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YouTube™ As An Education Platform for Dental Implants

Dental İmplantlar Hakkında Eğitim Platformu Olarak YouTube™

ABSTRACT

Objective: YouTube™, a video sharing platform, with its audiovisual content, can be an important education platform for dental students, practitioners and patients on all topics in the field of dentistry. The intention of this study is to analyze videos that are relevant to dental implants on YouTube™ videos in terms of popularity, uploading source, video purpose and usefulness.

Materials and Method: The keyword 'dental implants' was searched on YouTube. The top 100 results, sorted by relevance on YouTube™, were scanned for English language videos with comments. For all results, video features such as views, likes, duration (minutes), comments, viewing rate and usefulness score (between 0-2) were created. The first 80 videos that met the inclusion criteria were evaluated, ranked by relevance. Videos were categorized according to source and purpose and examined in terms of video features.

Results: The usefulness score was significantly higher for the healthcare professional source (p=0.036) compared to company, individual user and tv channel sources. Healthcare professionals informing their patients uploaded the majority of the videos (57%). Also, in another comparison in terms of video purpose, statistical data showed that videos with patient experience (p=0.023) videos received significantly more comments.

Conclusion: YouTube™ could be preferred as an education platform for dental students, practitioners and patient information about dental implants. It is obvious that if the videos uploaded by healthcare professionals are prepared to include patient experiences, they will inform society more accurately about dental implants.

Key Words: Dental Education, Dental İmplants, Patient Information, Social Media, Youtube.

ÖZ

Amaç: Video paylaşım platformu olan YouTube™, görsel ve işitsel içeriğiyle diş hekimliği öğrencileri, hekimler ve hastalar için diş hekimliği alanındaki tüm konularda önemli bir eğitim platformu olabilir. Bu çalışmanın amacı YouTube™ videolarında dental implantlarla ilgili videoları popülerlik, yükleme kaynağı, video amacı ve yararlılık açısından analiz etmektir.

Gereç ve Yöntemler: YouTube'da 'dental implantlar' anahtar kelimesi arandı. YouTube™'da alaka düzeyine göre sıralandığında listelenen ilk 100 sonuç, yorum alan İngilizce videolar açısından tarandı. Tüm sonuçlar için izlenme, beğeni, süre (dakika), yorum, izlenme oranı ve yararlılık puanı (0-2 arasında) gibi video özellikleri oluşturuldu. Dahil edilme kriterlerini karşılayan ve alaka düzeyine göre sıralanan ilk 80 video değerlendirildi. Videolar kaynağına ve amacına göre kategorize edilerek video özellikleri açısından incelendi.

Bulgular: Şirket, bireysel kullanıcı ve tv kanalı kaynaklarına göre sağlık profesyoneli kaynağında yararlılık puanı anlamlı derecede yüksekti (p=0.036). Videoların çoğunluğunu (% 56) hastalarını bilgilendiren sağlık çalışanları yüklemişti. Ayrıca video amacı açısından yapılan başka bir karşılaştırmada istatistiksel veriler, hasta deneyimi içeren videoların (p=0.023) anlamlı derecede daha fazla yorum aldığını gösterdi.

Sonuç: YouTube™, diş hekimliği öğrencileri, hekimler ve hastalar için dental implantlar hakkında bilgilendiren bir eğitim platformu olarak tercih edilebilir. Sağlık profesyonellerinin yüklediği videoların hasta deneyimlerini de içerecek şekilde hazırlanması durumunda toplumu dental implantlar hakkında daha doğru bilgilendireceği açıktır.

Anahtar Kelimeler: Dental Eğitim, Dental Implantlar, Hasta Bilgilendirme, Sosyal Medya, Youtube.

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INTRODUCTION

Access to the Internet has increased significantly with the development and spread of technology. The easy accessibility of information about health on Internet platforms has contributed to their widespread use. The results of a European study with 7,934 participants showed that % 71 of the participants were Internet users and % 44 used the Internet for health-related information (1). Another study conducted in Europe demonstrated that the Internet was used to obtain health information, with approximately % 60 of adults searching for health-related information on the Internet (2). Participants who searched for health information on the Internet were not limited to patients. A cross-sectional study found that % 85 of general practitioners in France reported using the Internet to obtain information for their clinical practices (3).

Dentists have been found to increasingly utilize dental implants in the precess of oral rehabilitation partially or completely edentulous patients (4). There are many treatment protocols, ranging from implant placement to the prosthetic loading process. Determining an appropriate protocol for a patient may vary depending on many factors. Therefore, many patients are curious about the treatment process, so they access the Internet to gather information before their medical appointments. One of the most popular platforms for research is YouTube™, a widely used global video-sharing website where users can share and watch videos. Since its inception in 2005, the website has expanded to include extensive video content related to health and various other field (5). The success and global reach of YouTube™ and its informative videos on health have had a significant effect on dentistry and medical practice (6).

Although YouTube™ is frequently used as an education platform because of its easy access by practitioners, dental students, and patients (7-9), its potential for misinformation is a significant concern. Because YouTube™ is not subject to peer review, it may contain wrong and misleading content. The health-related information available on YouTube™ is diverse and easily shared by everyone. Health-related videos may contain content uploaded by healthcare professionals for professional education, patient information, or advertising purposes. However, it is possible that those who access the website lack the knowledge needed to assess the trustworthiness and accuracy of medical information or relate it to their own situation. Only a few studies have investigated YouTube™ content regarding dental implants (10-12). Therefore, this study aimed to examine dental implant-related videos on YouTube™, focusing on their features, usefulness, purpose, and source evaluations. The following null hypothesis was tested: There would be no differences in the usefulness scores of YouTube videos related to dental implants that were uploaded from different sources and purposes.

On July 12, 2024, a search for videos related to dental implants was conducted on YouTube™, an online video hosting website (http://www.youtube.com). The keywords “dental implants” were used to search YouTube™. Sorted by relevance, the top 100 results were scanned for English language videos that had received comments. Prior to the search, to prevent the results from being affected by cookies and advertising preferences, a search was conducted by opening an incognito window in the search engine to YouTube™ pages, and all video links were saved. Inclusion criteria were as follows: English language, relevance to dental implants, and acceptable audiovisual quality. The exclusion criteria were: non-English language, irrelevant to dental implants, repetitive, and poor audiovisual quality. After filtering by relevance, 80 videos that met the inclusion criteria were assessed. Because only publicly available data were used in this study, ethics committee approval was not required.

A previous report indicated that 95% of YouTube™ users who conducted searches limited their browsing to the first three pages of results (13). Given that the results obtained from an on-site search of the website are displayed as 20 results per page, it was assumed that a minimum of 60 videos were required to conduct a study that assessed a meaningful portion of the population.

MATERIAL AND METHODS

Video Assessment

The following general features were noted in the 80 videos that satisfied the inclusion criteria after they were watched from beginning to end: views, time (minutes), likes, comments, watching rate, and usefulness scores. The videos were categorized into four groups according to their sources: 1) company; 2) healthcare professional; 3) individual user; and 4) TV channel. The primary purpose of each video was thoroughly investigated and divided into two sections: 1) educational and 2) patient experience. The videos were independently evaluated by two experienced periodontists (E.T. and C.G.).

The usefulness scores of the videos were scored according to the criteria used in Hegarty et al. (14) Videos with excellent quality and flow were evaluated

with 2 points, and videos with moderate quality and flow were evaluated with 1 point. Videos with poor video quality and flow were evaluated with 0 points. Table 1 presents the results of the usefulness scores. In accordance with Hassona et al. (15), a viewing rate formula was calculated using the number of views and loading times to determine the viewing rates in our study. The audiovisual quality of the videos was rated on a three-point scale, with the categories good, fair, and poor, respectively, according to the model proposed by Sorensen et al. (16).

Table 1. Subjective Classification of Video Usefulness.

Excellent	**Excellent quality and flow, most of the relevant information is included, very useful for patients**
Moderate	Moderate quality, sub-optimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients
Poor	Poor quality, poor flow of the video, some information listed but most missing, not at all useful for patients

* Based on Hegarty et al.(14)

Statistical Analysis

The video data were collected using the Microsoft Excel software. The SPSS software (windows version 20.0; SPSS Inc., Chicago, Illinois) was used to conduct the statistical analysis. Descriptive statistics were created for the video features, including views, duration (minutes), likes, comments, viewing rate, and usefulness scores. The videos were classified into two categories: source and purpose. The normality assumption of the values of the video features of each category was examined using the Kolmogorov–Smirnov and Shapiro–Wilk tests. Nonparametric tests were used due to not normal distribution of the values. The Mann–Whitney U test was used to compare two independent groups, while the Kruskal–Wallis test was used to compare more than two independent groups. Descriptive statistics were generated for each category variable. Inter-reviewer consistency between reviewers was evaluated using Cohen Kappa coefficient (k) (17). Statistical significance was determined as $p < 0.05$.

RESULTS

Table 2 shows the mean, standard deviations, minimum and maximum views, duration (minute), likes, comments, viewing rates, and usefulness scores. The videos that satisfied the inclusion criteria were classified as upload sources: company (% 20, n = 16), healthcare professionals (% 56.3, n = 45), individual users (% 11.2, n = 9), and TV channel (% 12.5, n = 10). Most of the videos reviewed (% 65) were uploaded from the United States, while the rest were uploaded from Spain, the United Kingdom, Australia, Canada, Turkey, Germany, South Korea, France, Mexico, and Singapore.

Table 3 presents a descriptive analysis of the videos categorized according to upload sources.

Table 4 presents comparison of video features according to upload source. No statistically significant difference was found between the upload source and the following variables: views ($p = 0.215$), duration ($p = 0.092$), likes ($p = 0.416$), comments ($p = 0.098$), and viewing rates ($p = 0.187$). A comparison of the videos according to their upload sources revealed a significant difference in the usefulness scores ($p = 0.036$).

Consequently, videos uploaded by healthcare professionals were associated with higher usefulness scores. The usefulness scores for the videos ranged from 0 to 2, with an average of 1.24. In total, % 12.50 of the videos were of poor quality (10/80), % 60 were of moderate quality (48/80), and % 27.5 were of excellent quality (22/80). The interobserver agreement for the usefulness score was 0.82, according to Cohens' Kappa statistics.

The findings showed that the videos were primarily created according to three main topics: description (% 61.25, n = 49); advantage (% 25, n = 20); and price (% 13.75, n = 11). The videos were also categorized as either educational (% 78.75, n = 63) or patient experience (% 21.25, n = 17) according to upload purpose (Table 5).

No statistically significant difference was found between the usefulness score and loading purpose ($p > 0.05$). Nevertheless, a significant difference was found between the number of comments and upload purpose ($p = 0.023$), as shown in Table 6.

Consequently, the videos about patients' experiences were associated with more comments.

Table 2. Features of the YouTube Videos About the Dental Implants. *Standart deviation

	N	Minimum	Maximum	Mean	S.D.*
View	80	2782.00	18934620.00	505287.118	1866024.702
Duration	80	1.19	14.50	4.952	3.728
Like	80	9.00	89000.00	2835.427	8853.754
Comment	80	1.00	16260.00	591.206	1778.156
Viewing rate	80	135.82	647853.84	42458.266	87436.387
Usefulness score	80	.00	2.00	1.235	.621
Valid N	80				

Table 3. Descriptive Data of the YouTube Videos by Source. *Standart deviation

SOURCE		N	Minimum	Maximum	Mean	SD*
COMPANY	View	16	5800.00	18934620.00	1265288.500	5827601.150
	Duration	16	1.19	14.50	5.875	3.492
	Like	16	9.00	21000.00	2576.128	4135.488
	Comment	16	1.00	852.00	166.520	302.748
	Viewing rate	16	135.82	580213.28	62073.840	157716.442
	Usefulness score	16	.00	2.00	.952	.628
	N	16				
HEALTHCARE PROFESSIONAL	View	45	2782.00	1070874.00	142926.558	239367.170
	Duration	45	1.19	12.35	5.087	3.30860
	Like	45	24.00	9500.00	1482.524	2352.647
	Comment	45	1.00	2249.00	215.472	464.725
	Viewing rate	45	367.94	101164.20	16014.394	18736.340
	Usefulness score	45	.00	2.00	1.428	.513
	N	45				
INDIVIDUAL USER	View	9	9376.00	2038230.00	413903.724	483218.613
	Duration	9	1.26	13.25	7.756	3.79648
	Like	9	28.00	89000.00	9560.818	24325.489
	Comment	9	26.00	14736.00	1359.861	3744.556
	Viewing rate	9	675.84	378420.83	60816.628	105248.164
	Usefulness score	9	.00	2.00	.894	.649
	N	9				
TV CHANNEL	View	10	3710.00	797653.00	183014.375	262475.213
	Duration	10	3.53	12.05	6.622	2.837
	Like	10	73.00	21000.00	3197.250	7224.824
	Comment	10	5.00	5701.00	823.875	1979.362
	Viewing rate	10	2251.18	552862.84	76127.460	184058.885
	Usefulness score	10	.00	2.00	.945	.610
	N	10				

Table 4. Comparison of Video Features Between Video Sources.

	View	Duration	Like	Comment	Usefulness score	Viewing rate
Chi-Square	5.378	6.828	2.785	5.165	8.754	5.086
p* value	.215	.092	.416	.098	.036	.187

*Kruskal Wallis H test

Table 5. . Descriptive Data of the YouTube Videos by Purpose.

Purpose		N	Minimum	Maximum	Mean	SD*
Educational	View	63	2782.00	18934620.00	461158.270	2305363.566
	Duration	63	1.19	14.50	5.9390	3.367
	Like	63	9.00	26000.00	1705.782	2715.768
	Comment	63	1.00	2571.00	171.755	411.769
	Viewing rate	63	135.82	611081.49	27410.488	74235.410
	Usefulness score	63	.00	2.00	1.194	.627
	Valid N	63				
Patient Experience	View	17	15845.00	184815.00	417556.741	521160.670
	Duration	17	1.50	13.25	5.825	4.306
	Like	17	60.00	89000.00	11385.000	27058.614
	Comment	17	9.00	16260.00	2079.412	3781.056
	Viewing rate	17	806.72	526791.49	71255.490	152277.562
	Usefulness score	17	.00	2.00	1.159	.588
	Valid N	17				

*Standart deviation

Table 6. Comparison of Video Features Between Video Purposes.

	View	Duration	Like	Comment	Usefulness score	Viewing rate
Mann-Whitney U	305.000	374.000	314.000	240.000	410.000	265.000
Wilcoxon W	2425.000	440.500	2711.000	2300.000	472.500	2608.000
Z score	-.947	-.023	-1.165	-2.781	-.061	-1.554
p** value	.364	.964	.317	.023	.898	.124

** Mann-Whitney U test

DISCUSSION

In recent years, dental implants have emerged as the dominant treatment option in the rehabilitation of edentulous jaws. The majority of patients express a preference for dental implant treatment instead of a removable prosthesis. Dental implant treatment has become a highly popular option, largely influenced by the impact of advertisements and social media, with millions of searches on YouTube™. Therefore, the aim of this study was to evaluate the features, usefulness, purpose, and sources of the dental implant videos on YouTube™. Despite the fact that YouTube™ is used for educational purposes, studies that have evaluated the quality of information provided on YouTube™ in the field of health have reported that the information quality is poor. In a study by Kurian et al. (18) examined 89 YouTube™ videos related to dental implants were analyzed. The findings indicated that the videos were generally low quality and contained incomplete and inaccurate patient information. Similarly, in a study about dental implants, Abukaraky et al. (10) determined that the videos were of limited quality. In our study, the usefulness score, which indicates the quality of the information presented, ranged from 0 to 2, with a mean usefulness score of 1.24. The results of the study showed that % 12.50 of 80 videos about dental implants had a low usability score. Additionally, % 60 of the videos were assigned a moderate usefulness score. The most significant reason for the contradictory findings in comparison to other studies was believed to be the high percentage of videos uploaded by healthcare professionals, which reached % 56.3. Additionally, changes in the ranking of search results on YouTube™ may contribute to this discrepancy.

Videos upload by professional healthcare organizations usually provide more reliable content, even if YouTube™ provides a forum for people who have had dental implant surgeries to express their thought and experiences. While YouTube™ offers a platform for patients who have undergone dental implant procedures to share their opinions and experiences, videos uploaded by healthcare professionals typically provide high quality content (19). Therefore, it is undeniable that videos about dental implants will provide more accurate information when uploaded by healthcare professionals. In our study, we revealed a significant relationship between usefulness score and the upload sources of the videos. We concluded that the healthcare professional source had higher usefulness score. This result is consistent with the study of Hassona et al. (15). Recent studies on YouTube have prioritized an investigation of viewers' reactions to videos. This has entailed an examination of various parameters, including the number of comments on videos, the content of comments, and the utilization of established scales for the assessment of video quality. Ma et al. (12) aimed to investigate the society's curiosity about dental implants and their reaction to the treatment by evaluating the comments on YouTube videos. Therefore, as the most striking result of the study, it is important to analyze video comments in order to produce content on topics that respond to the current needs of the society and to disseminate accurate information. In another study where YouTube comments were examined in terms of quantity, Menziletoğlu et al. (11) reported that patient experience videos received more comments than educational videos. Similarly, in our study where we examined the effect of video comments on other parameters, we found that there is a relationship between the purpose of uploading the videos and the number of comments. Accordingly, when comparing patient experience videos with educational videos, it was seen that patient experience videos received statistically significantly more comments. Patient experience videos may have attracted more attention because patients found them to be more realistic and predictable. Therefore, we think that videos that are more popular may have received more interactions and comments. It is very important for public health that videos, especially those with higher interaction, contain accurate information. Moreover, considering that many dental students and dental practitioners use YouTube™ as an educational platform, we wanted to strongly emphasize this importance strongly.

YouTube™ should contain more comprehensive and accurate information, regardless of the users. Healthcare professionals have a great responsibility in improving videos. For this purpose, we think that the preparation of videos by periodontist or oral surgeons, and including patient experiences in the videos, will ensure that the videos receive more interaction and that accurate information reaches a wider population.

There are some limitations to our study. We conducted a search using the keyword 'dental implants', which is a very common keyword that most people use on YouTube™. However, if some users use an alternative keyword, different results may occur. The fact that YouTube™ videos are constantly uploaded and removed makes the content dynamic. Therefore, different results may vary depending on the search time. The 'snapshot' data collection method is absent from our study, as it is from others. In addition, videos about dental implants do not cover the subject in its entirety. While the results generally consisted of videos about description, benefits, price or surgery, we found almost no results regarding maintenance of peri-implant health, peri-implant diseases or failures. This should be considered as another limitation of the study.

CONCLUSION

As a result of our study, we have reached the following conclusions:

1. Videos uploaded by healthcare professionals were associated with higher usefulness scores; This not only proves our null hypothesis wrong, but also shows that viewers should consider the video source. While the YouTube platform offers practical resources about dental implants, the reliability of the information presented remains unclear. Therefore, we urge healthcare professionals to develop high-quality videos that provide accurate information to a large audience.

2. Although the majority of videos about dental implants exhibit a moderate level of usefulness score, it is reasonable to conclude that YouTube™ cannot be considered a wholly reliable source of information about dental implants.

3. Our study revealed that there was no relationship between the purpose of the videos and the usefulness score, confirming the null hypothesis. However, it was observed that videos that included patient experiences received more comments, which is critical for content to reach a wide audience. Including patient experiences in videos may allow for greater coverage and access to a wider audience.

4. YouTube™ is a popular platform for dental students and dentists seeking information about dental implants. While it may not be the most reliable educational source, it offers a sufficient level of general information.

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