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Assesment of Youtube™ Videos About all-on-four Implant Supported Fixed Prostheses Maintenance Using the Global Quality Score, the DISCERN Tool, and Journal of American Medical Association Benchmarks

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Research Article

History

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ABSTRACT

Objectives: The aim of the study is to evaluate the information on “all-on-four fixed implant prostheses maintenance” videos shared on YouTube™.

Material-Methods: A search was made on YouTube™ at 09:00 on August 14, 2023, with the search term "all-on-four fixed implant prostheses maintenance". Videos uploaded in the last year are sorted by relevance. The first 60 videos were viewed and analyzed for content by 2 independent prosthodontists. GQS (Global Quality Score), DISCERN, and JAMA (Journal of the American Medical Association) scales were used for the evaluation of the videos.

Results: Some of the videos obtained for the study were excluded from evaluation because they did not meet the "all-on-four fixed implant prostheses maintenance" requirements (n=39). A statistically significant relationship was found between GQS scores and DISCERN scores ($p<0.05$) that as the DISCERN score increases, the GQS score increases. Also, videos with DISCERN scores of 4 and 5 are longer than videos with scores of 3. JAMA scores of videos with a longer duration and more time since they were uploaded were found to be statistically significantly higher ($p<0.05$).

Conclusion: The quality of YouTube™ videos are generally poor. Patients should consider this when they want to obtain information about “all-on-four fixed implant prostheses maintenance" from YouTube™.

Keywords: All-On-Four, Fixed Implant Prostheses, Maintenance, Dental Implant.

All-On-Four İmplant Destekli Sabit Protezlerin İdamesi Hakkındaki YouTube™ Videolarının Global Kalite Skoru, DISCERN ve Journal of American Medical Association Araçları ile Değerlendirilmesi

Research Article

Süreç

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ÖZ

Amaç: Çalışmanın amacı YouTube™'da paylaşılan “all-on-four implant destekli sabit protez idamesi” videolarına ilişkin bilgilerin değerlendirilmesidir.

Gereç-Yöntemler: 14 Ağustos 2023 saat 09:00'da YouTube™'da "all-on-four sabit implant protez idamesi" anahtar sözcüğü ile arama yapılmıştır. Son bir yıl içinde yüklenen videolar alaka düzeyine göre sıralanmıştır. İlk 60 video 2 bağımsız protez uzmanı tarafından değerlendirilmiş ve içerik açısından analiz edilmiştir. Videoların değerlendirilmesinde GQS (Global Quality Score), DISCERN ve JAMA (Journal of the American Medical Association) ölçekleri kullanılmıştır.

Bulgular: Çalışma için elde edilen videolardan bazıları "all-on-four sabit implant protez idamesi" gerekliliklerini (n=39) karşılamadığı için değerlendirme dışı bırakılmıştır. GQS puanları ile DISCERN puanları arasında istatistiksel olarak anlamlı bir ilişki bulunmuş ($p<0,05$), DISCERN puanı arttıkça GQS puanın da arttığı tespit edilmiştir. Ayrıca DISCERN puanı 4 ve 5 olan videolar, puanı 3 olan videolara göre daha uzun olduğu tespit edilmiştir. Süresi daha uzun olan ve yüklendikten sonra daha uzun süre geçen videoların JAMA puanları istatistiksel olarak anlamlı derecede yüksek bulunmuştur ($p<0,05$).

Sonuçlar: YouTube™ videolarının kalitesi genellikle düşüktür. Hastalar YouTube™'dan “all-on-four sabit implant protez idamesi” hakkında bilgi almak istediklerinde bunu göz önünde bulundurmalıdırlar.

Anahtar Kelimeler: All-On-Four, İmplant Destekli Sabit Protezler, İdame, Dental İmplant.

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Introduction

Dental implants are a frequently preferred treatment option in the rehabilitation of edentulous jaws.[1] However, when the maxillary sinuses in the upper jaw the mandibular canal, mental foramen in the lower jaw approach the residual crest due to crestal bone loss, implant surgical applications bring difficulties.[2] The all-on-four technique has been used safely for years to overcome these difficulties and ensure dental implant placement in atrophic edentulous jaws without damaging the anatomical structures.[3]

In the all-on-four technique, four implants are placed between the mental foramens in the mandible. For the maxillary arch, four implants are placed in the area anterior to the maxillary sinuses. The necks of the distal implants are placed at an angle towards the distal, the apexes towards the mesial so that the emergence profile of the abutments is brought to the level of the first molar teeth.[4] After osseointegration, implant-supported fixed prostheses that mimic both soft tissue and hard tissue are delivered to the patient.

It is extremely important to fulfill oral hygiene requirements after prosthesis delivery. Tooth brushing, the use of dental floss and interdental brushes, oral irrigators, and mouthwashes play an active role in all-on-four implant-supported fixed prosthesis care. If daily oral hygiene requirements are not applied and proper care is not taken, inflammation may occur in the soft tissues surrounding all-on-four fixed implant prostheses.[5] As inflammation progresses to the alveolar bone, bone loss occurs around the implant, and implant loss may occur.[6] If the all-on-four implant-supported fixed prostheses, which are applied with a small number of implants to patients with already limited bone tissue, are not properly maintained by the patient and regular dentist check-ups are not performed, irreversible problems may arise. Due to bone loss, the patient may lose the chance to have new dental implants.

YouTube™ (https://www.youtube.com) is a video-sharing with a large user network that allows users to create and watch videos containing health information.[7] Every day a large amount of videos are uploaded and viewed by millions of people. There are a lot of videos about all-on-four fixed implant prosthesis maintenance on YouTube™ and they have great effects on patients who wear all-on-four fixed implant-supported fixed prostheses. Patients view these videos to learn how to clean their prostheses to use their prostheses for a long time. So, correct and appropriate information should be given on videos for a long life of all-on-four fixed implant prostheses maintenance. Videos are made available without the information which they contain being evaluated by an independent and blind referee system. They may be problems such as incorrect diagnosis and/or treatment.[8] Previous studies reported that YouTube™ videos about various health tissues often contain misleading and inadequate information.[9–13]

This study aimed to evaluate the information on “all-on-four fixed implant prostheses maintenance” videos shared on YouTube™. The hypothesis of the present study was that YouTube™ videos on all-on-four fixed implant prostheses maintenance contain misleading or incomplete information.

Materials and Methods

Ethical approval was not required because of the use of the publicly available data. A search was made on YouTube™ at 09:00 on August 14, 2023, with the search term "all-on-four fixed implant prostheses maintenance". Videos uploaded in the last year are sorted by relevance. It was reported in previous studies that when searching on YouTube™, users could look at a list between 60-200[14], but the majority would choose to watch only the first 30 videos listed so that the first 60 videos were evaluated.[15,16]

All videos were viewed and analyzed for content by 2 independent prosthodontists (E.T.A. and G.A.). Videos' information (duration, date of upload, number of likes&dislikes... etc) were recorded. The viewing rates (Number of views/Number of days since upload ×100%) and the interaction index [(Number of likes-Number of dislikes) / Total number of views×100%)] are also calculated according to the formula used in a previous study.[17]

Videos in languages other than English, implant training videos for dental professionals, implant-supported prostheses clinical try-in videos, and irrelevant videos were excluded. After that, all remaining videos were analyzed and GQS (Global Quality Score), DISCERN, and JAMA (Journal of the American Medical Association) scales were used for the evaluation of the videos.

GQS[18,19] was used to evaluate the general quality of the videos. The score description is listed in Table 1. DISCERN tool[20] consists of 16 questions (Table 2) and each questions are scored 1 to 5. Using DISCERN, videos were divided into 5 groups according to total score: very poor(16 to 20), poor (27 to 38), fair (39-50), good (51 to 62), and excellent (above 63).[21] JAMA (Journal of the American Medical Association) evaluation tool[22] is used for reliability and usefulness of health-related information. JAMA benchmark criteria have 4 sections and each one is scored 0 to 4.[21] The criteria and descriptions are listed in Table 3.

Data were analyzed with IBM SPSS 25. The Shapiro-Wilk Test was used to assess conformity to the normal distributon. Homogenity of variance was assessed with The Levene Test. Independent Sample-T test was used for comparing two independent groups with normal distribution. In cases where the assumption was not met, Mann Whitney U test was used. ANOVA test was used to compare the means of three or more groups with normal distribution, and the Kruskal Wallis test was used when the assumption was not met. The Post Hoc Tamhane T2 test was applied to reveal the group or groups that made the difference. Kendall's Tau correlation was used to examine the relationship between ordered categorical variables and continuous variables. To examine the relationship between categorical variables, Fisher's Exact test was used when the sample size assumption was not met. The significance level was taken as $p<0.05$.

Table 1. Global Quality Score (GQS) Five-Point Scale.

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

Table 2. DISCERN Questions.

Section 1: Is the publication reliable?
1. Are the aims clear?
2. Does it achieve its aims?
3. Is it relevant?
4. Is it clear what sources of information were used to compile the publication (other than the author or producer)?
5. Is it clear when the information used or reported in the publication was produced?
6. Is it balanced and unbiased?
7. Does it provide details of additional sources of support and information?
8. Does it refer to areas of uncertainty?
Section 2: How good is the quality of information on treatment choices?
9. Does it describe how each treatment works?
10. Does it describe the benefits of each treatment?
11. Does it describe the risks of each treatment?
12. Does it describe what would happen if no treatment is used?
13. Does it describe how the treatment choices affect the overall quality of life?
14. Is it clear that there may be more than one possible treatment choice?
15. Does it provide support for shared decision-making?
16. Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices

Table 3. JAMA benchmark criteria.

Criteria	Description
Authorship	Authors and contributors, their affiliations, and relevant credentials should be provided
Attribution	References and sources for all content should be listed clearly, and all relevant copyright information noted
Disclosure	Web site “ownership” should be prominently and fully disclosed, as should any sponsorship, advertising, underwriting, commercial funding
Currency	Dates that content was posted and updated should be indicated

Results

Some of the videos obtained for the study were excluded from evaluation because they did not meet the "all-on-four fixed implant prostheses maintenance" requirements (Table 4). Characteristic features of the included videos (duration in minutes, days since upload, number of likes, etc.) are given in Table 5. 38.1% (n=8) of the evaluated videos were uploaded by dentists and 61.9% (n=13) were uploaded by dental clinics. Global Quality score distributions of the included videos are shown in Table 6.

Kendall's Tau correlations were applied to examine the relationships between the characteristics of the videos and the scores. As a result of the analysis, no statistically significant relations were obtained between the characteristics of the videos and GQI, JAMA, and DISCERN scores ($p>0.05$) (Table 7).

Fisher's Exact tests were performed to investigate the relationships between the characteristics of the videos and GQS scores. As a result, a statistically significant relationship was found between GQS scores and DISCERN scores ($p<0.05$). It has been determined that as the DISCERN score increases, the GQS score increases.

Anova and Kruskal Wallis tests were applied to compare the characteristics of the videos according to DISCERN scores. A statistically significant difference was found between the lengths of the videos according to the DISCERN groups ($p <0.05$). According to Tamhane tests, a statistically significant difference was detected between scores 3 and scores 4 and 5 ($p=0.002$). Videos with DISCERN scores of 4 and 5 are longer than videos with scores of 3.

Independent Sample T Test and Mann Whitney U Test were performed to investigate the differences between the characteristics of the videos and JAMA scores. Statistically significant differences were found between the JAMA scores, the duration of the videos and the average time elapsed since the date they were uploaded ($p<0.05$). The duration of videos with JAMA scores of 3 and 4 and the average of the time since the date they were uploaded are higher than the average of the duration and the time since the date of upload of the videos with JAMA scores of 1 and 2.

Table 4. Reasons for exclusion.

	n	%
Excluded videos (not related to subject)	39	65.0
Included videos	21	35.0
Total	60	100.0

Table 5. Distribution of YouTube videos according to their characteristic features.

	Minimum	Maximum	Average	Standard Deviation	Median
Duration in minutes	0.32	17.30	6.43	5.23	4.20
Days since upload	36.00	300.00	196.10	73.15	191.00
Number of likes	1.00	562.00	100.38	139.39	46.00
Number of comments	0.00	62.00	16.14	20.22	6.00
Number of subscriptions	105.00	941.00	360.17	301.74	286.50
Number of views	22.00	35872.00	7293.38	10331.77	1991.00
Viewing Rate	16.06	17329.47	3757.25	5089.08	1217.84
Interaction Index	0.23	4.55	2.21	1.14	1.94

Table 6. Distribution of Global Quality Score (GQS) Five-Point Scale Scores.

	n	%
Poor quality, poor flow of video, most information missing, not at all useful for patients	0	0
Generally poor quality and poor flow, some information listed but many important topics but of limited use to patients	4	19.0
Moderate quality, suboptimal flow, some important is adequately discussed but others poorly discussed, somewhat useful for patients	3	14.3
Good quality generally good flow, most relevant information is covered, useful for patients	3	14.3
Excellent quality and flow, very useful for patients	11	52.4

Table 7. Relationships between the characteristic features of the videos and the scores.

		GQS	JAMA	DISCERN
Duration in minutes	r	-0.221	-0.150	0.111
	p	0.209	0.396	0.540
Days since upload	r	-0.229	-0.073	0.185
	p	0.249	0.714	0.367
Number of likes	r	0.260	0.194	0.034
	p	0.137	0.267	0.848
Number of comments	r	0.179	0.103	-0.034
	p	0.306	0.557	0.848
Number of subscriptions	r	-0.306	-0.148	0.034
	p	0.080	0.396	0.848
Number of views	r	-0.221	-0.150	0.111
	p	0.209	0.396	0.540
Viewing Rate	r	-0.229	-0.073	0.185
	p	0.249	0.714	0.367
Interaction Index	r	0.260	0.194	0.034
	p	0.137	0.267	0.848

Discussion

Daily home care is very important for the safe use of all-on-four implant-supported fixed prostheses by the patient for many years. Setti *et al*.[6] investigated the use of angled toothbrushes in implant-supported full-arch dentures and reported that the symptom of bleeding on probing in the experimental group decreased statistically significantly. The study emphasized that there is a serious deficiency in the literature regarding the cleaning and maintenance of implant-supported fixed prostheses and long-term validated home-care oral hygiene procedures should be established.

Post-operative information about the care of the prostheses and patient education provided by dental professionals. In addition to verbal explanations, videos, and visual representations make it easier for patients to apply the oral hygiene requirements. In this context, YouTube™ videos serve patients as an important data source.[12] According to some researchers, YouTube™ videos contain personal opinions and they are not based on scientific findings.[23–25] For this reason, the content and the quality of information in the videos should be evaluated.

Yağcı *et al.* evaluated 200 YouTube™ videos providing information about cleaning dentures and compared their GQS scores. As a result of the study, it was emphasized that videos were insufficient and should not be considered the only source for denture cleaning.[19] Menziletoğlu *et al.*[26] examined whether dental implant videos on YouTube™ were useful for patient education and compared the GQS scores of the videos. They

reported that the duration of excellent videos was longer than others. Consistent with our study, GQS and DISCERN scores increased as video duration increased. According to the results of the study, it was reported that important parameters related to implant treatment, such as implant maintenance, oral hygiene requirements, periimplantitis, and implant loss were not included in the videos.[26] This situation also makes the job of professionals providing dental implant services difficult. 38% of doctors think that the information obtained by patients negatively affects doctor-patient appointments, and the possible reason for this situation may be videos with poor content.[27]

In a previous study, the viewing rates, likes, GQS, DISCERN, usefulness scores of videos uploaded by healthcare professionals were found to be statistically significantly higher than those of videos uploaded by individual users.[28] All of the videos evaluated in our study were uploaded by dental professionals, and consistent with this study, interaction index and GQS scores increased as the duration of the videos increased.[28] Kurian *et al*.,[29] searched with the keyword "Complete arch fixed treatment using dental implants" and reached a total of 508 videos and evaluated 89 videos that met the inclusion criteria. They reported that dental implant contraindications, survival rates, prognoses, and possible complications were not emphasized in the videos. Only 1% of the videos received an excellent score according to GQS. Most of the videos did not mention oral hygiene, implant maintenance, and complications of prosthesis. 78% of the videos were described as poor. Contrary to existing studies, 52.4% (n=11) of the videos in our study received an excellent GQS score. A possible explanation for this may be that all the videos evaluated had good content because they were uploaded by dentists or dental clinics.

In a study examining YouTube™ videos about dental implants, 117 videos were evaluated according to the "Information for patient" available at the American Academy of Implant Dentistry, the European Association of Osseointegration, and the British Society of Restorative Dentistry.[17] According to the results of the study, it was reported that 35 of the videos contained incorrect information about dental implant prognosis and maintenance. It was emphasized that the videos were low quality and unreliable. In our study, GQS, JAMA, and DISCERN tools, which are frequently used to evaluate YouTube™ videos, were used and 14.3% (n=3) of the videos received moderate, 14.3% (n=3) good and 52.4% (n=11) excellent scores.

In a previous study, 20 videos were evaluated and their GQS scores were compared. After 1 month the videos were re-evaluated and consistency and reliability were analyzed.[19] In another study, a pilot study was conducted for analysis and calibration by observers then 20 videos were re-watched at different times. Both intraobserver and interobserver reliability were examined.[28] In another study, before evaluating the videos, evaluators were trained to perform the study, and evaluation calibration was performed. Kohen's kappa coefficient was used to evaluate this calibration.[17] In our study, the evaluators were not subjected to prior training and calibration, and no pilot study was conducted. All videos were evaluated once by both researchers. Unlike studies comparing inter-rater reliability[23,29], this comparison was not made in our study.

Limitations of this study included that, because YouTube™ is a dynamic platform, these results only reflected information available at the time of the search. Also, these results are specific to keywords. If the keyword changes or extra keywords are added, results change.[17,19,23,26] Although searches with a single keyword yield better[9,30] the scanning area should be improved by adding extra keywords.[28]

Conclusions

The quality of YouTube™ videos is generally poor. Patients should take this into consideration when they want to obtain information about “all-on-four fixed implant prostheses maintenance" from YouTube™. If dental professionals use scales such as GQS, JAMA, and DISCERN when uploading videos to YouTube™™, better quality content will be enhanced. So, patients can access better-quality information.

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