ORIGINAL ARTICLE

Evaluation of the Peri-implantitis Videos on YouTube

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Abstract

Aim This study aims to evaluate the general quality and educational value of YouTube peri-implantitis videos.
Material and method The keyword peri-implantitis was utilized to perform a search on YouTube. The top 120 results listed by relevance on YouTube were saved. The inclusion criteria in the final list was determined as the video being English, running at least two minutes or longer and with 720p or higher quality. The remaining 68 videos were evaluated. Descriptive data of views, likes, dislikes, duration (minutes), days passed since upload, comments, viewing rate, and interaction index were created. The videos were divided into the following categories: source, content, and target audience. The videos were evaluated using the video information and quality index (VIQI) for general quality and the global quality scale (GQS) for educational value. VIQI and GQS values were compared according to the created categories. Kruskal Wallis and Spearman tests were applied in statistical evaluations.
Results Statistically significant difference was observed between GQS and source (p<0.001) and content (p=0.038). There was also a significantly statistical difference between VIQI and both source (p<0.001) and content (p=0.048). There was a strong correlation between GQS and VIQI using Spearman correlation analysis (r=0.946; p<0.001).
Conclusion The source and content of YouTube videos are correlated with general information quality and educational value. Although YouTube is not completely reliable, in the event that the videos are uploaded by professionals, it is possible to reach the public with videos of higher quality and higher educational value.

Keywords GQS, Peri-implantitis, Peri-implant mucositis, VIQI, YouTube

Introduction

Dental implants are a very popular treatment option that has been used for many years to treat patients who have lost teeth (1). Although dental implants are considered the first treatment options to replace missing teeth, it is noteworthy that the incidence of diseases that can affect the surrounding supportive tissues of the implant and lead to treatment failure is increasing (2). Peri-implant disease is defined as an inflammatory condition that occurs in the tissues surrounding the dental implants. Peri-implant mucositis is a condition where the soft tissues surrounding dental implants become inflamed, without causing any damage to the bone tissue. It is possible to reverse the current condition when the cause is eliminated. Inflammation of the soft tissues and loss of supporting bone tissue are characteristic of an irreversible condition known as peri-implantitis (3, 4). Peri-implant lesions are often asymptomatic and are usually detected by bleeding on probing at follow-up appointments. Other clinical signs include mucosal recession, increased probing depth, and abscess formation around the implant. If not diagnosed and managed effectively, peri-implantitis can lead to loss of the implant after tissue destruction (5). Even though peri-implantitis has a complex etiology, the severity of the disease varies considerably among individuals. Bacterial biofilm resulting from inadequate oral hygiene is the primary cause of peri-implantitis development (6).

Additionally, peri-implantitis may develop due to reasons such as tobacco use, history of periodontitis, systemic diseases (diabetes, cardiovascular diseases, immunosuppression, etc.), insufficient keratinized tissue surrounding the dental implant, inappropriate restoration margins and residual cement (2, 7-11).

Peri-implant mucositis is a leading cause of peri-implantitis in the same way that gingivitis leads to periodontitis. Inflammation in the soft tissues surrounding the implant affects the bone tissue over time, causing the transition to peri-implantitis. However, as the disease progresses from mucositis to peri-implantitis, it is very difficult to distinguish between these transitional conditions (12). Most of the time, the inflammatory condition around the dental implant is ignored or unnoticed by patients when it is in the mucositis stage, and when they apply to the clinic, it is seen that the inflammatory condition turns into peri-implantitis, which is characterized by bone destruction.

Social media sharing platforms highly practical means of obtaining information on any subject (13). YouTube is a widely recognized sharing platform that receives an average of two billion daily views. It is a fact that a new video is uploaded every minute on this platform, and a normal user spends at least fifteen minutes per day on the site (14). Madathil et al. (14) found that 75% of individuals with chronic diseases base their treatment decisions on information obtained from YouTube. It is important to note that this information may not always be reliable or accurate, and individuals should consult with their healthcare provider before making any treatment decisions. This suggests that YouTube is an affective platform for disseminating health-related information to a wide audiences. Although there are many methods in the literature for the preventing and treating peri-implantitis, which

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is a chronic disease, they can be difficult for patients to understand due to complex terminology. While visiting a dentist for accurate information and treatment is necessary, patients should also have access to understandable information. For this reason, patients may seek information about peri-implantitis and other dental issues before visiting the dentist. Moreover, YouTube allows people to share their knowledge and experiences by joining the communication network (15). Because people want to interact with people who have had similar experiences to them in order to get support (16).

YouTube videos, which contain a wide range of health-related information, are not peer-reviewed and may contain inaccurate or misleading content. Although YouTube provides easy and fast information, the real concern is that potential misinformation can spread very quickly. Therefore, there have been numerous studies evaluating the information quality of YouTube videos and their effectiveness to improving health (17-21). In addition to information on many health disciplines, YouTube contains content on almost every subject in the field of dentistry. However, there are few studies evaluating videos about peri-implantitis on YouTube (13, 22, 23). Therefore, this study aims to evaluate the educational value and general information quality of peri-implantitis videos available on YouTube.

Material and Methods

The search term was chosen as 'peri-implantitis' among the popular words searched with the "worldwide" setting using the Google Trends website. On February 24, 2024, YouTube search was performed with using the keyword "peri-implantitis". The first 120 video URL's were saved for later viewing after the results had been filtered according to relevance. Cookies and search history were deleted before the search was made to prevent the videos from being affected by cookies and ad preferences. Additionally, the YouTube platform was accessed by opening an incognito window in the Google Chrome search engine. Inclusion criteria; English videos, videos that were at least 2 minutes of duration, video quality of 720p and videos related to peri-implantitis. Exclusion criteria were; Non-English videos, videos less than 2 minutes long, videos with quality lower than 720p, videos unrelated to peri-implantitis, and repetitive videos. 68 videos that met the inclusion criteria were watched carefully and completely. The video's descriptive data, including views, likes, dislikes, duration (minutes), days passed since upload, comments, interaction index and viewing rate were recorded. Descriptive data from the YouTube videos was used to calculate interaction index and viewing rate. (17) YouTube videos were categorized as source; dentist, scientific and commercial, as content; treatment, definition and testimonial, as target audience; professional, layperson and both. The educational value and general quality of the YouTube videos were assessed by one researcher (E.T.). The videos' general quality was assessed using the video information and quality index (VIQI), and each video was scored between 1 to 20 points. Global quality scale (GQS) was used to identify educational value of the videos and each video was scored on a five-point Likert-type scale. The same researcher (E.T.) reevaluated the videos after three weeks. According to Cohen's kappa statistics, the GQS score, which evaluates general quality content between two assessment times, was 0.696. Similarly, the VIQI score, which evaluates the educational value of videos between two assessment times, was 0.748 according to Cohen's kappa statistics. Since only publicly available data was used in this study, ethic approval was not required.

The data obtained after evaluating the videos was collected in the Microsoft Excel program. SPSS software was used to perform statistical analysis (SPSS version 26.0). Views, duration (minutes), likes, dislikes, day since upload, comments, interaction index and viewing rate data were used to create descriptive statistics of the videos. The videos have been categorized according to their source, content, and target audience. Kolmogorov-Smirnov and Shapiro-Wilk tests were performed to evaluate the distribution of normality of the values obtained from the descriptive data of each category. Since the values were not normally distributed, non-parametric tests were used. Kruskal Wallis test was performed to compare descriptive data with categorized groups. Additionally, potential relationships between the interaction index, viewing rate, GQS and VIQI scores of YouTube videos were examined with the Spearman correlation test. Statistical significance level was accepted as $p<0.05$.

Results

Mean, standard deviation, maximum and minimum of the descriptive information of the videos, consisting of views, likes, dislikes, days since upload, comments, interaction index, viewing rate, GQS and VIQI are shown in Table 1. Mean, minimum, maximum and standard deviations of GQS, VIQI, viewing rate and interaction index according to the source, content and target audience of the videos are shown in table 2. The GQS mean was found to be 3.00 and the VIQI mean was found to be 11.63.

Table 1: Descriptive statistic of the videos

Video characteristic	N	Minimum	Maximum	Mean	SD
View	68	56	65000	6136.76	12077.199
Duration	68	2	70	10.25	15.35
Like	68	0	458	52.29	96.783
Dislike	68	0	0	0	0
Upload day	68	120	3700	1657.46	1032.618
Comment	68	0	95	4,60	13,136
Interaction Index	68	0	6	1.12	1.118
Viewing Rate	68	0	142	6.31	18.454
GQS	68	1	5	3	1,327
VIQI	68	4	20	11.63	4.998

Abbreviations: SD, standart deviation; GQS, global quality scale; VIQI, video information quality index

The videos that match with the inclusion criteria were classified as sources; commercial (%45, n=31), dentist (%40, n=27), and scientific (%15, n=10), as content; treatment (%44, n=30), de-

scription (%46, n=31) and testimonial (%10, n=7), as target audience; professional (%40, n=27), layperson (%43, n=29) and both (%17, n=12).

Table 2: Comparison of GQS, VIQI, interaction index and viewing rate according to source, content and target audience

		N	GQS Mean SD	GQS Min Max	VIQI Mean SD	VIQI Min Max	Interaction index Mean SD	Interaction index Min Max	Viewing rate Mean SD	Viewing rate Min Max
SOURCE	Dentist	27	3.48 1.156	1 5	13.03 4.476	4 20	1.10 1.186	0 5.36	9.90 27.439	0.03 141.66
	Scientific	10	4.30 0.823	3 5	16.60 2.796	12 19	1.42 0.704	0.48 2.63	2.72 2.336	0.12 7.00
	Commercial	31	2.16 1.036	1 5	8.80 4.222	4 17	1.02 1.176	0 5.71	4.33 9.297	0.064 45.139
CONTENT	Treatment	30	3.00 1.231	1 5	12.33 4.780	5 20	0.87 0.680	0 2.63	5.78 10.544	0.15 45.139
	Definition	31	3.26 1.413	1 5	12.00 5.215	4 19	1.34 1.388	0 5.71	7.52 25.408	0.031 141.667
	Testimonial	7	1.857 0.690	1 3	7.00 2.081	4 10	1.158 1.232	0 3.03	3.14 4.113	0.137 9.898
TARGET AUDIENCE	Professional	27	3.148 1.406	1 5	12.44 5.117	5 19	1.141 0.801	0 3.00	2.37 3.04	0.069 12.632
	Layperson	29	2.655 1.203	1 5	10.03 4.709	4 19	0.80 0.731	0 2.59	11.32 27.503	0.031 141.667
	Both	12	3.50 1.314	1 5	13.666 4.579	5 20	1.837 1.975	0 5.71	3.02 3.330	0.056 9.898

Abbreviations: SD, standart deviation; GQS, global quality scale; VIQI, video information quality index

Statistical comparison of descriptive data of the videos according to source, content and target audience is shown in table 3. There was not a difference between views, likes, dislikes, day since upload, comments, interaction index and viewing rate in terms of source, content and target audience categories. A statistical difference was found between the duration, source (p = 0.025) and target audience (p = 0.005) of the videos. There was a significant difference between GQS and source (p<0.001) and content (p=0.038). Also, there was a statistically significant difference between VIQI and source (p<0.001) and content (p=0.048).

Table 3: Statistical comparison descriptive data according to video categories

p value*	Source	Content	Target Audience
Descriptive data			
View	0.910	.516	.592
Duration	.025*	1	.005*
Like	.687	.791	.853
Dislike	1	1	1
Upload day	.158	.896	.751
Comment	.218	.413	.627
Interaction Index	.132	.477	.181
Viewing Rate	.776	.592	.673
GQS	<0.001	.038	.149
VIQI	<0.001	.048	.051

*Abbreviations: GQS, global quality scale; VIQI, video information quality index *Kruskal Wallis test*

Possible correlation between viewing rate, interaction index, GQS and VIQI is shown in table 4. Strong relationship was found using Spearman correlation analysis between GQS and VIQI (r=0.946; p<0.001). The VIQI values of the videos showed positive correlation with both viewing rate (r=0.358, p<0.01) and interaction index (r=0.254, p<0.05). Also, GQS showed positive correlation with both the viewing rate (r=0.245, p<0.05) and the interaction index (r=0.297, p<0.05).

Table 4: Correlation interaction index, viewing rate, GQS and VIQI

	Interaction Index	Viewing Rate	GQS	VIQI
Interaction Index	1	.121	.297*	.254*
Viewing Rate	.121	1	.245*	.358**
GQS	.297*	.245*	1	.946***
VIQI	.254*	.358**	.946***	1

Abbreviations: GQS, global quality scale; VIQI, video information quality index
*p<0.05, **p<0.01, ***p<0.001, GQS indicates global quality score, VIQI indicates video information quality index*

Discussion

The rapidly increasing use of the social media in recent years has spread to the field of health, causing health professionals to attach more importance to this issue. Especially YouTube attracts people's attention with its video content in almost every field. Although YouTube offers many advantages such as fast access to information, the reliability of its video content is questionable. Videos containing misinformation have the potential to negatively affect patients and doctors by causing unnecessary treatment or treatment seeking in people unsuited to their disease. On the other hand, it should also be noted that, due to the problems experienced by patients with dental implants, the tendency for people to obtain information through YouTube videos is increasing. Therefore, the aim of this study is evaluate the informative and educational value of peri-implantitis videos presented in YouTube.

Some dental studies have concluded that information quality of YouTube is insufficient or misleading (19, 20, 23-25). On the other hand, some studies have concluded that the general information quality of YouTube videos is sufficient (17, 21). Di Spirito et al. (23) evaluated peri-implantitis videos on YouTube and stated the mean educational value (GQS) of the videos as 2.0 and the VIQI value, which measures the quality of information, as 12.0. They also stated that the educational value of the videos was low to medium. In this study, the general information quality of YouTube videos was evaluated with the VIQI scale and the educational value with the GQS scale, and the mean values were found to be 11.63 and 3.0, respectively. We also observed that videos with dentists and scientific sources had higher GQS and VIQI values. This result is consistent with some studies (13, 17, 26, 27) that investigated the relevance between the upload source of videos and their quality. These findings demonstrate that the level of information and professional interest in the sources providing the videos influence quality. Therefore, when watching videos, patients need to consider their source and be aware that the videos may not contain accurate information.

The present study's video contents generally consisted of treatment and descriptive content. Only 10% of the videos were described as testimonial. There was a statistically significant difference between the GQS and VIQI scores and the video content, based on the study findings. Accordingly, both treatment and description contents showed higher GQS and VIQI values than testimonial content. It was observed that testimonial videos consisted of video content in which patients who received treatment expressed their positive opinions about the treatment. Testimonial contents were associated with low GQS and VIQI values because they contained subjective comments and were far from addressing scientific and educational information for peri-implantitis.

Although the GQS and VIQI mean values of the videos addressing to the layperson were lower than those of the videos addressing to the professional and both audiences, there was no observable statistically significant difference between the target audience of the videos and GQS and VIQI. It was observed that the videos about the peri-implantitis uploaded for the layperson did not contain important information such as strategies for preventing peri-implantitis. Additionally, the causes of peri-implantitis were not fully explained.

Previous studies have revealed that YouTube videos with low information (low value of VIQI) and quality (low value of GQS) are generally more popular among users and receive more interaction (22, 24). Because it is easier for people with limited medical knowledge to understand videos of insufficient quality, these videos are likely to receive more views and likes. This means that videos with low quality content are associated with higher interaction index and viewing rate. However, in this study, there was a positive correlation between the interaction index and viewing rate and the videos GQS and VIQI values. This result may be related to the fact that the majority of the target audience is dentists. Therefore, videos with high educational value and general quality may have received more attention from professionals.

In this study examining peri-implantitis videos, an extremely high positive correlation (r=.946, p<0.001) was detected between the VIQI score and GQS scores, as in the study of Di Spirito et. al. (23) Additionally, another study (28) evaluating the information content and educational value of peri-implantitis videos is compatible with the results of this study. This result reveals that the increase in general quality increases educational value. As in some previous studies (29, 30), in this study, a positive correlation was observed between the VIQI values of the videos and viewing rate and interaction index. Also, a positive correlation was found between GQS and interaction index and viewing rate. This result is similar to that reported by Göller et al. (22) who evaluated peri-implantitis videos. These results show that videos with higher general quality and educational value are more popular and receive more views and likes, resulting in more interaction.

There are some important limitations to this study. The most important limitation is that search results on YouTube, which is a dynamic sharing platform, can change instantly. Therefore, the same keyword can give different results at different times, making it difficult for the current study to reach a generalizable conclusion. Additionally, videos about peri-implantitis do not explain all aspects of the subject. New information about peri-implantitis may make previously uploaded YouTube videos obsolete. Another limitation is that although two different times were used to evaluate the videos, they were evaluated by a single observer. Since only one observer evaluated the videos in both of the evaluation sessions, this creates a reliability problem. Furthermore, the data on peri-implantitis-related videos in this study were evaluated using GQS and VIQI. However, it is important to note that YouTube videos can be evaluated using different tools and from various perspectives. This presents a potential area for future research.

Conclusion

There are many videos about peri-implantitis on YouTube and new ones are added every day. Although the content has moderate quality and educational value, watching YouTube content with prejudice will protect patients from possible misinformation. The uploader source and YouTube videos content have a significant impact on general quality and educational utility. Therefore, it is clear that if the videos are uploaded by dentists, the society will be informed more accurately with videos of higher quality and higher educational value. Furthermore, dentists should guide their patients to reliable YouTube channels that provide accurate information on peri-implantitis.

Declarations

Author Contributions: *Conception/Design of Study- E.T.; Data Acquisition- E.T.; Data Analysis/Interpretation- E.T.; Drafting Manuscript- E.T.; Critical Revision of Manuscript- E.T.; Final Approval and Accountability- E.T.; Material and Technical Support- E.T.; Supervision- E.T.*

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