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Original Research Article

Zygomatic Implants on Youtube: Analyzing the Content and Usefulness of Videos

'Youtube'da Zigomatik İmplantlar: Videoların İçeriğini ve Kullanışlılığını Analiz Etme

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ABSTRACT

Aim: This research intended to assess the quality of information acquired from YouTube videos concerning the zygomatic implant.

Materials and Method: 'Zygomatic implant' was selected as the search term for YouTube videos. The first 200 videos were reviewed. After exceptions, the rest of them (n=57) were evaluated regarding the content's usefulness according to 8 titles by two researchers. The videos were classified as poor (0), moderate (1), and excellent (2) based on the content scores. All videos were grouped according to upload sources (healthcare professionals, health companies, or others) and types (patient experience, educational, or scientifically incorrect). Kruskal-Wallis, Mann-Whitney U, Chi-square, and Pearson's tests were performed for data analysis ($p<0.05$).

Results: The mean usefulness score of the included videos was 0.77. When the video demographic data were compared with the usefulness score, the number of views of excellent and moderate videos was higher than poor videos ($p=0.017$ $p=0.033$, respectively), the number of likes for moderate videos was significantly higher than poor videos ($p=0.005$). There was a statistically significant difference between video type and usefulness score ($p<0.05$).The most informed topics were indications and advantages, contraindications were never mentioned.

Conclusion: YouTube videos on zygomatic implants were the limited source for patient education.

Keywords: Internet; Patient education; Social media; Video; YouTube; Zygomatic implant

ÖZET

Amaç: Bu araştırma, zigomatik implant ile ilgili YouTube videolarından elde edilen bilgilerin kalitesini değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem: YouTube videoları için arama terimi olarak 'zigomatik implant' seçildi. İlk 200 video incelendi. İstisnalar dışında geri kalanlar (n=57) iki araştırmacı tarafından 8 başlığa göre içeriğin kullanışlılığı açısından değerlendirilmiştir. Videolar içerik puanına göre zayıf (0), orta (1) ve mükemmel (2) olarak sınıflandırıldı. Tüm videolar, yükleme kaynaklarına (sağlık uzmanları, sağlık şirketleri veya diğerleri) ve türlerine (hasta deneyimi, eğitimsel veya bilimsel olarak yanlış) göre gruplandırıldı. Verilerin analizinde Kruskal-Wallis, Mann-Whitney U, Ki-kare ve Pearson testleri uygulandı ($p<0.05$).

Bulgular: Dahil edilen videoların ortalama kullanışlılık puanı 0.77 idi. Video demografik verileri kullanışlılık puanıyla karşılaştırıldığında, mükemmel ve orta dereceli videoların izlenme sayısının kötü videolardan daha yüksek olduğu (sırasıyla $p=0.017$ $p=0.033$), orta dereceli videoların beğeni sayısının kötü videolardan anlamlı derecede yüksek olduğu görüldü. ($p=0.005$). Video türü ile kullanışlılık puanı arasında istatistiksel olarak anlamlı fark vardı ($p<0.05$). En çok bilgi verilen konular endikasyonlar ve avantajlardı, kontrendikasyonlardan hiç bahsedilmedi.

Sonuç: Zigomatik implantlarla ilgili YouTube videoları hasta eğitimi için sınırlı kaynaktı.

Anahtar Kelimeler: İnternet; Hasta eğitimi; Sosyal medya; Video; Youtube; Zigomatik implant

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INTRODUCTION

Knowledge in the field of health, such as medicine and dentistry is available through direct consultation with physicians and dentists, or through the Internet, which has been widely used recently. There is an increasing tendency to use the Internet as a search tool for health-related info.

YouTube, one of the most used online platforms globally, covers medical topics and videos that can be shared by anyone for free.[1,2]

Just like in various fields of dentistry, patients in need of dental implants also turn to YouTube videos to enhance their understanding of the procedure.[3,4] Patients with severe atrophic maxilla who cannot be treated with standard implant methods or who have failed a previous augmentation procedure (such as sinus lifting) may also turn to videos on YouTube to increase their knowledge about alternative treatments and to benefit from patient experiences. The zygomatic implant (ZIs) is one of these alternatives.

In patients with sufficient bone volume in the edentulous/partially edentulous maxilla, rehabilitation of chewing function can be provided with admissible results by dental implants. However, treatment of severely atrophied maxilla with dental implants still has an issue because of mechanical and anatomical challenges.[5] Several methods including block grafting, sinus lifting, split crest technique, and bone grafting with Lefort I osteotomy that have a high success rate, are performed in such cases. However, they may require a secondary donor site, additional surgery, cost, and time.[6,7] Lately, evolving ZIs may provide solution that requires less time and cost, permitting immediate rehabilitation of patients with atrophic maxilla without bone grafting.[7-9]

By Branemark in 1988, the zygomatic implant was first identified as an alternative for patients with a wide maxillary defect caused by tumor resection, trauma, or congenital anomaly. Indications of this implant were expanded to all edentulous patients with extreme maxillary atrophy, severe pneumatization of the maxillary sinus, and failure of sinus lifting.[10,11] As well as acute sinusitis, zygomatic or maxillary pathological conditions, and systemic disease hindering the surgery; smoking, treatment with antiresorptive medications like bisphosphonates known to cause medication-related osteonecrosis of the jaw, and chronic sinusitis are contraindications.[11,12]

ZIs developed as an alternative to bone grafts, use zygomatic bone as a potent rest. It is designed with a length of 30-50 mm, a diameter of 4.5 mm at the widest part, an angle of 45 degrees at the head.[11-13] For adequate mechanical strength and holding for an implant-supported fixed prosthesis, in addition to the placement of bilateral ZIs in the molar/premolar regions of the maxilla, 2-4 usual dental implants are placed in the anterior maxilla.[8,10] The success rate is 95.9-99.9%. Complications such as postoperative sinusitis, oroantral fistula formation, periorbital and conjunctival hematoma or edema, soft tissue infection, paresthesia, and orbital penetration/injury have been reported.[7,9]

Considering the indications, contraindications, success rate, and risks of zygomatic implants, it is possible that patients are likely to turn to online platforms such as YouTube to acquire information about the surgical procedure and review patient experiences. Nevertheless, government agencies and health care providers stated their concerns about the correctness and quality of the information available on this platform because of the growing use of YouTube to post short informational videos and minimal guidelines, interferences governing the content of material uploaded. In this case, questions raises about the reliability of the knowledge source and risk of spreading misleading information.[1] That is why the use of social media as a platform for the transmission of health-related information, including dentistry, is examined by researchers. While some declared that the information content quality of the videos was sufficient[14,15] others stated that the information content of the videos was inadequate.[3,16,17] Several studies examined the information content quality of related YouTube videos on subjects such as standard dental implants, implant-supported prostheses, and implant failures.[3,4]

The purpose of this study is to evaluate the quality of knowledge content in YouTube videos about ZIs, which is an alternative rehabilitation method for patients with severe bone deficiency in the upper jaw, and to analyze their utility for patients.

MATERIALS AND METHOD

Search strategy on YouTube

On January 02, 2023, the search term “zygomatic implant” was used on the YouTube homepage (http://www.youtube.com) for videos containing information about the zygomatic implant. ‘Sort by relevance’ was selected as a search filter. Cookies have been deleted and a non-subscription search is made it. The first 200 videos were evaluated by recording their universal resource identifiers (URLs). Ethics committee approval was not necessary for this study.

Video analytics

All 200 videos were watched to determine which videos would be included in the study. Excluded videos were non-English, duplicated, irrelevant, with no sound/image, conference/lecture, and advertising (n=143). Demographic data of the included videos (n=57), as presented in the flowchart (Figure 1), were assessed by two independent oral and maxillofacial surgeons (TCS, EM). Spectators’ interaction with videos was calculated using the formula for interaction index [(likes-dislikes)/total views x 100%] and viewing rate (views/days since upload x 100%).[4]

All videos were scored in terms of the quality of information they contain in the following eight topic titles: definition, indications, contraindications, advantages, procedures involved, complications, prognosis and survival, and cost.[19] One point was given for each title mentioned, and 0 points if not mentioned. Videos with poor information content had 0-2 points, videos with moderate information content 3-5 points, and videos with excellent information content 6-8 points. The videos were classified as poor, moderate, and excellent based on usefulness scores.

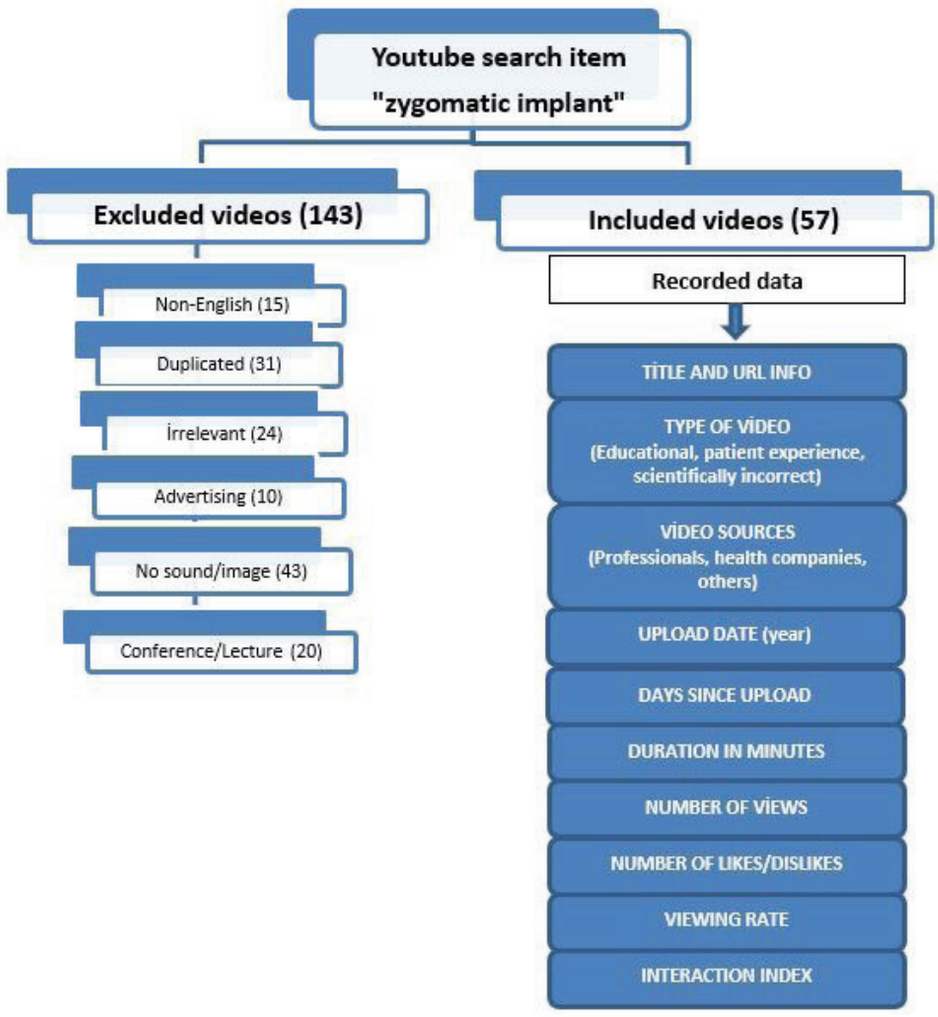

Figure 1. Flowchart

Statistical analysis

After recording the data in the Excel program, statistical analysis was done using IBM SPSS Statistical Software (version 23; IBM, Armonk, NY). The mean, median, standard deviation, minimum and maximum values of the parameters of all videos were determined. Kolmogorov-Smirnov test was used for testing normality. Kruskal-Wallis and Mann-Whitney U tests were used for nonparametric data. Post hoc tests were implemented in pair comparisons. The chi-square test determined the differences between categorical variables. Correlations were evaluated using the Spearman correlation tests. Inter-observer compatiablety on usefulness score was calculated as the kappa score. The accepted significance level was $p<0.05$.

RESULTS

Demographic data of 57 videos are shown in Table 1. The average duration in minutes was 3.35. The average number of views was 5746.94, the average interaction index was 1.23, and the mean view rate was 585.32. The average number of likes and dislikes was 39.33 and 0.82, respectively. The average days since upload was 1180.86. Most of the videos were uploaded in 2020, and the USA was the most uploaded country (Figure 2).

Table 1. Descriptive statistics of the Youtube videos.

Variables	Mean	Median	SD	Min.	Max.
Video characteristics					
Days since upload	1180.86	807	1136.269	19	4639
Duration in minutes	3.3518	2.28	3.35852	0.5	16.46
Views	5746.947	701	23260.38	10	174606
Likes	39.3333	5	105.5676	0	662
Dislikes	0.8246	0	2.07986	0	9
Viewing rate	585.3298	88.05	1586.96	4.22	10784.8
Interaction Index	1.2351	0.66	2.07774	0	13.3
Total content score	3.0351	3	1.5232	0	7

SD, standard deviation; min, minimum; max, maximum.

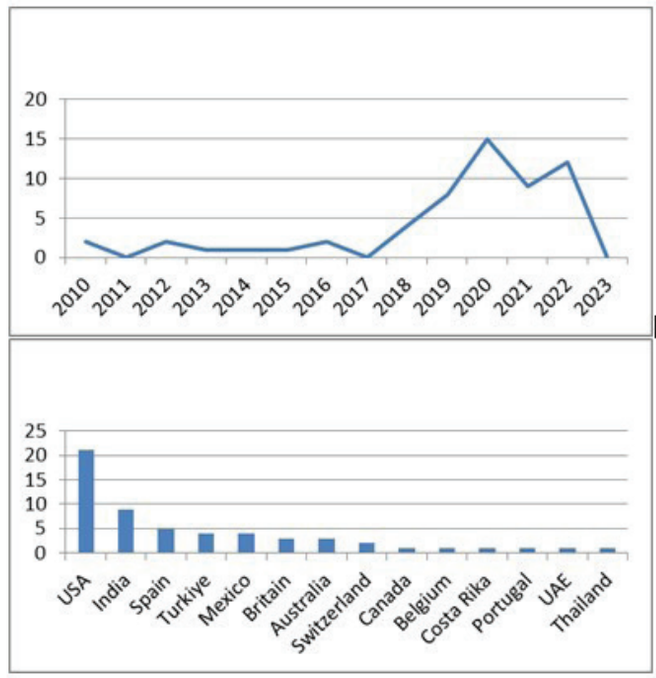

Figure 2. Distribution of the videos by country and years

The average total content score of YouTube videos on the zygomatic implant was 3.03. The most quoted titles were indications (n=44, 77.2%) and advantages (n=40, 70.2%). Procedures involved (n=33, 57.9%), definition (n=29, 50.9%), cost (n=13, 22.8%), prognosis/survival rate (n=8, 14%), and complications (n=5, 8.8%) were less frequent. Contraindications were never mentioned.

The type of videos was categorized as educational (n=40 70.2%) and patient experience (n=17 29.8%), no statistical difference was found between the groups (p>0.05). 10 videos were uploaded by professionals (expert dentists, dentists), 35 by health companies, and 12 by other sources (individuals and social platforms), and no statistically significant differences were found between the groups, according to the upload source.

The average usefulness score of the videos was 0.77. It was grouped as poor (n=16), moderate (n=34), and excellent (n=7) regarding the usefulness and significant differences were found between the groups in terms of the number of views and the number of likes (p<0.05). While moderate and excellent videos had significantly higher view counts than poor videos (respectively, p=0.017, p=0.033), no differences were found between the moderate and excellent videos. Also, the number of likes of moderate videos was significantly higher than poor videos (p=0.005) (Table 2).

There was no significant difference between the upload source and the type of video, between the upload source and the usefulness score. There was a significant difference between the type of video and the usefulness score (p<0.05). 17.5% of the educational videos were poor, 70% moderate, and 12.5% excellent. Of the videos with patient experience, 52.9% were poor, 36.3% moderate, and 11.8% excellent (Figure 3).

While the usefulness score of the videos was strongly positively related to the number of views, the number of likes, and the viewing rate (p<0.001), there was a moderate positive correlation with the length of the video (p<0.01). The length of the video showed a strong correlation with the number of likes and viewing rate (p<0.001), in addition, it showed a weak relation with the view count, number of dislikes, and the interaction index (p<0.05) (Table 3). Inter-observer reliability for the usefulness score was excellent (kappa = 0.848).

Table 2. Comparison of demographic data based on usefullness score.

Parameters	Poor (n=16)		Moderate (n=34)		Excellent (n=17)		
	Mean±SD (Range)	Median	Mean±SD (Range)	Median	Mean±SD (Range)	Median	p value
Days since upload	1120.06±1261.26 (21-4595)	726.00	1172.47±1022.31 (19-3866)	917.00	1360.57±1509.05 (101-4639)	815.00	0.649
Duration in minutes	1.86±1.21 (0.60-5.23)	1.85	3.5226±3.19 (0.50-13.46)	2.47	5.91±5.63 (0.75-16.46)	4.80	0.108
Views	527.75±556.33 (15-1740)	344.50	8922.17±29851.37 (10-174606)	1096.00	2254.00±1975.20 (244-4920)	1792.00	*0.033 *0.017[a] *0.033[b] 0.959[c]
Likes	2.68±3.85 (0-14)	1.50	59.26±131.98 (0-662)	7.50	26.28±46.29 (0-129)	10.00	*0.017 *0.005[a] 0.103[b] 0.747[c]
Dislikes	0.12±0.50 (0-2)	0.00	1.20±2.57 (0-9)	0.00	0.57±0.97 (0-2)	0.00	0.330
Viewing rate	145.28±306.95 (4.22-1238.09	35.88	829.91±1998.91 (7.64-10784.80)	125.30	403.15±632.25 (30.20-1774.25)	106.05	0.076
Interaction Index	1.66±3.44 (0-13.30)	0,28	1.66±3.44 (0-13.30)	0.28	0.93±1.18 (0-3.09)	0.66	0.538

SD, standard deviation; min, minimum; max, maximum; *p<0.05. [a]poor and moderate, [b]poor and excellent, [c]moderate and excellent.

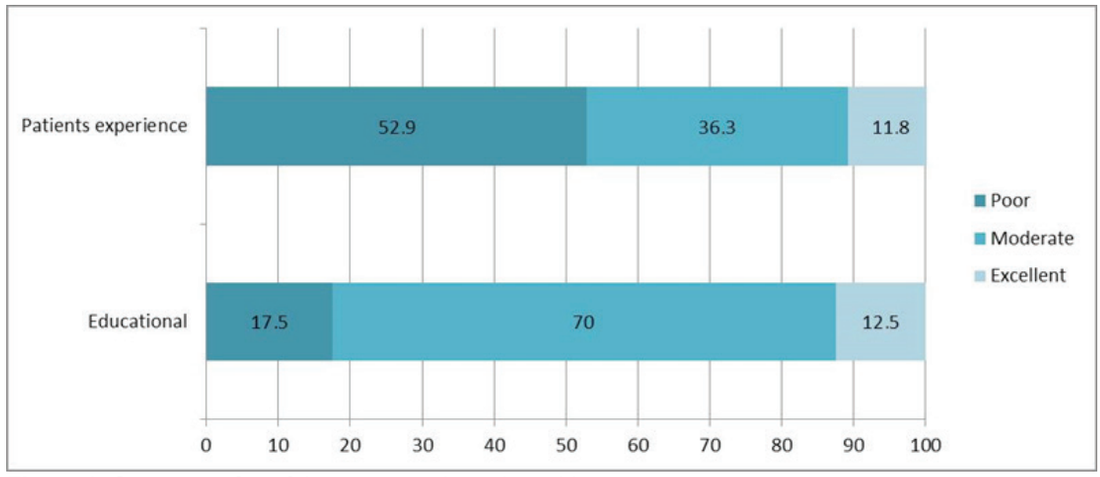

Figure 3. Summary of usefulness scores based on video type

Table 3. Sperman correlation coefficients of the demographic data of the videos.

	Days since upload	Length of video	Views	Like	Dislikes	Viewing rate	Interaction index	Total concent score
Days since upload	1							
Duration in minutes	-0.163	1						
Views	0.432***	0.371**	1					
Like	0.060	0.444***	0.730***	1				
Dislikes	0.154	0.326*	0.576***	0.606***	1			
Viewing rate	0.161	0.520***	0.767***	0.752***	0.509***	1		
Interaction index	-0.253	0.312*	0.168*	0.685***	0.255	0.335*	1	
Total concent score	0.175	0.373**	0.532***	0.515***	0.279*	0.442***	0.209	1

*p<0.05, **p<0.01, ***p<0.001.

DISCUSSION

For the purpose of getting conscious health-related decisions, patients increasingly consult the internet to learn about their medical condition and its treatment. This study intended to evaluate the knowledge content quality of YouTube videos about the zygomatic implant and its usefulness for patients. Our findings showed that YouTube videos about ZIs are limited source of information for patients.

In the literature, several studies were found assessing whether YouTube videos about dentistry were beneficial for patient education. A previous study by Delli *et al*.[20], surveying Sjogren's syndrome, reported that YouTube videos uploaded as a patient experience contained incomplete knowledge compared to educational videos. On the contrary, a similar study by Özdal *et al*.[2] based on impacted teeth stated that there was no difference in knowledge quality between educational videos and other types of videos. In addition to more than half of the videos in our study comprised educational videos, it was agreed with the work of Delli.

YouTube videos on ZIs, 28.07% were of poor quality, 59.65% of them moderate, and 12.28% were of excellent quality. Thus, moderate-quality videos with poor streaming and adequate coverage of some topics were in the majority. These findings were coherent with similar studies on the reliability of YouTube videos on botulinum toxin[19], impacted teeth[15], and fixed prosthetic restorations.[21]

Menziletoğlu *et al*.[15] determined that the usefulness scores of the videos uploaded by healthcare professionals were higher than healthcare companies and other sources. In our study, it was seen that most of the videos were uploaded by healthcare companies, and the upload source did not affect the quality of the

information provided by YouTube videos. However, there was a strong positive correlation between the usefulness score of the videos and the number of views and likes. The fact that the number of views of excellent and moderate videos is significantly higher than that of poor videos, and the fact that moderate videos have the highest number of views indicates people can receive information to a limited extent. Likewise, moderate (statistically significant) and excellent videos received more likes than poor videos, showing that watchers care about information content. Despite the positive correlation in which the number of likes and views increase as video length increases, the upload source and quality of information content did not affect this situation.

Our study determined the usefulness score according to the topic titles which are important for determining whether a video is educational and for the viewer to get knowledge about the subject.[19] Early complications such as hematoma, paresthesia, pain, and orbital penetration associated with ZIs, and late complications such as loss of osseointegration, oroantral fistula, chronic sinusitis, and soft tissue infections have been recorded. Maxillary sinusitis is the most reported. Complications are mainly lenient, easy to overcome, and rarely destructive. The technique has good clinical outcomes with high foreseeability. Therefore, it is substantial to inform patients about possible complications and prognosis.[22] Only 7 of the videos analyzed in our study had good knowledge content. Advanced maxillary bone resorption was highlighted in the videos, and the indications and the advantages were the most mentioned. It is similar to previous studies[19,23], important issues such as procedures involved, complications, cost, and prognosis are mentioned less, and contraindications are not mentioned at all. As a result, it is confirmed that these videos contain incomplete and misleading information. Therefore, patient access to this misleading information has become easier and concerns arise regarding the use of YouTube videos by patients seeking health-related information.

This study had some limitations. First, although there was sharing on the subject in non-native English-speaking countries, only English-language videos were included which limits our findings. The second was using only one search term. Finally, on YouTube, which has dynamic content, search results can change at different dates and times. Future evaluation of videos on zygomatic implant rehabilitation of the extremely atrophied maxilla can be made using detailed keywords, including multiple languages, with no time limit in the videos. In addition, analysis of other social media applications can be performed to assess the quality of these videos and their effect on clinician-patient relationships and patient expectations.

CONCLUSION

The quality of the information on the zygomatic implant on YouTube™ is manifold but often contains a limited level of knowledge. Though the educational videos had better quality information content than the patient experience, most of the videos did not mention the significant parameters related to the zygomatic implant. Healthcare professionals and health companies should intend to recommend better sources of information for patients and educate patients to recognize quality information.

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