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Smile Design on Turkish YouTube: A Content and Quality Analysis

Original Article

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Abstract: ***Smile design focuses on enhancing oral health and aesthetics by optimizing the shape, size, color, and alignment of teeth. Interest in this field has grown, influenced by television and online platforms. This study analyzed the content and quality of Turkish YouTube videos about smile design. On September 15, 2023, the term "smile design" was searched using Turkish characters via a VPN in Turkey. Of the first 75 videos, 61 meeting inclusion criteria were analyzed. Videos were evaluated using the Global Quality Scale (GQS), modified DISCERN scoring, and an eight-category quality system. Statistical comparisons were made using Chi-Square, Kruskal-Wallis, and Mann-Whitney U tests ($p < 0.05$). Findings revealed that 27.8% of videos were created by dentists, 95.1% targeted lay audiences, and 86.9% aimed at informing patients. Most videos (59%) had poor content, with a mean modified DISCERN score of 2.1±0.7. According to GQS, 55.7% were of low quality, often missing critical information. Videos created by dentists received significantly more likes (median 56 vs. 11; $p=0.001$) and views (median 8090 vs. 2600; $p=0.029$) than those by organizations, though content quality did not differ significantly ($p > 0.05$). Overall, Turkish YouTube videos on smile design were of low quality and had poor content, with limited views and likes. The source and duration of videos did not determine quality, nor did quality directly influence audience engagement.***

Keywords: Smile design, YouTube video quality, aesthetic dentistry, digital health content, public engagement

1.Introduction

Smile design aims to optimize the shape, size, color and alignment of teeth in the field of aesthetic dentistry, as well as improving the oral and dental health of the individual. This process is carried out with a multidisciplinary approach, taking into account the facial structure, gum level, lip shape and even individual aesthetic expectations of the patients. [1-3] The use of digital technologies in dentistry has created a major revolution in smile design processes, enabling more predictable and personalized results for both the patient and the physician. [1-4] Today, digital platforms play an increasingly important role in terms of information, education and awareness. YouTube has become a powerful tool, especially in the field of health and aesthetics, that allows users to research different treatment options and learn more about the processes. Aesthetic smile design in dentistry is also one of the topics that appeal to a wide audience on this platform. [5-8] Smile design videos explain aesthetic dentistry practices in detail, helping patients make more informed decisions on this subject. These videos aim to provide confidence to viewers and shed light on topics of interest by sharing pre- and post-treatment images, explaining the processes step by step, and sharing patients' experiences. However, the quality, reliability, and accuracy of the information provided by these videos can vary greatly. [5-8] The modified DISCERN and GQS categories are two methods used to evaluate the quality of websites and video content containing medical and health information. These methods use various criteria to analyze the reliability, accuracy, and scope of the content. [8-13] This study aimed to analyze the content and quality of Turkish videos published on YouTube about smile design in dentistry.

2.Methods

On September 15, 2023, using a private virtual network (VPN), the word 'smile design' was typed in Turkish characters into the YouTube (www.youtube.com) search bar in Turkey and the first 75 videos that appeared were examined.

Only videos in Turkish were evaluated. Videos with poor audio and video quality, videos without explanations, videos longer than 30 minutes, and YouTube-based ads were excluded from the study. 61 videos that met the criteria were analyzed out of 75 videos. For each video, the video length (in seconds), the time from the upload date to today (in years), who made the upload, the number of views, the number of likes and dislikes were recorded.

Scales

The modified DISCERN scoring and the Global Quality Scale (GQS) Scale were used in the study regarding the content and quality of the videos.

Modified DISCERN

DISCERN is a tool developed to evaluate sources containing health information. The modified DISCERN is a version of this tool that has been adapted or modified for specific purposes [5,9,10,12]:

The modified DISCERN scale consisted of the following questions. Each question was scored as Yes: 1, No: 0, and a total score was recorded for each video.

1. Is the video clear, concise, and understandable?
2. Is it derived from valid sources? (Valid studies, Dentist)
3. Is the information presented balanced and unbiased?
4. Are additional sources of information for the patient/viewer indicated?
5. Does the video address controversial or ambiguous issues?

Global Quality Scale (GQS) Scale

The GQS is a subjective scoring system that evaluates the overall quality of websites. The scale used the following categorization system. [5,9-13]

1. Poor quality, poor flow of the site, most information missing, not at all useful for patients.
2. Generally poor quality and poor flow, some information listed but many important topics missing, of very limited use to patients.
3. Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, but other poorly discussed, somewhat useful for patients.
4. Good quality and generally good flow. Most of the relevant information is listed, but some topics not covered, useful for patients.
5. High quality and flow, very useful for patients. It provides complete and clear information.

The accuracy of the information content of the reviewed videos was evaluated by considering the current publications (14-16) published in the literature for smile design.

The content quality of the videos was evaluated according to 8 different parameters: description, advantages, indications, contraindications, procedures, complications, cost and prognosis. If the video content provides accurate information, it was evaluated as 1, if not, it was evaluated as 0 and scored between 0-8. The content score was obtained by evaluating the sum of these scores. Poor videos (0-2 points) were quite limited in terms of information. Medium quality videos (3-4 points) were evaluated as slightly useful because they contained insufficient flow and superficial information. Good quality (5-6 points), rich (7-8 points) videos with video content quality were described as quite useful for the patient because they contained detailed and accurate information.

Statistical analysis

All statistical analyses in the study were performed using SPSS 25.0 software (IBM SPSS, Chicago, IL, USA). Descriptive data were shown as mean and standard deviation in normally distributed data, median and interquartile range in non-normally distributed data. Distributions of nominal or ordinal variables were given as numbers and percentages. Comparisons between groups were made with the Chi Square test in terms of categorical variables. Whether continuous variables were normally distributed was analyzed with the Kolmogorov-Smirnov Test. Differences between two groups in terms of non-normally distributed continuous variables were analyzed with the Mann Whitney U test, and differences between multiple groups were analyzed with the Kruskal Wallis test. The results were evaluated at a 95% confidence interval and $p<0.05$ was considered significant. Bonferroni correction was applied where necessary.

3.Results

The source of 27.8% of the videos was dentists, while the source of the remaining 72.2% was organizations such as dental companies or television channels. 62.3% of the video uploaders had less than 10 thousand subscribers. The target audience of 95.1% of the videos was lay people. The purpose of 86.9% of the videos was to report for patients. Complications were mentioned in only two of the videos (3.3%). 28 of the videos included in the study (45.9%) were 2 minutes or shorter. 59% of the videos had weak content. 32.8% of the videos had more than 10 thousand views (Table 1).

The mean modified DISCERN score of the videos was 2.1±0.7, and according to this score, 57.4 of the videos received 2 points. According to this score, there were no videos that received 5 full points, and only 4.9% of the videos received 4 points.

According to the GQS classification, 55.7% of the videos were generally of low quality and the site had a weak flow, some information was available but many important issues were missing, and they met very limited criteria for use by patients. The rate of videos that met the definition of high quality was 8.2% (Table 1).

The median duration of the videos was 150 seconds, the median time since upload was 3 months, the median number of likes was 18, the median number of subscribers of the uploaders was 3400, and the median number of views was 3200 (Table 1).

Table 1. Distribution of the videos in terms of some variables

	n	%
Video source		
Dentist	**17**	**27.8**
Dental company	**35**	**57.4**
Television channel	**9**	**14.8**
Number of subscribers of the uploader		
<10 thousand	**38**	**62.3**
>10 thousand	**23**	**37.7**
Target audience		
Lay people	**58**	**95.1**
Professionals	**2**	**3.3**
Both	**1**	**1.6**
Purpose of the video		
Information for professionals	**6**	**9.8**
Information for patients	**53**	**86.9**
General information	**2**	**3.3**
Mention of complications		
No	**59**	**96.7**
Yes	**2**	**3.3**
Video duration		
2 minutes or shorter	**28**	**45.9**
Longer than2 minutes	**33**	**54.1**
Content quality of videos		
Poor	**36**	**59.0**
Intermediate	**22**	**36.1**
Good	**3**	**4.9**
Rich	**0**	**0**
View count		
<10 thousand	**41**	**67.2**
>10 thousand	**20**	**32.8**
Modified DISCERN scoring		
1 point	**8**	**13.1**
2 points	**35**	**57.4**
3 points	**15**	**24.6**
4 points	**3**	**4.9**
5 points	**0**	**0**
Global Quality Scale (GQS)		
Poor quality, poor flow of the site, most information missing, not at all useful for patients	**10**	**16.4**
Generally Poor quality and poor flow. Some information listed but many important topics missing, of very limited use to patients	**34**	**55.7**
Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients	**12**	**19.7**
Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients	**5**	**8.2**
	Median	**IQR**
Duration of video (sec)	**150.0**	**307**
Time since upload (years)	**3.0**	**2**
Number of subscribers of uploader	**3400.0**	**18890**
Modified DISCERN score (mean±SD)	**2.1**	**0.7**
Likes	**18.0**	**72**
View count	**3200.0**	**13835**

SD: Standard deviation, IQR: Inter-quartile range.

The distributions of those with a duration of 2 minutes or less and those longer than 2 minutes were found to be similar according to the video source, the number of subscribers of the uploader, the target audience, the purpose of the video, the quality of the content, the number of views, the modified DISCERN and GQS categories ($p>0.05$ for each). The median number of subscribers of the uploaders, the number of likes and views were also similar in these groups ($p>0.05$ for each) (Table 2).

Table 2. Comparisons of the distributions and median values in terms of some variables between the video-duration groups.

	Duration of video (sec)				Total	P*
	2 minutes or less		More than 2 minutes			
	n	%	n	%	n	
n	28	100.0	33	100.0	61	
Video source						0.645
Dentist	7	25.0	10	30.3	17	
Organization	21	75.0	23	69.7	44	
Number of subscribers of the uploader						0.768
<10 thousand	18	64.3	20	60.6	38	
>10 thousand	10	35.7	13	39.4	23	
Target audience						0.647
Lay people	27	96.4	31	93.9	58	
Professionals	1	3.6	1	3.0	2	
Both	0	0.0	1	3.0	1	
Purpose of the video						0.969
Information for professionals	3	10.7	3	9.1	6	
Information for patients	24	85.7	29	87.9	53	
General information	1	3.6	1	3.0	2	
Content quality of videos						0.791
Poor	16	57.1	20	60.6	36	
Intermediate	11	39.3	11	33.3	22	
Good	1	3.6	2	6.0	3	
View count						0.082
<10 thousand	22	78.6	19	57.6	41	
>10 thousand	6	21.4	14	42.4	20	
Modified DISCERN						0.593
1 point	5	17.9	3	9.1	8	
2 points	14	50.0	21	63.6	35	
3 points	7	25.0	8	24.2	15	
4 points	2	7.1	1	3.0	3	
5 points	0	0	0	0	0	
Global Quality Scale (GQS)						0.213
Poor quality, poor flow of the site, most information missing, not at all useful for patients	6	21.4	4	12.1	10	
Generally Poor quality and poor flow. Some information listed but many important topics missing, of very limited use to patients	12	42.9	22	66.7	34	
Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients	8	28.6	4	12.1	12	
Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients	2	7.1	3	9.1	5	
	Median	**IQR**	**Median**	**IQR**		**P****
Uploader's subscriber count	3175	15949	4760	18580		0.385
Modified DISCERN score (Mean and SD)	2.2	0.8	2.2	0.7		0.991
Likes	15	43	31	117		0.434
Views	2050	7493	6300	49300		0.079

IQR: Inter-quartile range, SD: Standard deviation.

The distribution of content quality of videos sourced from dentists or organizations was found to be similar in modified DISCERN and GQS categories (p>0.05 for each). Median uploader subscriber numbers were also similar among these groups (p=0.778), but median likes (56 vs. 11; p=0.001) and median views (8090 vs. 2600; p=0.029) were significantly higher in videos sourced from dentists than in videos sourced from organizations (Table 3).

Table 3. Comparisons of the distributions and median values in terms of some variables between the video-source groups.

	Video source				Total	P*
	Dentist		Organization			
n	17	100.0	44	100.0	61	
Content quality of videos						0.351
Poor	9	52.9	27	61.4	36	
Intermediate	8	47.1	14	31.8	22	
Good	0	0.0	3	6.8	3	
Modified DISCERN						0.918
1 point	3	17.6	5	11.4	8	
2 points	9	52.9	26	59.1	35	
3 points	4	23.5	11	25.0	15	
4 points	1	5.9	2	4.5	3	
5 points	0	0	0	0	0	
Global Quality Scale (GQS)						0.71
Poor quality, poor flow of the site, most information missing, not at all useful for patients	4	23.5	6	13.6	10	
Generally Poor quality and poor flow. Some information listed but many important topics missing, of very limited use to patients	8	47.1	26	59.1	34	
Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients	4	23.5	8	18.2	12	
Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients	1	5.9	4	9.1	5	
	Median	**IQR**	**Median**	**IQR**		**p****
Uploader's subscriber count	9300	18685	3225	15835		0.778
Modified DISCERN score	2.2	0.8	2.2	0.7		0.811
Likes	56	398	11	42		**0.001**
Views	8090	66090	2600	12131		**0.029**

IQR: Inter-quartile range.

Median likes and views were found to be similar among modified DISCERN categories (p>0.05 for both). Median likes and views were found to be similar among GQS categories (p>0.05 for both) (Table 4).

Table 4. Comparisons of the median values of like and view counts among modified DISCERN scores and Global Quality Scale categories.

	Count of likes		View count	
	Median	**IQR**	**Median**	**IQR**
Modified DISCERN				
1 point	25	83	7495	9725
2 points	29	84	3000	25352
3 points	12	41	3200	6066
4 points	4	-	1100	-
5 points	-	-	-	-
p*	0.414		0.505	
GQS				
Poor quality, poor flow of the site, most information missing, not at all useful for patients	35.5	113	8195	18600
Generally Poor quality and poor flow. Some information listed but many important topics missing, of very limited use to patients	30.5	73	2950	25352
Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients	13.5	28	2600	11445
Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients	2	13	1100	6280
p*	0.069		0.289	

4.Discussion

YouTube videos on smile design are important in terms of informing the public on this subject and even increasing the knowledge of dental professionals. However, there are serious deficiencies in terms of content and quality, as in social media videos on health. [1-5] This study has shown that the quality of Turkish videos on smile design is not sufficient.

Preparing informative videos on dental topics on YouTube is a professional job and is done by professional individuals or organizations. [3-6] Yağcı [17] reported that 39% of Turkish YouTube videos on digital dentistry are published by dentists, while the rest are published by dental

companies and television sites. In our study, it was determined that 27.8% of videos on smile design in dentistry are sourced by dentists, while the remaining 72.2% are sourced by dental companies or organizations such as television channels, the median subscriber number of uploaders is 3400, and 62.3% have less than 10 thousand subscribers. These findings show that all videos on smile design in dentistry are sourced by professionals, the majority of these videos are sourced by organizations such as dental companies or television channels, but approximately two-thirds do not have high subscriber numbers.

In our study, it was determined that 95.1% of the videos were targeted by lay people and 86.9% were created for the purpose of informing patients. These findings show that the vast majority of videos on smile design in dentistry aim to enlighten the public.
In our study, it was determined that complications were mentioned in only 3.3% of the videos. This finding indicates that a major topic such as complications is very limited in videos on smile design in dentistry, and that this situation may mislead the public and even some professionals.

Temizci [18] found that the mean number of views in Turkish videos on smile design is around 6000, and the mean number of likes is 32. Yağcı [17] reported that the mean number of views in digital dentistry YouTube videos was around 800, and the mean number of likes was close to 25. In our study, the median number of likes for the videos was found to be 18, and the median number of views was found to be 3200. It was also found that 32.8% of the videos had over 10 thousand views. This finding shows that such videos are mostly viewed a small number of times and do not attract much attention from the public. This may indicate that creating and publishing videos about smile design in dentistry via YouTube has limited educational value for the public. Menziletoğlu et al. [19] and Abukaraky et al. [20] reported that the vast majority of YouTube videos about dental implants were of poor quality. Ho et al. [21] also found that the educational level of dental implant videos was low. Yağcı [17] reported that 27% of YouTube videos about digital dentistry were of poor quality, and 44% were of moderate quality. Temizci [18] found that 36% of the videos on smile design were of low quality. Eksi-Ozsoy [5] evaluated English videos on smile design with DISCERN scoring and found that the videos were generally of medium quality. In our study, it was found that 59% of the videos on smile design in dentistry had poor content. In addition, according to the GQS classification, 55.7% of the videos were generally of low quality, the site had a weak flow, some information was available but many important issues were missing, and they met very limited criteria for patient use. According to these criteria, it was found that the rate of videos that met the definition of high quality was 8.2%. It was seen that the mean modified DISCERN score of the videos was 2.1±0.7 and 57.4 of the videos received 2 points according to this scoring. All these findings show that the content quality of the videos on smile design in dentistry on YouTube is generally not high and that these videos are deficient in many ways. This may indicate that such videos are limited in terms of education.

Studies show that even if the content quality of videos on YouTube is good, people usually watch videos for 30 minutes or less. [22,23] For this reason, videos longer than 30 minutes were not included in the study. In our study, it was determined that 45.9% of the videos were 2 minutes or less. The distribution of those with a duration of 2 minutes or less and those longer than 2 minutes according to the video source, the uploader's subscriber count, the target audience, the purpose of the video, the content quality, the number of views, and the modified DISCERN and GQS categories was found to be similar. In addition, the median uploader subscriber count, likes and view counts were also found to be similar in these groups. All these findings show that the duration is not a determining factor for the purpose, target audience, content quality and number of views in YouTube videos with smile design content in dentistry. Yağcı [17] reported that the viewing and like rates in videos prepared by dentists in digital dentistry content YouTube videos were significantly higher than in videos uploaded by organizations. Temizci [18] found that the number of views from different video sources was similar between specialist dentists and non-specialist dentists. Şahin [24] reported that the content quality and number of views of videos on porcelain laminate veneers prepared by specialist dentists were higher. In our study, the distribution of videos whose source was a dentist or an organization according to the content quality, modified DISCERN and GQS categories was found to be similar. The median uploader subscriber numbers were also found to be similar among these groups. However, it was found that the median likes and median views were significantly higher in videos whose source was dentists than in videos originating from organizations. All these findings show that in YouTube videos with smile design content in dentistry, whether the source is a dentist or an organization is not a determinant in terms of the purpose, target audience and content quality of the videos. However, the higher view and like rates of videos created by dentists indicate that the rate of reaching the public of videos prepared by this group is better. Temizci [18] found that the number of views and likes of videos on smile design were similar according to their content quality. Yağcı [17] reported that the values such as views and likes were similar according to the content quality of YouTube videos with digital dentistry content. In our study, the median likes and view numbers were found to be similar among the modified DISCERN categories. Similarly, the median likes and view numbers were found to be similar among the GQS categories. All these findings indicate that the viewing and like rates of videos on smile design in dentistry did not change according to the content categories. This situation shows that the reach of such videos to the public is limited and that content preferences cannot improve this situation. There were some limitations in our study. It is known that YouTube users mostly watch the first 60 videos after the search and then make other searches. [17,18] Therefore, the first 61 videos that met the criteria were evaluated in our study. The low number of videos may have caused the analyses to yield limited results. Since the study also aimed to examine only the interaction of Turkish society with videos on smile design, content other than Turkish was not

evaluated. This situation may not have reflected the analysis results of different languages videos on this subject.

The study highlights the low quality of YouTube videos related to smile design, emphasizing the need for dental professionals and organizations to create more informative, accurate, and engaging content. Future efforts should focus on leveraging digital platforms to enhance public knowledge and decision-making in aesthetic dentistry.

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