



# Evaluation of Online Information on Bruxism in Children: A Study on YouTube™ Videos

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## Abstract

**Aim:** Bruxism in children is a common health issue that causes discomfort in the jaw joint and surrounding muscles, negatively affecting daily activities and quality of life. As individuals increasingly turn to online platforms for health information, the accuracy and reliability of this information become crucial. This study aims to evaluate the content and quality of online information on bruxism in children, facilitating access to accurate and reliable patient information and aiding in more informed decision-making regarding treatment options.

**Material and Method:** This study searched the term 'Bruxism in Children' on YouTube™, evaluating the first 100 relevant videos and selecting 18 videos for further analysis. Data on view count, video length, time since upload, likes and dislikes, number of comments, uploader, interaction index, and views were recorded. The Quality Criteria for Consumer Health Information (DISCERN), the Journal of American Medical Association (JAMA), and Global Quality Scale (GQS) assessed patient viewers' medical accuracy, content quality, understandability, and suitability.

**Results:** Most videos were uploaded by health professionals and educators. However, videos uploaded by health professionals did not have significantly higher GQS scores than those uploaded by patients. When categorized by the source of upload, videos from health professionals did not score significantly higher in reliability than other groups.

**Conclusion:** There is a scarcity of videos on bruxism in children on the YouTube™ platform, providing limited benefits and insufficient information. Despite expectations for more accurate information from health professional-produced content, these professionals must upload more comprehensive and understandable videos.

**Keywords:** Bruxism in children, Global Quality Scale, video, Youtube

## INTRODUCTION

Bruxism can be described as involuntary muscle activity of the chewing system (1). This muscle activity may manifest as teeth clenching or grinding (2). Although it can occur at any stage of life, it is known to be expected in childhood (3). The literature shows that bruxism is classified as diurnal bruxism, occurring during the day while awake, or nocturnal bruxism, occurring during sleep (4,5). Various studies on the causes of bruxism have been conducted, and researchers agree on the idea that it may emerge idiopathically, without any specific cause, or iatrogenically, due to neurological, psychiatric, or similar reasons (6,7). Bruxism is a problem affecting children and adults (8). The literature predominates with views that it may be more common in children compared to adults and tends to decrease with age (9). This problem

damages the teeth and surrounding periodontal tissues and can cause discomfort in the chewing muscles and temporomandibular joint, leading to sleep disorders (10). While different treatment options are suggested for adults, choices for treatment in children are more limited and dependent on many factors (11). A study indicated that the prevalence of bruxism among children ranges from 3.5% to 40.6% (1). When examining its etiology, it is argued that emotional factors, high levels of stress and anxiety, occlusion disorders, and widespread cavities can also contribute to this issue, besides the potential relation to the central nervous system (8). Recent studies have focused on the existence of a relationship between bruxism and genetics (12). Diagnosis of bruxism in pediatric patients is often based on reports from families, highlighting the importance of family awareness regarding bruxism; however, lack of knowledge about bruxism

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usually complicates its detection (13).

In today's world, thanks to computers or smartphones that nearly everyone owns, obtaining information on any subject has become incredibly simple due to the increased internet use (14). The preference of individuals for online methods to access information has also directed health professionals to focus on this area, as evidenced by studies analyzing YouTube™ videos, especially on systemic diseases such as diabetes and hypertension (15,16). Since health professionals can reach individuals more easily and quickly through these online platforms, such studies have also become popular in dentistry (17,18).

YouTube™, one of the most popular video-sharing sites worldwide, including in our country, is increasingly used for acquiring information (19). Compared to other social media platforms, YouTube™ is visited multiple times daily by individuals seeking information on general health and dental and aesthetic practices due to its ability to provide visual and verbal information (20).

The Quality Criteria for Consumer Health Information (DISCERN), a 16-question instrument developed in 1999 by Charnock and colleagues at the University of Oxford, initially used for assessing the quality of written information sources, is now preferred for evaluating the quality of web-based information (21,22).

Silberg, Lundberg, and Musacchio recommend using the Journal of American Medical Association (JAMA) criteria for evaluating the standards of information obtained from health-related written information sources. These criteria assess four essential features that health-related website content should contain, including authorship, attribution, financial support, disclosures of conflicts of interest, and update dates in the content, making it more objective than other assessment tools. It's a measurement tool developed to measure the reliability of information based on precise data without considering the individual knowledge and competence of the evaluator (23,24).

The Global Quality Score (GQS) is an assessment tool consisting of a 5-point scale (25) that ranges from low quality (not beneficial for patients) to high quality and utility (very useful for patients).

This study aims to evaluate the reliability, quality, and content of the most-watched videos on YouTube™ (www.youtube.com) related to bruxism in children and determine whether they benefit patients.

## MATERIAL AND METHOD

Our study did not require ethical committee approval as it was conducted using a publicly available internet site and did not involve humans or samples taken from humans.

### Video Selection and Data Collection

In January 2024, when the phrase "bruxism in children" was searched on Google Trends™ (<https://trends.google.com/trends/>), no popular keyword related to the topic was

found. The first 100 videos that appeared when "bruxism in children" was typed into YouTube™ (www.youtube.com) were reviewed. Studies related to YouTube™ have noted that up to 90% of users look at the first three pages of search results, and 79% of those who do not find what they are looking for check other pages (26). Another study suggested that 95% of YouTube™ searchers watch the first 60 videos and are unlikely to continue beyond the first five pages (27). Therefore, the first 100 videos were examined, and their URLs were archived since search results may vary on different days. The selection of videos for the study was completed on the same day by two experienced professionals, an oral and maxillofacial surgeon and a pediatric dentist, with the data from the first observer (E.E.Ö.) being the basis for evaluation and the data from the second observer (T.N.Ş.) used for comparison in terms of correlation (January 20, 2024).

The inclusion criteria determined that the videos must be in Turkish, longer than 30 seconds but shorter than 30 minutes, contain spoken narration without text on screen, be relevant to the topic, and not contain advertisements. Additionally, for each video, information such as the title and URL, video duration (minutes: seconds. milliseconds), time elapsed from the upload date to the date of the study (in days), who uploaded the video (healthcare professionals/ laypeople), number of views, likes, and dislikes, number of comments were recorded, and the Interaction Index (%) and Viewing Rate (%) were calculated (20).

**Interaction Index (%)** = ((Number of Likes - Number of Dislikes) / (Number of Views)) × 100

**Viewing Rate (%)** = ((Number of Views) / (Time Since Upload in Days)) × 100

The DISCERN instrument was used to evaluate the reliability and quality of information in the videos (23). The DISCERN questionnaire consists of 16 questions and three sections. Each question is scored between "1" (no) and "5" (yes). The scores at the end of the evaluation range between "8 to 40" for the reliability section, "7 to 35" for the treatment options section, and "1 to 5" for the overall score section evaluating the website. The total DISCERN score obtained after all evaluations ranges between "16 to 80". A score range of "16 to 26" is considered "very poor," "27 to 38" as "poor," "39 to 50" as "fair," "51 to 62" as "good," and scores above "63" as "excellent" quality (22).

The study used the JAMA scoring to evaluate the quality and safety of medical information in the videos (23). JAMA evaluation criteria assess health-related information on the internet against basic quality standards. In the JAMA scale evaluation, four essential features were investigated for clear expression: authorship, attribution, disclosure, and currency. Authorship: Authors and contributors should share their affiliations and relevant credentials. Attribution: References and sources for all content should be clearly stated, along with copyright information. Disclosure: Potential conflicts of interest, website ownership, sponsorship, advertising, insurance

responsibility, commercial funding, or support should be clear and comprehensive. Currency: Dates of publication and updates should be stated. A score between 0 and 1 was given to evaluate each video against the JAMA criteria. A score of '1' was given if the criterion was met and '0' if not, with the total JAMA score derived from the sum of these points (24).

GQS was used to evaluate the overall quality of the videos. The scoring system is based on the quality and overall usefulness of the video to the patient (28). The scoring is as follows: 1 point for "Low quality, slow video flow, insufficient information, not useful for patients"; 2 points for "Generally low quality and slow flow, some information but missing key details, partially useful for patients"; 3 points for "Somewhat useful for patients, some important information available but insufficient, medium quality"; 4 points for "Useful for patients, generally well-listed information but with missing parts, good quality"; and 5 points for "High quality and flow, beneficial for patients" (25).

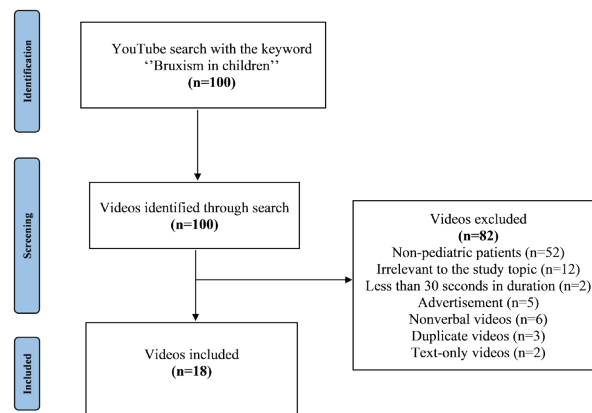
### Statistical Analysis

Data analysis of the study was performed using the IBM SPSS Statistics Version 26 (SPSS Inc., Chicago, IL, USA) software package. The normal distribution of the data was calculated using the Shapiro-Wilk test. According to the results, most data did not follow a normal distribution; therefore, nonparametric tests were utilized for comparative analyses. Descriptive data are presented as frequency (percentage), count, and mean  $\pm$  standard deviation. The Mann-Whitney U test was used to compare two groups, while the Kruskal-Wallis test was employed for comparisons among more than two groups. The Spearman correlation test was applied to analyze the relationship between scales. The Chi-Square test was used to compare categorical data. The interclass correlation coefficient (ICC) was calculated to determine the degree of agreement between two observers. This research accepted a statistical significance value of  $p < 0.05$ .

## RESULTS

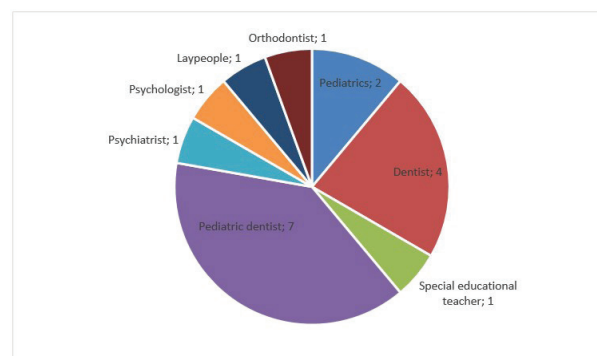
As shown in Figure 1, 100 videos were initially reviewed as part of the research. Of the reviewed videos, 18 were

deemed suitable and included in the study. A significant portion of the excluded sources was directed toward adults and hence could not be included in the study's scope.



**Figure 1.** PRISMA Flowchart of the process of identification and screening of the included videos

As presented in Figure 2, of the 18 sources included in the study, 11.1% were prepared by pediatricians, 22.2% by dentists, and 38.9% by pediatric dentists.



**Figure 2.** Distribution of videos by sources

In the scope of the study, the mean views of the analyzed videos are  $7332.5 \pm 10648.7$ , the mean duration is 2 minutes and 26 seconds  $\pm$  1 minute and 38 seconds, the mean number of days since upload is  $1597.5 \pm 1228.6$ , and the mean likes are  $36.6 \pm 57.0$ . The mean number of comments on the videos is  $2.6 \pm 7.5$ , the mean interaction index is  $2.6 \pm 4.5$ , and the mean viewing rate is  $421.0 \pm 454.9$  (Table 1).

**Table 1.** Basic descriptive information related to the videos

	n	Min	Max	Mean	SD
Number of views	18	28	34000	7332,5	10648,7
Duration (minutes:seconds.milliseconds)	18	00:57:00	06:23:00	02:26:10	01:38:34
Days since upload	18	240	4015	1597.5	1228.6
Number of likes	18	1	224	36.6	57.0
Number of dislikes	18	0	0	0.0	0.0
Number of comments	18	0	32	2.6	7.5
Interaction Index (%)	18	0	15	2.6	4.5
Viewing Rate (views per day)	18	3.83	1291.58	421.0	454.9

While there was a statistically significant difference among the sources of the videos in terms of their durations and the number of likes ( $p < 0.05$ ), no statistically significant difference was found among the sources in terms of the number of views, the number of days since upload, the number of comments, the interaction indices, and the viewing rates ( $p > 0.05$ ). The most extended video duration was observed in videos produced by pediatricians, and the highest mean number of likes was also attributed to

videos created by pediatricians. The highest mean number of views was identified in videos from the laypeople group, whereas the lowest viewing rate belonged to the dentist group, despite these videos being the oldest. The highest mean number of comments was observed in videos produced by pediatricians, and the highest interaction index mean was found in videos from the pediatric dentist group (Table 2).

**Table 2. Detailed information of videos by uploaders (mean  $\pm$  standard deviation)**

	Number of views	Duration (minutes:seconds.milliseconds)	Days since upload	Number of likes	Number of comments	Interaction Index (%)	Viewing rate (views per day)
Pediatric dentist (n=7)	6804.4 $\pm$ 12240.8	01:44.29 $\pm$ 00:20.80	1455.6 $\pm$ 1637.0	22.6 $\pm$ 36.4	1.3 $\pm$ 2.2	4.8 $\pm$ 6.9	424.7 $\pm$ 471.1
Dentist (n=4)	2194.5 $\pm$ 3809.0	01:25.25 $\pm$ 00:26.96	1962.5 $\pm$ 1294.9	6.3 $\pm$ 6.0	0.3 $\pm$ 0.5	1.3 $\pm$ 1.2	78.5 $\pm$ 86.4
Pediatrician (n=2)	4545.5 $\pm$ 6016.8	04:13.00 $\pm$ 03:03.85	730.0 $\pm$ 516.2	114.0 $\pm$ 155.6	16.0 $\pm$ 22.6	2.0 $\pm$ 0.8	616.0 $\pm$ 833.6
Other (n=5)	13297.0 $\pm$ 12727.7	03:30.80 $\pm$ 01:58.07	1851.2 $\pm$ 667.7	49.4 $\pm$ 35.6	0.8 $\pm$ 1.1	0.6 $\pm$ 0.5	611.7 $\pm$ 430.8
p	0.483	0.044*	0.686	0.030*	0.044*	0.437	0.340

In the study, the mean DISCERN value for the first observer (E.E.Ö.) was 47.3, while the second observer's (T.N.Ş.) mean DISCERN value was 47.05, with an ICC=0.98 calculated. This indicates a very good agreement between the two observers. For JAMA, the ICC was calculated as 1, showing perfect agreement between the observers. The first observer's mean GQS was 3.4, while the second observer's GQS was 3.39, with an ICC=0.77, indicating good agreement between the two observers.

Looking at the total JAMA score classification of the analyzed videos, 83.3% scored 1, 11.1% scored 0, and 5.6% scored 4. According to DISCERN, 66.7% of the videos were rated as moderate quality, and 33.3% were rated as good quality. When evaluating the GQS of the videos, 61.1% were considered "Somewhat useful for patients, some important information available but insufficient, medium quality," and 38.9% were "Useful for patients, generally well-listed information but with missing parts, good quality." (Table 3).

**Table 3. Classification of videos by JAMA, DISCERN, and GQS**

		f	%
JAMA	0	2	11.1
	1	15	83.3
	4	1	5.6
DISCERN	Moderate	12	66.7
	Good	6	33.3
GQS	Somewhat helpful for patients, some critical information available but insufficient, medium quality	11	61.1
	It is helpful for patients, generally well-listed information but with missing parts, good quality	7	38.9

The mean JAMA scores of the videos were determined to be 1.1 $\pm$ 0.8, the mean DISCERN scores were 47.3 $\pm$ 5.1, and the mean GQS scores were 3.4 $\pm$ 0.5.

Basic information related to the videos was compared according to DISCERN scores. According to the results, there was no statistically significant difference between DISCERN scores and the number of views ( $p > 0.05$ ). Still, the mean number of views for videos classified as "Good" was higher. No statistically significant difference was found between DISCERN scores and duration ( $p > 0.05$ ), yet the mean duration of videos classified as "Good" was longer. There was no statistically significant difference

between DISCERN scores and the number of days since upload ( $p > 0.05$ ), but the mean number of days since upload was higher for videos classified as "Moderate." There was no statistically significant difference between DISCERN scores and the number of likes ( $p > 0.05$ ), but the mean number of likes for videos classified as "Good" was higher. No statistically significant difference was found between DISCERN scores and the number of comments ( $p > 0.05$ ), yet the mean number of comments was higher for videos classified as "Moderate." There was no statistically significant difference between DISCERN scores and the interaction index ( $p > 0.05$ ), but the mean interaction index



for videos classified as "Good" was higher. No statistically significant difference was found between DISCERN scores

and the viewing rate ( $p>0.05$ ); however, the mean viewing rate for videos classified as "Good" was higher (Table 4).

**Table 4. Examination of data according to DISCERN**

	Moderate (n: 12)	Good (n: 6)	p
Number of views	7041.4±10164.1	7914.7±12555.9	0.964
Duration (minutes:seconds.milliseconds)	01:57.00±01:26.95	03:24.50±01:41.38	0.032
Days since upload	1840.4±1344.7	1111.7±853.8	0.291
Number of likes	34.4±65.6	40.8±39.4	0.291
Number of comments	3.3±9.1	1.0±1.7	0.964
Interaction index (%)	2.0±4.0	3.6±5.8	0.213
Viewing rate (views per day)	392.3±442.5	478.3±516.7	0.494

In the JAMA category of authorship, attribution, and disclosure, only 1 video evaluated in the "Other" section was accepted. Videos from other sources did not receive positive evaluations in this section. In the currency category, all videos from pediatric dentists and pediatricians were accepted, 75% of the videos from

dentists were accepted, and 80% of the videos evaluated in the "Other" category were accepted. The highest mean JAMA score was found in videos categorized under "Other," while the lowest mean JAMA score was found in videos belonging to dentists (Table 5).

**Table 5. Evaluation of video sources according to JAMA**

	Authors	Attribution	Disclosure	Currency	Total JAMA score (mean ±SD)
Pediatric dentist (n=7)	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (%100.0)	1.00±0.00
Dentist (n=4)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (%75.0)	0.75±0.50
Pediatrician (n=2)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)	1.00±0.00
Other (n=5)	1 (20.0%)	1 (20.0%)	1 (20.0%)	4 (80.0%)	1.40±1.15

A statistically significant positive correlation of moderate strength was identified between the DISCERN and JAMA scores of the videos ( $r: 0.552, p<0.05$ ). A statistically significant positive and strong correlation was found between the DISCERN and GQS of the videos ( $r: 0.829, p<0.05$ ). A statistically significant positive but weak correlation was detected between the DISCERN scores and GQS of the videos ( $r: 0.382, p<0.05$ ) (Table 6).

**Table 6. Examination of videos' relationship between JAMA, DISCERN, and GQS (1st observer)**

	DISCERN	JAMA	GQS
DISCERN	1	0.552**	0.829**
JAMA		1	0.382*
GQS			1

## DISCUSSION

Although numerous studies on health topics have been conducted on YouTube (14,17,19), the limited number of YouTube studies on "bruxism in children" in Turkish within the literature prompted our investigation into this subject.

During the study, 100 videos were initially reviewed by two observers, of which only 18 were deemed suitable

for inclusion. The aim was to examine videos on bruxism in children; however, it was found that videos related to teeth grinding primarily explain the condition in adults, suggesting that while numerous videos on teeth grinding exist, only a few address the condition in children. For this, the videos were evaluated by experienced researchers from pediatric dentistry (T.N.Ş), and oral and maxillofacial surgery (E.E.Ö), two branches that often work cooperatively on bruxism in children, and their compatibility was found to be good and very good. We believe that working with researchers from different branches related to the subject in studies involving such subjective evaluations will benefit the study results.

When evaluating the sources of the included videos, 11.1% were from pediatricians, 22.2% from dentists, and 38.9% from pedodontists, which seems reasonable and aligns with the literature (18).

The shortest video examined during the study was 57 seconds, and the longest was 6 minutes and 23 seconds. This duration range aligns with video lengths used in other studies (29,30).

The analyzed videos had a mean view count of 7332, a mean duration of 02:26, a mean of 1597 days since upload,

and a mean of 36.6 likes. The mean number of comments was 2,6, the interaction index mean was 2,6, and the mean viewing rate was 421, with these figures varying depending on the topic according to the literature (18,29).

Statistically significant differences were found among the sources of the videos in terms of their durations ( $p < 0.05$ ), with the longest mean duration observed in videos produced by pediatricians, possibly due to more informative content. Similarly, a statistically significant difference was observed in the number of comments ( $p < 0.05$ ), with the highest mean number of comments found in videos by pediatricians, possibly due to the diversity of topics covered in longer videos encouraging more comments.

No statistically significant difference was observed in viewing rates among the video sources ( $p > 0.05$ ), but the lowest mean was found in dentist group videos. This may indicate an interest in videos produced by pediatric dentists or pediatricians regarding the issue of teeth grinding in children. The literature explains why health professionals' videos are viewed more frequently (18).

The quality of video content was evaluated using JAMA, DISCERN, and GQS. According to the total JAMA score, 83.3% scored 1, 11.1% scored 0, and 5.6% scored 4, suggesting low-quality videos. According to DISCERN, 66.7% of the videos were rated moderate and 33.3% good quality. According to GQS, 61.1% were deemed "somewhat useful but insufficient, medium quality," and 38.9% as "useful, good quality," indicating a medium quality overall.

The low JAMA scores suggest deficiencies in the videos regarding authorship, references, copyright information, and currency. Only one video categorized as "other" by health professionals addressed these aspects adequately, though currency scores were better among health professionals' videos.

A statistically significant moderate positive correlation was found between DISCERN and JAMA scores ( $r: 0.552$ ,  $p < 0.05$ ), a strong positive correlation between DISCERN scores and GQS ( $r: 0.29$ ,  $p < 0.05$ ), and a weak positive correlation between DISCERN scores and GQS ( $r: 0.382$ ,  $p < 0.05$ ), suggesting a positive relationship between these scales and their reliability.

In a similar study conducted in English with keywords related to children's bruxism, 80 videos were analyzed, yielding mean JAMA, DISCERN, and GQS scores of 1,3, 2,4, and 2,8, respectively. Similar to our study, these low scores reflect the lack of accurate and reliable information on pediatric bruxism on YouTube™ in Turkish and English (30).

The study's limitations include using a single search term, being conducted solely in Turkish, and including a limited number of videos. YouTube is a constantly updated platform, making it challenging to comment on the future quality of videos. Variations might also be seen in videos across different geographies and languages.

## CONCLUSION

The study found a limited number of videos on bruxism in children on the YouTube™ platform, indicating that the videos provided low benefits and lacked sufficient information. Health professionals should upload more and clearer videos, as their content is expected to contain more accurate information.

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