	p *	Min-Max	Median (Q1-Q3)	Min-Max	Median (Q1-Q3)	p *
GQS Score	1-4	1 (1-1)	1-5	3 (2-4)	<0.001	1-5	3 (2-4)	1-4	1(1-1)	<0.001
JAMA Score	1-3	2 (2-2)	1-3	2 (1-2)	0.059	1-3	2 (1-2)	1-3	2 (2-2)	0.125
Usefulness	1-3	2 (1-2)	1-3	1 (1-1)	0.001	1-3	1 (1-1)	1-3	2 (1-2)	0.004
Number of views	13-831725	4504(823-14408)	25-241113	8845(854-47307)	0.152	25-241113	7060(854-47307)	13-831725	4537(823-15030)	0.332
Number of like	0-5421	26(8-152)	0-1182	59(4-286)	0.660	0-1182	32(4-286)	0-5421	30(8-170)	0.906
Video duration	17-3546	424(251-684)	24-274	126(97-209)	<0.001	24-235	126(75-183)	17-3546	424(261-684)	<0.001
Upload time	1-137	48(24-84)	11-132	60(36-83)	0.598	11-132	60(32-77)	1-137	52(24-84)	0.809
Interaction	0-21	1(0-2)	0-2	0(0-1)	0.002	0-2	0(0-1)	0-21	1(0-2)	0.003
Viewing rate	22-1078833	7281(2285-47531)	35-315036	40000(3572-79693)	0.200	35-315036	8979(3572-71711)	22-1078833	7689(2285-47712)	0.361

**: Mann Whitney U test*

Discussion and Results

With the developing technology, sharing information with internet videos in the field of health has become widespread. YouTube is a website that contains the most content in this field and can be accessed free of charge by anyone who wishes (16). Students benefit from YouTube videos to reinforce their knowledge, to understand the subjects they are curious about, and to capture details especially in subjects with technical difficulties. This platform can be considered as a support to education with enlightening information on subjects such as anatomy, diseases, treatments, and hygiene rules in medical education (17). In addition, the fact that anyone can upload videos under any title and that there is no access limit poses a risk in an important issue such as education (18). Since it is easy to access online information nowadays, even if the physician has given enough information, patients do research on internet channels. This situation is especially encountered in patients in whom surgical intervention is planned (19). Patients state that they watch YouTube videos to satisfy their concerns and curiosity. Since disorders, treatments, and complications are personalised, these videos containing general information may create expectations that patients may not have (20). It should be noted that the videos found in the search results are mostly real surgical operation images uploaded by physicians. It is thought that the fact that patients at any level of consciousness can watch these contents without any prior warning will not provide any benefit other than increasing anxiety (21). A limited number of animated content may be useful for patient information. The point that should not be forgotten is that only the physician can explain the benefits, risks, recovery process and limitations of the surgical operation in the best way (22).

Studies have been conducted in the literature on the use of YouTube videos for educational purposes in the field of medicine, and it has been argued that it can be used as a lecture on anatomy (10). Similarly, Azer et al. stated that the visual effect of YouTube videos may be useful in understanding cardiovascular diseases (23). Bulut et al. stated that the use of YouTube videos in patient and student education in mucogingival surgery may be inadequate and harmful (12). Based on this point, we wanted to address this issue more extensively under the roof of an educational institution. External sinus lift is one of the most worrying procedures for patients in terms of procedure time and healing process (24). It is also considered to be a risky and difficult procedure for students and new physicians (25). Therefore, in our study, we aimed to examine the usefulness of videos related to external sinus lift operation for students and patients in a broad framework.

In terms of content, YouTube videos were found to be inadequate for patient information and student education, and the quality of videos on YouTube was found to be inadequate for use for these purposes. In addition, the JAMA score, which evaluates the timeliness of the videos and their compliance with scientific principles, is also low. It is possible to foresee that publishing unscientific and self-interested videos will cause more harm than benefit for student education. When the literature was analysed, it was found that YouTube had a very limited quality in an article investigating video quality on dental implant application similar to our study (1).

In the study results, it is noteworthy that there is a positive and significant relationship between video duration, audience interaction, JAMA and US scores. However, GQS score was negatively correlated. Videos with more technical details, scientific content and explanatory videos were found to be of high quality and useful for education. On the contrary, short information videos may be sufficient for patient information. In previous studies, it was observed that video length was effective in the decision to watch or not to watch the video (10,26). In this regard, it would be the healthiest approach for physicians to provide accurate and complete information to

students and patients and to recommend appropriate visual data (27). On the otherhand; the low GQS scores may result from the videos often containing superficial information and lacking relevance to the target audience. On the other hand, videos with high JAMA scores are likely to be prepared by professionals and exhibit transparency regarding sources, which is noteworthy.

The JAMA scores of the videos uploaded by a scientifically qualified, educational, named doctor are high. The high US score and viewers interaction medians in these videos show that the scales make a real evaluation. The fact that the video uploaded by a physician was watched more shows that physicians should pay utmost attention to the information and sensitive content they provide on online platforms such as YouTube (28,29).

It is useful to mention some limitations of the study. YouTube is a dynamic platform where new videos are uploaded, and existing videos may gain or lose visibility over time. As a result, the metrics evaluated in this study, such as the number of views, likes, and audience interactions, represent a snapshot of the platform at the time of data collection. These metrics are likely to change with time, which may influence the applicability of the study's findings in the future. Despite this limitation, the study provides valuable insights into the current quality and usefulness of videos related to external sinus lift procedures.

Although the use of technological tools for education and information purposes has become widespread, our study has revealed that YouTube videos related to external sinus lift procedures are insufficient for both patient information and student education. These videos need to be improved in terms of scientific accuracy, visual quality, and target audience relevance. Healthcare professionals can enhance the educational value of these videos by producing scientifically based and audience-appropriate content; especially animated and detailed videos could be beneficial for both students and patients. Moreover, platforms like YouTube should implement content verification mechanisms and introduce scientific accuracy labels or warnings to ensure the reliability of such content.

Availability of data and materials

Data sets, YouTube links and evaluation scores can be made available upon request.

Ethical Approval

This study does not contain any human or animal resources, ethical approval was not needed for this study.

Conflicts of interest

The author declare no competing interests.

Author Contributions: Concept; Design; Supervision; Resources; Data Collection and/or Processing; Analysis and/or Interpretation; Literature Search; Writing Manuscript; Critical Review; comleted by N.G.

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