

Is YouTube™ the right address to get information on providing hygienic care for dental prostheses users?

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ABSTRACT

Objective: Patients increasingly use social media platforms such as YouTube™ to get information about health issues. However, the effect of the videos on YouTube™ on oral health care is still controversial. This study aimed to analyze the content quality of the videos on YouTube™ about the oral hygiene care of various dental prostheses.

Material and Methods: YouTube™ videos were searched utilizing operators and keywords: «* (denture OR prosthesis OR implant) hygiene OR care OR cleaning OR brushing OR maintenance». The videos were ordered by "relevance". The video's source, origin, and content; duration; the number of likes, dislikes, comments, and views; the number of days since upload; viewing rate and viewer interactions were recorded for each video. In addition, videos were scored for the usefulness of their content: poor (0), moderate (1), or excellent (2).

Results: 200 videos were screened, and 82 videos that met the criteria were analyzed in the study. It was found that most of the videos (72.2%) were uploaded from the USA, and the popular video topics were about complete dentures and implant-supported fixed dentures (48.8% and 43.9%, respectively). It has been observed that the usefulness score of the videos, which ranges from 0 to 2 and has an average of 1.06, had a positive and significant correlation with the number of likes and viewer interactions separately.

Conclusion: Social media usage can be an effective tool for patients to learn about oral hygienic care for dental prostheses. However, it should be noted that YouTube™ may also contain misleading information due to its dynamic nature. Healthcare professionals can be important in directing patients to videos with correct and qualified content.

Keywords: Dentures, Oral hygiene, Social media

INTRODUCTION

Tooth loss has a non-negligible impact on general health and oral health-related quality of life (1). Individuals with complete or partially edentulous need dental prostheses or dental implants to restore dentition functionally and aesthetically. Removable dentures, which provide a relatively non-invasive treatment, are an option to rehabilitate the chewing function (2). Since the introduction of the osseointegration concept, the use of implant-related applications has become widespread, enabling fixed prosthetic applications and removable dentures for fully or partially edentulous individuals (3). Implant-supported restorations demand the highest level of oral care to protect and maintain both implants and dentures. For this reason, dental professionals should adequately inform patients about oral hygiene applications and their importance to ensure prosthesis-related hygiene and motivate them to maintain their oral care behaviors. However, elderly individuals may forget the instructions for denture cleaning (4), or patients cannot contact their dentists for any reason. Therefore, they may want to get the information needed through other sources that can be reached directly without consulting the dentist (5).

In the current digital era, access to information is much easier and faster, thanks to various social media platforms. Obtaining information about medical and dental issues through the internet has become increasingly common due to its quick responsiveness and cost-effective methods for meeting the growing demand for information (6).

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In addition, healthcare professionals have started using social media platforms as beneficial tools to provide information about health issues (7). From this point of view, video-sharing web-sites get great attention in this context. YouTube™ (Google LLC, San Bruno, California, USA) has become the most popular web-site used for searching various topics by over two billion people every day (8,9).

YouTube™ videos, including oral care issues, can allow individuals who wear prostheses to gain a more advanced perspective on how to apply and maintain oral hygienic applications. The videos, in which individuals share their experiences and knowledge on denture cleaning, are a valuable resource for those seeking information on this subject.

By periodically analyzing the video contents on popular websites, current cleaning methods can be reviewed, common misconceptions about the subject can be determined, and the effectiveness of the presented techniques can be evaluated. The results of this analysis can provide valuable information not only for dentists but also for patients with dental prostheses, as well as anyone interested in maintaining optimal oral health (9). On the other hand, it should be considered that uploaded videos may contain misleading and unreliable information because YouTube™ content is not checked by an expert (10). In line with this information, this study aims to evaluate the quality and type of information obtained from YouTube™ videos about the hygiene applications for various prostheses. The null hypothesis of the present study was that the upload source of the video did not affect the quality of the content for oral care videos of dental prostheses within YouTube™.

MATERIAL and METHODS

This study does not require approval of research protocols by the Ethics Committee according to international agreements because YouTube™ is a publicly available platform.

This study searched YouTube™ videos from <http://www.youtube.com> using operators and keywords: «* (denture OR prosthesis OR implant) hygiene OR care OR cleaning OR brushing OR maintenance». The videos were ordered by "relevance", and it was decided to examine the first 200 videos, in view of the fact that approximately 95% of YouTube viewers who were doing research watched videos in the range of 60-200, within this study during February 11-18, 2023 (11,12).

Exclusion criteria for videos were: (1) No audio content and/or subtitles in English; (2) irrelevant content regarding oral hygiene applications for dental prostheses users; (3) repetition and (4) videos longer than 15 minutes (Figure 1).

The videos included in the study were watched from beginning to end by a prosthodontist (H.Ö.U). Analysis was performed considering 'origin', number of 'likes' and 'dislikes', number of 'comments', 'duration' (seconds), 'views', and 'days since upload'. In addition, videos were assessed according to the presence of content in 8 non-mutually exclusive domains: 'definition', 'indication', 'contraindication', 'advantages', 'procedure', 'complications', 'prognosis', and 'cost'. To determine the usefulness score of videos, they were rated based on providing information about the titles above-mentioned (13):

- range 0-2: poor quality and flow, incomplete and insufficient information (poor content; score 0)
- range 3-5: moderate quality, sufficient information, and suboptimal flow (moderate content; score 1)
- range 6-8: excellent quality and excellent flow, exhaustive and lots of valuable data (excellent content; score 2)

Also, the viewers' interactions (a) and viewing rate (b) was calculated by the formulas below (14):

a: Viewers' interactions = $\left(\frac{(\text{number of likes} - \text{number of dislikes})}{\text{total number of views}} \right) \times 100\%$

b: Viewing rate = $\left(\frac{\text{number of views}}{\text{number of days since upload}} \right) \times 100\%$

Statistical analysis

The data were analyzed using IBM® SPSS® Statistics for Windows (Version 20.0. Armonk, NY: IBM Corp.). Data are presented as descriptive statistics (mean, standard deviation, frequency, range). The data were subjected to the Kolmogorov-Smirnov normality test to determine their distribution. The Kruskal-Wallis test for two or more sets and the Mann-Whitney U test for only two sets of nonparametric data were employed when comparing quantitative variables. Spearman's test was used for the correlation analysis. The level of significance was taken as $p < 0.05$.

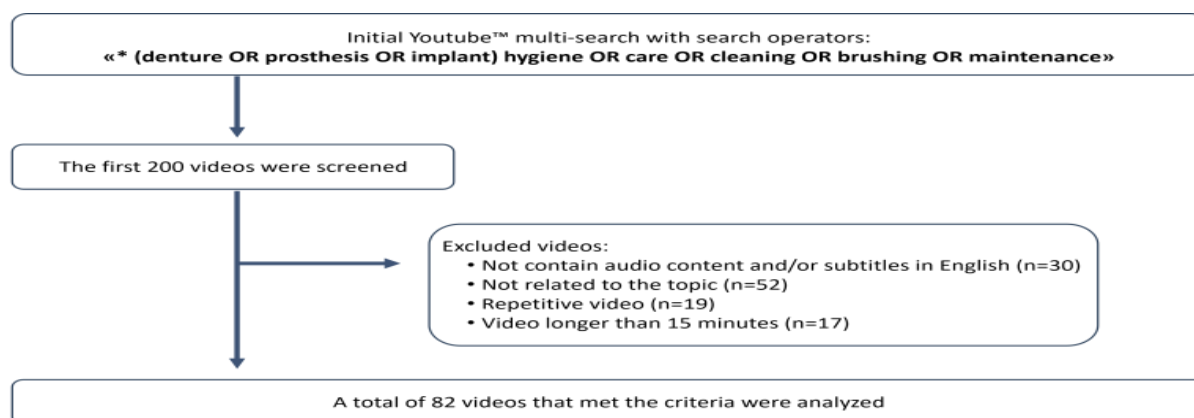


Figure 1. Flowchart of the video selection process that meets the criteria

RESULTS

As a result of recent changes, YouTube™ does not display the total number of results existing per search. Therefore, the top 200 videos were identified using YouTube™ search operators and keywords, and 82 videos that met the criteria were analyzed.

The data about the origin, issue, content, and source of included videos were represented in Figure 2. 72.2% of videos were uploaded by YouTube™ participants from the USA (n=60). The most common issue in videos was hygienic applications for complete dentures and implant-supported fixed prostheses, 48.8% and 43.9%, respectively. Nurses had a rate of 26.8% higher among healthcare professionals who uploaded videos, while hygienists had lower, 11%. The cumulative rate of dentists was 36.6% (dental specialists 24.4%, and dentists 12.2%). When the videos were analyzed in terms of content (Figure 2), more than a half of them were informative videos (52.4%), then educational (30.5%), and commercial purposes (17.1%).

To descriptive data in Table 1, the mean value of time duration in videos was 280.24 sec (range, 40-794 sec). The lowest mean values were observed at commercial content videos by 130sec (range, 40-325 sec), significant statistically. In addition to this, the mean number of comments was minimum in commercial videos.

Although educational videos had values above average related to liking and viewing, the difference was not statistically significant among contents-also, none of the analyzed videos was marked as disliked. Qualification of videos was arranged as poor (2.4%), moderate (89%), and excellent quality (8.6%).

The mean interaction index score was 0.95 (range, 0–5.71). The usefulness score of the videos ranged from 0–2, and the average was 1.06.

Different kinds of information existed in videos as to the hygienic applications for various dental prostheses (Figure 3). Despite the issues like indications (24.7%), definitions (24.39%), procedures (23.48%), and advantages (12.8%) were mentioned commonly, complications (8.84%), contraindications (3.05%), prognosis (1.52%), and cost (1.22%) were less speak to in the videos.

Correlation information of the descriptive parameters and usefulness score of the analyzed videos were presented in Table 2. Accordingly, it was observed that the number of likes and the viewers' interaction showed a positive and significant correlation with the usefulness score. Even there were intense and affirmative correlations among relationships determined by parameters except for usefulness score.

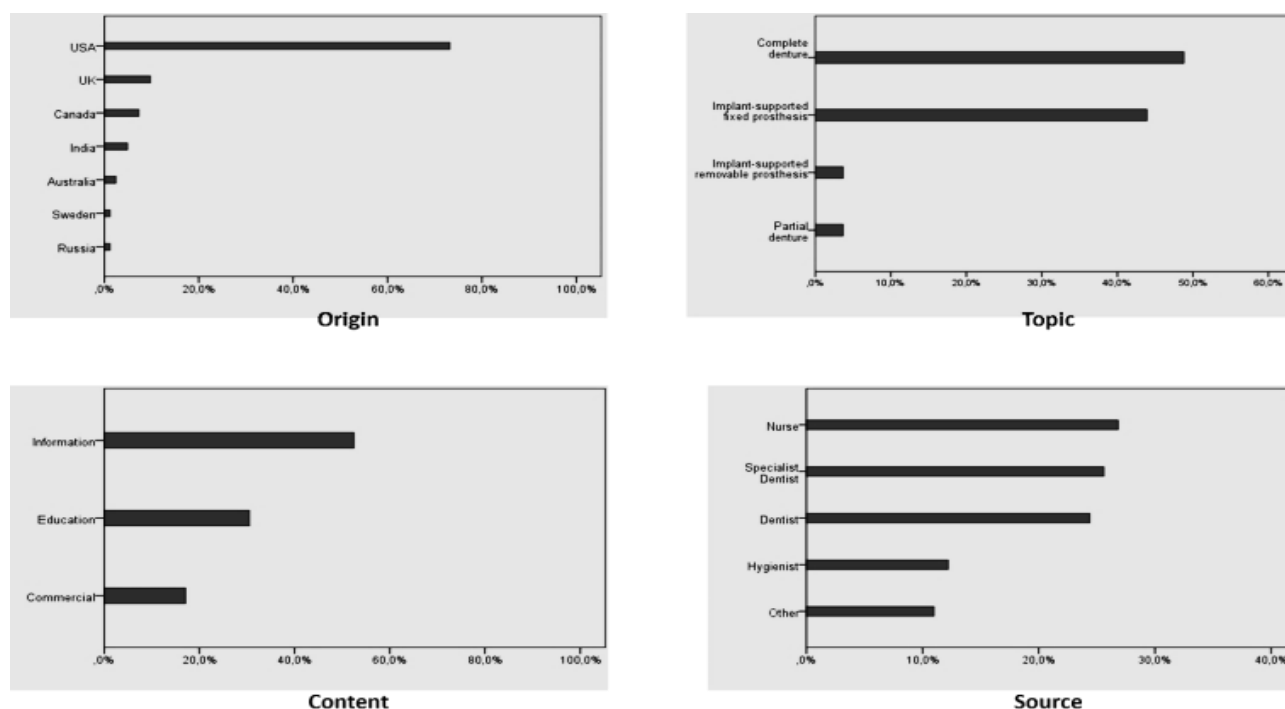


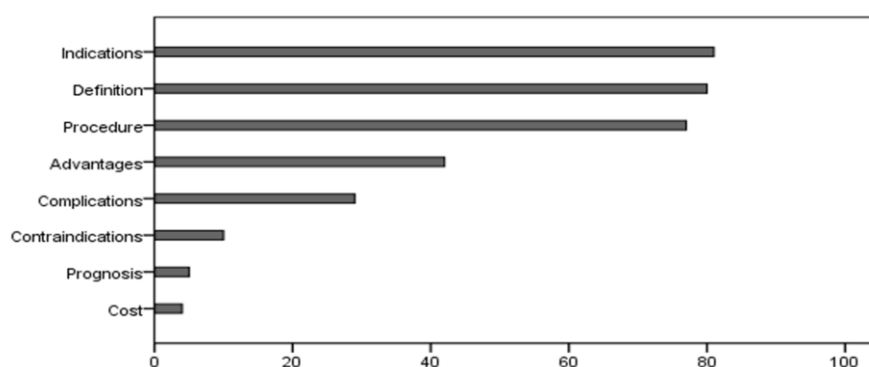
Figure 2. The percentage distributions of the videos according to origin, topic, content and source.

Table 1. Descriptive statistics of analyzed YouTube™ videos.

	Like	Dislike	Comments	Duration (sec)	Views	Days since upload	Viewing rate	Viewers' interaction
Total (n=82) mean±SD (range)	383.62 ± 850.63 (0-4100)	0	29.89 ± 75.48 (0-349)	280.24 ± 193.07 (40-794)	47422,33 ± 97222,16 (53-735824)	1811,80 ± 1083,32 (12-3936)	6324,04±26200,47 (6,46-205798,85)	0,95 ± 1,15 (0-5,71)
Content								
Information (n=43) mean±SD (range)	397,88±801,47 (0-3600)	0	35,81±85,13 (0-349)	278,63±200,59 (55-794)	43958,07±70541,13 (53-358090)	1778,79±1113,56 (12-3936)	9781,89±35710,64 (6,46-205798,85)	0,95±0,97 (0-4,80)
Education (n=25) mean±SD (range)	507,96±1114,82 (0-4100)	0	31,76±77,22 (0-308)	367,04±175,24 (133-742)	64005,32±147869,78 (297-735824)	1893,80±1125,05 (355-3769)	2931,30±6022,68 (56,90-30557,48)	1,12±1,48 (0-5,71)
Commercial (n=14) mean±SD (range)	117,79±179,41 (2-586)	0	8,36±21,18 (0-78)	130,21±82,60 (40-325)	28450,07±38658,54 (502-113897)	1766,79±975,03 (404-3595)	1761,97±2470,31 (35,48-8387,48)	0,67±0,98 (0,08-3,89)
p value	0.637	-	0.040	0.000	0.682	0.921	0.698	0.246
Usefulness score								
Poor (n=2) mean±SD (range)	28,50±40,31 (0-57)	0	5,50±7,78 (0-11)	152,00±99,00 (82-222)	13290,50±610,23 (12859-13722)	981,50±886,01 (355-1608)	2332,52±2167,75 (799,69-3865,35)	0,22±0,31 (0-0,44)
Moderate (n=73) mean±SD (range)	394,48±894,22 (0-4100)	0	32,92±79,50 (0-349)	281,86±199,51 (40-794)	46849,84±100131,71 (53-735824)	1816,12±1108,47 (12-3936)	6768,61±27739,13 (6,46-205798,85)	0,91±1,06 (0-4,80)
Excellent (n=7) mean±SD (range)	371,86±358,95 (38-851)	0	5,29±5,41 (0-15)	300,00±134,02 (171-557)	63144,57±81282,95 (1943-198877)	2004,00±833,58 (902-3575)	2828,18±3316,99 (86,01-8722,82)	1,65±1,87 (0,43-5,71)
p value	0.838	-	0.591	0.624	0.810	0.488	0.910	0.171

Table 2. Correlation matrix showing association between usefulness score of video and video characteristics (n=82).

	Correlation coefficient (<i>Spearman's rho</i>)							
	Usefulness score	Like	Comments	Duration (sec)	Views	Days since upload	Viewing rate	Viewers' interaction
Usefulness score	1,000	,232*	,045	,125	,043	,113	-,013	,245*
Like		1,000	,777**	,415**	,686**	-,052	,715**	,543**
Comments			1,000	,394**	,520**	-,121	,579**	,484**
Duration (sec)				1,000	,239*	-,104	,310**	,451**
Views					1,000	,283**	,883**	-,105
Days since upload						1,000	-,101	-,544**
Viewing rate							1,000	,132
Viewers' interaction								1,000

**Figure 3.** Topics reviewed on YouTubeTM videos relating hygiene of different types of dentures

DISCUSSION

Proper oral hygienic care ensures dental health maintenance, even for patients who wear any kind of prostheses to rehabilitate missing teeth; hygienic care of prostheses is of great importance. At this point, if patients feel the need for more information before making decisions about their health, they have recourse to YouTube™, a popular platform containing videos about any topic, to access information about dentistry anytime and anywhere due to the widespread usage of the internet (15). However, it should be remembered that the validity of Youtube™ videos on health matters is controversial for health fields (15) and may provide misleading information. Therefore, this study was designed to evaluate the content and quality of the videos on You Tube™.

Many studies evaluate the quality of the information provided by different social media platforms (16,17). Most of these studies investigated Youtube™ videos (18-20). Because of its rich content and easy access to information, most individuals prefer Youtube™ as a source for all kinds of information, including scientific opinions. However, Youtube™ was not designed as a scientific platform (21). However, since video sharing is easy and there is no standard for content, the accuracy of the information provided by Youtube™ videos should be questioned (22). The contents are shared without quality control, so the scientific accuracy and quality of the shared dental information vary widely (23).

In the current study, consistent with previous studies (13,14), almost all videos included information on indication, definition, and procedure; very few have been shown to include contraindications, prognosis, and cost. In order to provide accurate and quality content to patients who want to learn about these issues, it is of great importance to focus on the deficient issues identified.

According to a study by Menziletoglu et al. (13), doctors were not pleased with the patients consulting videos to get information as a very first source, and the physician-patient relationship was affected by it negatively. Similarly, Murray et al. (24) examined the effects of health information obtained from the internet on the physician-patient relationship. It was stated that physicians do not seem to oppose clinically inappropriate requests because they want not to harm the physician-patient relationship or to use time efficiently during the examination. In addition, a small part of the physicians stated that they felt that the patients were challenging their authority during the session and, therefore, they were uncomfortable with this situation. For this reason, the accuracy and quality of the information that patients receive on social media about their health are critical for these platforms to have positive effects in the fields of medicine and dentistry.

To avoid unfavorable consequences in which poor quality content could be held responsible, videos of high quality and excellent content concerning the subject on web platforms, including YouTube™, should be posted first. Our data showed that 8.6% of the 82 videos evaluated have excellent qualified information regarding oral hygienic applications for various prosthetic restorations. We believe that the low detection of such videos can be attributed to differences in the video source and origin.

Our data showed that healthcare professionals like specialist dentists, dentists, hygienists, or nurses uploaded most videos (74.4%) related to maintaining oral hygiene status after prosthetic rehabilitation. In addition, videos of non-healthcare professionals included personal experiences with dentures and their cleaning. Since these videos had no scientific value or purpose, confirmation of their contents can be beneficial before publication to prohibit misleading about the so-called issue. Another thing is that YouTubers generally aim to socialize with their large audience by sharing their videos, but health institutions intend to educate other health professionals and individuals (25). Thanks to video sharing on YouTube™, healthcare professionals can reach broader audiences and provide better quality information about individuals' health.

Interacting with viewers is crucial for content creators and media companies to gain insights into the preferences, behaviors, and opinions of their audience. This can help them tailor their content to better meet the expectations, interests, and needs of viewers (9). The results of the current study demonstrated a statistically significant positive correlation between the usefulness score and the viewers' interaction. In addition, a similar and robust correlation was observed among the number of likes and comments, the duration of the video, and viewers' interaction. Our results were compatible with the previous studies declaring that the duration of videos extends if videos hold useful content (13,26,27).

Viewers' opinion about the ideal time duration of a YouTube™ video can vary depending on the kind of content, topic, and audience to reach. Thus, it can be expected that the duration of the video will elongate when information on different topics had given in the same video and increases the usefulness scores. A video time of 3-15 minutes can be appropriate to attract the viewers' attention and keep the interest high, so generally, the time duration should be neither longer nor shorter than this is recommended (9). In another respect, Oz and Kirzioglu (26) emphasized that the number of likes is not deterministic data for evaluating the usefulness of a video due to its subjective nature.

In line with the results of the present study, the null hypothesis that the uploading source of a video did not significantly affect the quality of the video contents was accepted when the hygienic applications for various dental prostheses take into consideration.

There were some limitations in this study. The results of our study could be valid in the current time, yet it is possible that the findings can exhibit variability in different time intervals due to the dynamic feature of the YouTube™ platform, where many videos are uploaded constantly. We only evaluated the videos in English because of being a global language nowadays, but this condition also limited the number of videos to be taken under review during the study.

CONCLUSION

It is advantageous for the internet to become popular in terms of facilitating physician-patient cooperation in dentistry, while developments in the digital era will positively impact the dental field as in other ones. Social media can be an effective tool for informing patients about the hygienic oral care of different dental prostheses after prosthodontic rehabilitation. YouTube™ is an online platform loaded with videos, and patients look to it when they need any information without doubting the quality of the video content (28). Therefore, healthcare professionals, as well as patients, should follow and specify contemporary, reliable, and informative video resources for the purpose of guidance to their patients correctly. This approach can positively contribute to increasing individuals' oral health-related quality of life. Additionally, from a public health perspective, such platforms need to interpret different criteria utilizing further developments like artificial intelligence, which is capable of cleaning out unqualified content, to avoid info pollution and misunderstanding in health applications.

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Author Contributions: HÖU, RA: Study design, collecting data, statistically analysis HÖU: Manuscript preparation, Literature search and revisions

Ethical approval: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and/or with the Helsinki Declaration of 1964 and later versions.

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