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RESEARCH ARTICLE / *ARAŞTIRMA MAKALESİ*

Evaluation of Reliability, Quality, Accuracy, and Content of YouTube Videos on Bruxism in Children- A Descriptive Study

Çocuklarda Bruksizmle İlgili Youtube Videolarının Güvenilirliği, Kalitesi, Doğruluğu ve İçeriğinin Değerlendirilmesi- Tanımlayıcı Çalışma

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ABSTRACT

Objective: People frequently refer to the internet for information about their health problems. This study aimed to evaluate the reliability, quality, accuracy, and content of YouTube videos about bruxism in children.

Material and Methods: YouTube was searched systematically using multiple and specific keywords for 'Bruxism in Children'. The first 60 videos from each keyword search were analyzed. Descriptive data were recorded. Videos were categorized and scored according to publishers. Researchers evaluated the reliability of the videos by using the modified DISCERN, the quality of the videos by using the Global Quality Score (GQS), and accuracy of the videos by using the Journal of the American Medical Association (JAMA) benchmark criteria and the contents of the videos.

Results: A total of 80 videos meeting the inclusion criteria were included in the study. The average values of JAMA, DISCERN, and GQS were 1.3/4.00, 2.4/5.00, and 2.8/5.00, respectively. The contents of 35 videos were non-comprehensive. According to the contents, the median values differed in the DISCERN and GQS ($p<0.001$), but not in JAMA ($p=0.812$). The median value of the DISCERN, GQS, and Content scores in comprehensive videos were all higher ($p<0.001$). According to individual users, the median DISCERN, GQS, and Content values were lower ($p=0.006$, $p=0.004$, $p=0.015$), and the median interaction index value was higher ($p=0.010$).

Conclusion: YouTube may not be considered a completely reliable source of information on bruxism in children. Health professionals should be encouraged to create and publish more comprehensive, reliable, and accurate videos on bruxism in children.

Keywords: YouTube, Internet, Bruxism, Teeth Grinding, Children

ÖZ

Amaç: İnsanlar sağlık sorunları hakkında bilgi almak için sıklıkla internete başvururlar. Bu çalışmanın amacı, çocuklarda bruksizm ile ilgili YouTube videolarının güvenilirliği, kalitesi, doğruluğu ve içeriğini değerlendirmektir.

Gereç ve Yöntemler: YouTube'taki videolar 'Çocuklarda Bruksizm' için birden fazla ve spesifik anahtar kelime kullanılarak sistematik olarak arandı. Her bir anahtar kelime aramasından ilk 60 video analiz edildi. Tanımlayıcı veriler kaydedildi. Videolar yayıncılara göre kategorilere ayrıldı ve puanlandırıldı. Videoların güvenilirliği modifiye DISCERN, kalitesi Global Quality Score (GQS), doğruluğu Journal of the American Medical Association (JAMA) benchmark kriterleri ve içerikleri belirlenen kriterler göre değerlendirdi.

Bulgular: Dahil edilme kriterlerini karşılayan toplam 80 video çalışmaya dahil edildi. JAMA, DISCERN ve GQS' in ortalama değerleri sırasıyla 1.3/4.00, 2.4/5.00 ve 2.8/5.00 idi. 35 videonun içeriği kapsamlı değildi. İçeriğe göre, medyan DISCERN ve GQS skorları farklılık gösterirken ($p<0,001$) JAMA'da farklılık görülmedi ($p=0,812$). Kapsamlı videolarda DISCERN, GQS ve Content puanlarının medyan değeri daha yüksekti ($p<0,001$). Bireysel kullanıcılara göre medyan DISCERN, GQS ve Content değerleri daha düşük ($p=0,006$, $p=0,004$, $p=0.015$) ve medyan etkileşim indeks değeri daha yüksekti ($p=0,010$).

Sonuç: YouTube, çocuklarda bruksizm hakkında tamamen güvenilir bir bilgi kaynağı değildir. Sağlık profesyonelleri çocuklarda bruksizm hakkında daha kapsamlı, güvenilir ve doğru videolar oluşturmaya ve yayınlamaya teşvik edilmelidir.

Anahtar Kelimeler: YouTube, İnternet, Bruksizm, Diş gıcırdatma, Çocuk

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INTRODUCTION

The internet is an important part of most people's lives today. It has become much faster and more easily accessible with mobile and modern communication devices, such as smartphones and personal computers. People frequently refer to the internet for information about their health problems and services, especially for recent global and individual health problems (1). Almost 50% of American adults used the internet to seek answers to their health problems (2).

YouTube™, created in 2005, with more than 2 billion users today, provides video-based educational content and is one of these global websites. More than 1 billion hours of videos are viewed daily on this website, which offers an attractive and a useful platform for evaluating health problems and services (1). Patients regard video resources, which are frequently used as a valuable source of health information, and this may affect their relationship with healthcare professionals. In addition, it was stated that almost 75% of those who use the internet for health information do not look at the source of information (3). In a study examining the content quality of videos posted on YouTube™ on various health issues, the content of the videos was not subjected to an official peer review. It has been reported that there are various concerns about reliability, accuracy, and scientific validity (4). Murray et al expressed that such posts can cause unwanted and even life-threatening consequences (5).

Sleep/awake bruxism is rhythmic or non-rhythmic masticatory muscle activities that appear throughout sleep and wakefulness, respectively. Bruxism is characterized by bracing or thrusting of the mandible and/or by persistent or repetitive tooth contact. Both non-instrumental (like parental reports) and instrumental methods (like electromyography) can be used to measure bruxism (6). As childhood is the most critical period for human growth and development, bruxism in children is an important public health problem. The most common method for assessing bruxism in children is parental reports. Therefore, parents/caregivers play an important role in detecting bruxism in children (7). Additionally, due to parents' low awareness and little or no knowledge about bruxism, reaching accurate and reliable information sources may be the key point for early detection and treatment.

The main purpose of this study was to evaluate the reliability, quality, accuracy, and content of videos that are likely to be encountered by people searching YouTube™ for information about bruxism in children.

Materials and Methods

This descriptive study was conducted in August 2020 via YouTube™. The search words chosen based on the definition of Bruxism were entered into the Google Trends application that is used to analyze the interrelated search activity on the internet. "Bruxism in children", "Teeth grinding in children", and "Teeth clenching in children" were selected as keywords. The keywords were entered on August 30th, 2020 on YouTube™ (https://www.youtube.com/), and the relevant videos were selected (Figure 1).

Video Selection

The keywords "Bruxism in children", "Teeth grinding in children" and "Teeth clenching in children" were entered in YouTube™ video search section, and the videos were listed. The "sort by" filter chosen by YouTube™ as a standard was changed to "relevance". Advertising content was excluded from the videos listed. Based on recent studies showing that 95% of people watch the first 3 pages and the first 60 videos, we chose to design our work out of a total of 60 videos listed on the first 3 pages (8-10). Videos in languages other than English, duplicate videos, videos with no sound or heading, videos that were not relevant to the topic, satirical videos, irrelevant videos, videos longer than 20 minutes, or videos with comments that were closed were excluded.

YouTube Application Programming Interface (API) was preferred to obtain metadata from videos. The code was written to the YouTube interface using Python programming language, and data were exported to Microsoft Excel which could not be accessed by scorers. The code was entered into the YouTube interface using the Python programming language, and the data was transferred to separate Microsoft Excel form (Microsoft, Redmond, WA). Uniform resource locator (URL), date of upload, video length, video source/uploader, video quality (in pixels), total views, number of likes, number of dislikes, and number of comments were recorded and exported to the Microsoft Excel (Microsoft, Redmond, WA) form by using YouTube API. The URL links of the videos to be evaluated were sent to two independent observers with a separate Microsoft Excel (Microsoft, Redmond, WA) form.

Data collection

The videos which were meeting the inclusion criteria were separately and randomly watched by two independent healthcare observers who had 10 years of experience in bruxism and were scored separately according to the forms created on Microsoft Excel. Any discrepancies were resolved by a third independent observer.

Since no data indicated the popularity of the video on YouTube™ 's data, video popularity indexes were created with some calculations using the number of likes and dislikes of videos, the number of video views, and the time elapsed since the day the video was uploaded by a third independent observer.

The indexes used in the study are:

The interaction index (II): [(likes-dislikes)/ number of views] X 100,

Viewing Ratio (VR): (total no. of views/ number of days since upload) X 100,

The Like Ratio (LR)= Like X 100 / (Like + Dislike) and

Video Power Index (VPI): Like Ratio X View Ratio/100 were calculated according to these formulas (11).

The videos were categorized and scored according to publishers as 1) Health Professional (Doctor/Dental), 2) University Channel/ Hospital, 3) Health Company /Health info website, 4) Independent user, and 5) News Agent/Medical advertisement (12).

To evaluate the accuracy and reliability of the videos, comparison criteria of the Journal of the American Medical Association (JAMA) consisting of 4 main titles (such as author and contributor credentials, copyright information of references and sources, date of posted content and subsequent updates, and conflicts of interest, funding, sponsorship, and advertising) were used (13).

The JAMA benchmark criteria consist of 4 separate criteria, and each was assigned a score of 1 for its availability, providing a non-specific assessment of source reliability. A score of 4 indicated higher source accuracy and reliability, while a score of 0 indicated poor source accuracy and reliability.

The videos were evaluated by the modified DISCERN instrument, which was adapted from a tool used to evaluate written health information (8,14,15). Using the scoring system from 1 to 5, the reliability of the videos was evaluated with titles such as clarity of the purpose of the videos, the use of reliable sources for information, the sharing of information in a balanced and unbiased way, providing additional information sources, and specifying uncertain areas.

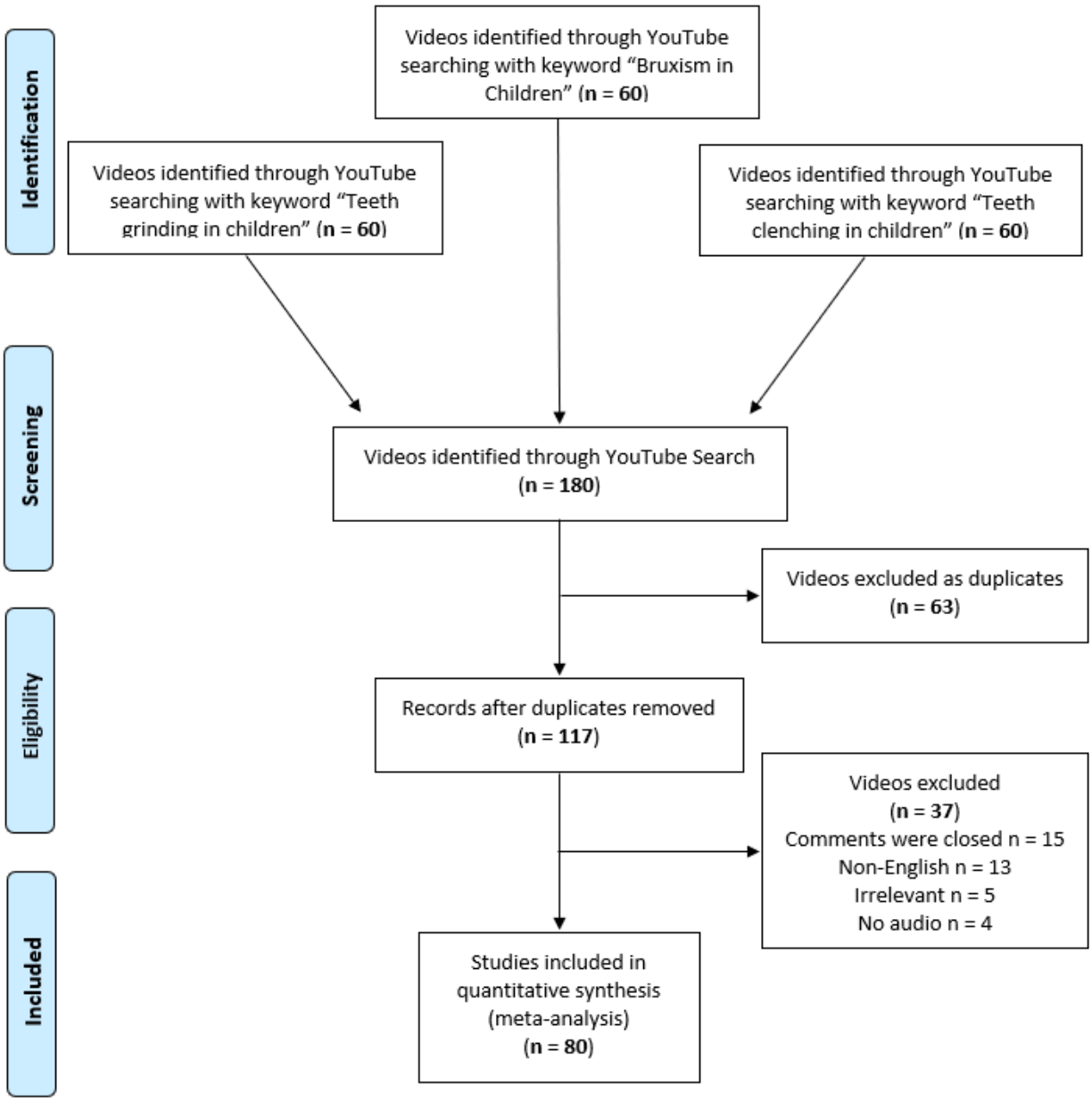

Figure 1: PRISMA Flow diagram of process of identification and screening of the included videos

Table 1: Descriptive statistics of videos for all parameters

	Mean	Minimum	Maximum	Average	Standard Deviation
Duration	2.1	0.5	16.9	3.1	3.0
Number of views	2471.0	19.0	805508.0	24004.1	97236.0
Number of likes	10.0	0.0	6500.0	203.2	905.3
Number of dislikes	1.0	0.0	286.0	12.6	42.0
Number of subscribers	1270.0	0.0	36000000.0	619541.8	4042960.7
Days	1234.5	29.0	4300.0	1470.1	1018.6
II	0.5	-3.7	12.6	1.1	2.2
VR	179.3	5.3	71473.6	2209.2	9272.9
LR	93.3	0.0	100.0	83.2	26.4
VPI	156.4	0.0	69485.3	2037.9	8915.6
JAMA	1.0	0.0	4.0	1.3	0.9
DISCERN	3.0	0.0	5.0	2.4	1.1
GQS	3.0	1.0	5.0	2.8	1.2
Content	4.0	0.0	5.0	3.3	1.8

II: The interaction index, VR: Viewing Ratio, LR: The Like Ratio, VPI: Video Power Index, JAMA: comparison criteria of the Journal of the American Medical Association, DISCERN: The DISCERN Instrument, GQS: The Global Quality Scale

The Global Quality Scale (GQS) was used to evaluate the quality of the videos (16). With the GQS, the topics of quality, flow, relevant information, and usefulness for patients were investigated in detail (GQS: 1: poor quality; 5: excellent quality).

Questions were also developed to assess whether risk factors, causes, signs/symptoms, diagnosis, complications, and management/treatment were discussed in the videos. A scoring system consisting of 1 point for each title and 5 maximum points in total was used. According to the total scores obtained, those who scored between 0-2 were not comprehensive, and those with a score between 3-5 were evaluated as comprehensive (17).

Ethical approval was not obtained as the article was not related to any information containing patient or patient data.

This study has followed the CRIS guidelines for in-vitro studies as discussed in the 2014 concept note.

Statistical Analysis

Data were analyzed with IBM SPSS V23. According to the JAMA score, with Type 1 error (Alpha) 0.05, %95 power (1-β) and d=0,899 effect size, the study population was determined as 68 videos. Conformity to normal distribution was examined according to Kolmogorov Smirnov and Shapiro Wilk tests. Mann Whitney U test was used to compare data that did not show normal distribution according to video quality, and the Kruskal Wallis test was used for the comparison of sources. Categorical data were compiled with the chi-square test. Correlation between the measurements was evaluated using Spearman rho. The ICC (95% CI) test was used to evaluate inter-observer measurements. Quantitative data were presented as median (min-max), and the categorical data as frequency (percentage). The significance level was taken as $p < 0.05$.

RESULTS

A total of 80 videos meeting inclusion criteria (excluded videos: 63 videos were repetitions of the same video, 15 videos were closed to comment, 13 videos were not in English, 5 videos were unrelated content, and 4 videos had no audio) were selected and included in the study (Figure 1). Descriptive statistics for all parameters are shown in Table 1.

The videos were examined according to their sources, 26 videos were published by a Health Professional (Doctor/Dental), 4 videos by University Channel/Hospital, 26 videos by a Health Company/Health info website, 3 videos by an independent user, and 21 videos by News Agent/Medical advertisement. The videos were separated according to the points they received from the questions created to evaluate the contents, with 35 categorized as non-comprehensive and 45 as comprehensive.

Table 2: Inter-observer correlation

	ICC (%95 CI)	P*
JAMA	0.977 (0.964-0.985)	**<0.001**
DISCERN	0.877 (0.815-0.920)	**<0.001**
GQS	0.918 (0.875-0.947)	**<0.001**
Content	0.992 (0.988-0.995)	**<0.001**
Comprehensive	0.999 (0.999-0.999)	**<0.001**

* ICC (95% CI) test, JAMA: comparison criteria of the Journal of the American Medical Association, DISCERN: The DISCERN Instrument, GQS: The Global Quality Scale

Inter-observer correlation (ICC) for JAMA, Discern Instrument, GQS, Checklist, and Reliability were evaluated by ICC, and a positive correlation was found among them. The ICC ranges from 0.877 to 0.999 (Table 2).

The median duration values differed according to the contents (p:0.003). The median value was 1.3 for bad and 2.5 for good contents. Median values for the number of views did not differ according to the content (p:0.731). The median value was 2034 for bad contents, while it was 2550 for good contents. The median values of the number of likes did not differ according to the content (p:0.39). The median value was 9 for those with bad content and 15 for those with good content. The median values of the number of dislikes did not differ according to the content (p:0.595). The median value was 2 for those with bad content and 1 for those with good content. The median number of subscribers did not differ according to content (p:0.214). The median value was 682 for those with bad content and 3170 for those with good content. II median values did not differ according to the content (p: 0.334). While the median value was 0.5 with bad content, it was 0.5 with good content. VR median values did not differ according to content (p: 0.896). The median value was 193.1 for bad content, while it was 176.7 for good content. LR median values did not differ according to the content (p: 0.083). While the median value was 88.9 for bad content, it was 94.1 for good content. VPI median values did not differ according to the content (p: 0.59). The median value was 151.8 for bad content, while it was 166.7 for good content. Median values of days did not differ according to content (p: 0.778). While the median value was 1295 for bad content, it was 1096 for good content (Table 3).

JAMA median values did not differ according to content (p: 0.812). While the median value was 1 for bad content, it was 1 for good content. DISCERN Instrument median values differed according to the content (p <0.001). The median value was 2 for bad content and 3 for good content. GQS median values differ according to the content (p <0.001). The median value was 2 for bad content and 4 for good content. Median values of reliability varied according to the content (p <0.001). While the median value was 0 for bad content, it was 1 for good content. There was no difference between publisher sources and video quality (p: 0.129) (Table 3).

Table 3: Comparisons of video interaction parameters by content

	Total	Non-Comprehensive	Comprehensive	P*
Duration	2.1 (0.5 - 16.9)	1.3 (0.5 - 16.9)	2.5 (0.9 - 14.1)	**0.003**
Number of views	2471 (19 - 805508)	2034 (27 - 805508)	2550 (19 - 299340)	0.731
Number of likes	10 (0 - 6500)	9 (0 - 6500)	15 (0 - 4600)	0.390
Number of dislikes	1 (0 - 286)	2 (0 - 186)	1 (0 - 286)	0.595
Number of subscribers	1270 (0 - 36000000)	682 (0 - 1840000)	3170 (0 - 36000000)	0.214
Days	1234.5 (29 - 4300)	1295 (29 - 3181)	1096 (81 - 4300)	0.778
II	0.5 (-3.7 - 12.6)	0.5 (-3.7 - 9.7)	0.5 (0 - 12.6)	0.334
VR	179.3 (5.3 - 71473.6)	193.1 (5.3 - 71473.6)	176.7 (10 - 41459.8)	0.896
LR	93.3 (0 - 100)	88.9 (0 - 100)	94.1 (0 - 100)	0.083
VPI	156.4 (0 - 69485.3)	151.8 (0 - 69485.3)	166.7 (0 - 39033)	0.590
JAMA	1 (0 - 4)	1 (0 - 3)	1 (0 - 4)	0.812
DISCERN	3 (0 - 5)	2 (0 - 3)	3 (1 - 5)	**<0.001**
GQS	3 (1 - 5)	2 (1 - 3)	4 (1 - 5)	**<0.001**
Content	1 (0 - 1)	0 (0 - 1)	1 (1 - 1)	**<0.001**
Type of Publisher				
1	26 (32.5)	11 (42.3)	15 (57.7)	
2	4 (5.0)	0	4 (100)	
3	26 (32.5)	11 (42.3)	15 (57.7)	0.129
4	3 (3.8)	3(8.6)	0	
5	21 (26.2)	10 (47.6)	11 (52.4)	

*Mann-Whitney U test, II: The interaction index, VR: Viewing Ratio, LR: The Like Ratio, VPI: Video Power Index, JAMA: comparison criteria of the Journal of the American Medical Association, DISCERN: The DISCERN Instrument, GQS: The Global Quality Scale, Type of publisher 1) Health Professional (Doctor/Dental), 2) University Channel/Hospital, 3) Health Company /Health info website, 4) Independent user, and 5) News Agent/Medical advertisement

Table 4: Correlations between video interaction parameters and measurements

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16
P1- Duration	r	---															
	p	1															
P2- Number of views	r	0.131	---														
	p	0.245	---														
P3- Number of likes	r	**0.297**	**0.789**	---													
	p	**0.007**	**0.000**	---													
P4- Number of dislikes	r	0.116	**0.765**	**0.692**	---												
	p	0.305	**0.000**	**0.000**	---												
P5- Number of subscribers	r	0.189	**0.419**	**0.386**	**0.432**	---											
	p	0.093	**0.000**	**0.000**	**0.000**	---											
P6-II	r	**0.421**	-0.107	**0.412**	-0.101	0.015	---										
	p	**0.000**	0.343	**0.000**	0.373	0.893	---										
P7-VR	r	**0.303**	**0.864**	**0.824**	**0.716**	**0.440**	0.117	---									
	p	**0.006**	**0.000**	**0.000**	**0.000**	**0.000**	0.303	---									
P8-LR	r	0.189	-0.128	0.020	**-0.574**	-0.136	**0.551**	-0.069	---								
	p	0.093	0.256	0.858	**0.000**	0.228	**0.000**	0.540	---								
P9-VPI	r	**0.341**	**0.854**	**0.843**	**0.651**	**0.451**	0.187	**0.985**	0.048	---							
	p	**0.002**	**0.000**	**0.000**	**0.000**	**0.000**	0.097	**0.000**	0.671	---							
P10-Type of Publisher	r	-0.090	**0.266**	0.081	**0.302**	0.113	**-0.353**	0.187	**-0.331**	0.164	---						
	p	0.429	**0.017**	0.474	**0.006**	0.320	**0.001**	0.096	**0.003**	0.146	---						
P11-Days	r	**-0.286**	**0.365**	0.041	0.185	0.086	**-0.417**	-0.077	-0.118	-0.056	**0.273**	---					
	p	**0.010**	**0.001**	0.716	0.101	0.447	**0.000**	0.499	0.296	0.622	**0.014**	---					
P12-JAMA	r	-0.008	-0.106	-0.098	-0.115	0.172	-0.002	-0.026	0.139	0.007	-0.032	0.128	---				
	p	0.945	0.351	0.388	0.308	0.128	0.986	0.819	0.219	0.951	0.779	0.258	---				
P13-DISCERN	r	**0.394**	-0.024	0.089	-0.101	0.136	**0.261**	0.018	**0.333**	0.082	**-0.308**	-0.003	**0.429**	---			
	p	**0.000**	0.836	0.434	0.374	0.228	**0.020**	0.873	**0.003**	0.469	**0.005**	0.977	**0.000**	---			
P14-GQS	r	**0.348**	0.103	0.157	0.007	**0.270**	0.106	0.089	0.175	0.145	-0.185	0.054	**0.222**	**0.699**	---		
	p	**0.002**	0.362	0.164	0.949	**0.015**	0.349	0.433	0.121	0.200	0.100	0.637	**0.048**	**0.000**	---		
P15-Content	r	**0.287**	0.040	0.067	-0.079	0.209	0.087	-0.028	0.209	0.030	-0.143	0.088	0.059	**0.567**	**0.836**	---	
	p	**0.010**	0.723	0.554	0.488	0.063	0.445	0.808	0.063	0.791	0.204	0.439	0.601	**0.000**	**0.000**	---	
P16-Comprehensive	r	**0.257**	-0.003	0.018	-0.117	0.190	0.068	-0.051	0.234	0.003	-0.154	0.010	0.099	**0.557**	**0.719**	**0.873**	---
	p	**0.022**	0.976	0.871	0.300	0.092	0.551	0.650	0.036	0.976	0.171	0.933	0.382	**0.000**	**0.000**	**0.000**	1

r: Spearman rho rank correlation, II: The interaction index, VR: Viewing Ratio, LR: The Like Ratio, VPI: Video Power Index, JAMA: comparison criteria of the Journal of the American Medical Association, DISCERN: The DISCERN Instrument, GQS: The Global Quality Scale

Table 5: Comparisons of video interaction parameters according to publishers

	1	2	3	4	5	P*
Duration	2.8 (0.5 - 14.1)	2.1 (2 - 7.6)	1.8 (0.8 - 16.9)	4 (0.6 - 11.7)	2.2 (0.7 - 10.1)	0.722
Number of views	817.5 (42 - 131722)	1525 (1212 - 12679)	2852 (19 - 41557)	821 (161 - 138343)	3561 (159 - 805508)	0.196
Number of likes	7.5 (0 - 2000)	23.5 (2 - 120)	16 (0 - 175)	81 (7 - 191)	10 (0 - 6500)	0.624
Number of dislikes	0 (0 - 87)	1 (0 - 9)	1 (0 - 36)	2 (1 - 141)	3 (0 - 286)	0.108
Number of subscribers	1126 (0 - 1900000)	9045 (0 - 9550)	1026 (10 - 738000)	22900 (1280 - 28700)	920 (5 - 36000000)	0.690
Days	893 (81 - 4300)	1332.5 (511 - 2734)	1527 (132 - 2765)	314 (29 - 1399)	1983 (323 - 3966)	0.035
II	0.9 (-0.7 - 12.6)[a]	1 (0.2 - 1.8)[a]	0.4 (-3.7 - 8.3)[a]	3.1 (0 - 9.7)[b]	0.2 (0 - 1.4)[a]	**0.010**
VR	82.3 (6.3 - 12356.7)	220.2 (76.8 - 463.8)	187.5 (11.9 - 2510.1)	555.2 (261.5 - 9888.7)	203 (5.3 - 71473.6)	0.288
LR	100 (0 - 100)	96.5 (90.5 - 100)	92.8 (0 - 100)	77.8 (57.5 - 98.8)	85.7 (0 - 100)	0.053
VPI	81.7 (0 - 11841.6)	213.6 (76.8 - 431.4)	166.9 (0 - 1886.9)	431.8 (258.3 - 5689)	172.2 (0 - 69485.3)	0.346
JAMA	1 (0 - 3)	2.5 (2 - 4)	1 (0 - 3)	1 (0 - 3)	1 (0 - 2)	0.100
DISCERN	3 (0 - 5)[a]	3.5 (3 - 4)[a]	3 (0 - 4)[a]	0 (0 - 3)[b]	2 (0 - 4)[a]	**0.006**
GQS	3 (1 - 5)[ab]	4 (4 - 5)[a]	3 (1 - 5)[ab]	1 (1 - 2)[b]	2 (1 - 4)[b]	**0.004**
Content	4 (0 - 5)[ab]	5 (5 - 5)[a]	4 (0 - 5)[ab]	0 (0 - 1)[b]	4 (1 - 5)[ab]	**0.015**

*Kruskal Wallis test, [a-b]: There is no difference between publishers with the same letter for each line, II: The interaction index, VR: Viewing Ratio, LR: The Like Ratio, VPI: Video Power Index, JAMA: comparison criteria of the Journal of the American Medical Association, DISCERN: The DISCERN Instrument, GQS: The Global Quality Scale.

The results of the relationship between parameters are presented in Table 3. While there was a positive relationship between duration and number of likes, II, VR, VPI, Discern Instrument, GQS, content and reliability, there was a negative relationship between duration and days. The relationship of 16 measurements is presented in Table 4.

When the contents of the videos in our study were examined; 54 videos (67.5%) were about risk factors and causes, 60 videos (75%) reviewed signs and symptoms, 47 videos (58.75%) discussed diagnosis, 45 videos (56.25%) reviewed complications and 52 videos (65%) contained information about treatment.

When the relevant parameters were examined according to the publishers, a difference was found between the II median values (p: 0.010). The median value of publisher number 4 was higher than the others. II median values did not differ among other broadcasters. When the DISCERN Instrument median values were examined, the median value of publisher number 4 was lower than the others, and there was no difference between the other publishers (p: 0.006). GQS median values differed according to the publishers (p: 0.004). The median values of the 4 and 5 broadcasters were lower than the number 2 broadcasters. Content median values also differed according to the publishers (p: 0.015). There was a difference between publisher number 4 and publisher number 2. Other measured values did not differ according to the publishers (p> 0.05) (Table 5).

DISCUSSION

YouTube™, the most popular video network of recent times, allows users to share content on various topics and easily access videos without any charge (8). Especially during this time when most people do their work at home due to global health problems, such as the Covid-19 pandemic, reliable information provided by the internet can increase patient satisfaction and trust in healthcare professionals, such as information given to patients by doctors. In addition to this, the internet is used to increase professional/name recognition or to earn money (18). Researchers have reported that more than 80% of patients use online resources to obtain information about their diseases, and in more than 70% of them, videos significantly affect patients' treatment decisions (19).

Videos with incorrect and incomplete content can be quite harmful, especially when it concerns health. It has been reported that it is difficult to distinguish the accuracy of information obtained by patients through the internet (20). The facts that the content and source of the videos uploaded to the platform are not based on evidence, and there is no official institution that examines and inspects the quality, content, reliability, and accuracy of YouTube™ videos have led to the spread of studies (21). The information on YouTube™ has often been proven by researchers to be of variable quality and far from evidence-based medicine (11,22).

To our knowledge, this study was the first to evaluate the content and quality of YouTube™ videos on bruxism in children.

While the videos included in this study had approximately 2 million views, the channels on which these videos were broadcast have approximately 50 million subscribers. This shows that this topic has been popular on YouTube™.

Among the videos included in this study, the average values of JAMA, DISCERN Instrument, and GQS were 1.3 / 4.00, 2.4 / 5.00, and 2.8 / 5, respectively. These low scores reflect the lack of structured, accurate, and reliable information about bruxism in children on YouTube™. In a similar study, the poor and often misleading quality of videos about vaccination was reviewed (23). Remarkably, in our study, no significant difference was found between the videos evaluated extensively in the JAMA benchmark criteria used to show the accuracy and reliability of the videos and the non-comprehensive videos. Therefore, more reliable video content should be produced by experts on bruxism in children.

A similar evaluation method for content was used in the study of Singh et al[17]. Many of these videos were uploaded by Health Companies/Health information websites and Health Professionals (Doctors/Dental). Studies have shown that patients cannot appropriately judge the accuracy and quality of the information published on YouTube™, and it is important to review the right information from the right source to improve patient satisfaction and results[9]. It was gratifying that the majority of the videos examined in our study were uploaded by Health Companies/Health information websites and Health Professionals (Doctors/Dental). However, when evaluated in terms of comprehensiveness, only 56% of the studies were evaluated comprehensively. In studies where the content of YouTube™ videos with different medical titles was evaluated, only 48% of those were related to immunization (23), 61% were related to H1N1 (24), and 58% of videos about kidney stones (25) were found to be beneficial. In the study of Singh et al evaluating the data on OSA, the rate was reported as 69% (17). While some of the studies have reported that videos uploaded by healthcare professionals tend to be more comprehensive than other sources, some have not shown such a relationship (10,26). In our study, videos originating from health professionals, university channels, and health information websites are more comprehensive.

The reliability scores of the videos, which were evaluated comprehensively by the observers, with the modified DISCERN Instrument were found to be statistically and significantly higher ($p < 0.001$). A similar relationship was shown with GQS scores ($p < 0.001$). However, the indicators related to viewers liking such as watching, likes, subscriber numbers, and associated VR, LR, and VPI scores of videos that were evaluated extensively did not show a significant difference compared to non-comprehensive videos. Similarly, in the study of Gas et al, they stated that there was no significant difference between the usefulness of videos and descriptive demographic data such as likes, dislikes, and comments (27). Gul et al expressed that people are exposed to reliable and unreliable information in videos, and they cannot distinguish between good and bad (18). Similarly, our study showed that YouTube™ viewers could not distinguish between extensive videos.

A recent study examined the behaviour of health videos for YouTube™ ranking in order to evaluate whether the ranking of videos from reliable sources remained the same. YouTube™ 's new algorithm (depending on the number of views) has shown that reliable videos rank at the top, which means users consider these channels to be a reliable source of information (28). In the study of Pons-Fuster et al, it was shown that useful videos are longer in duration and significantly different from the other two categories that are not useful (8). In the same study, there were no differences between the number of likes, dislikes, comments, and viewer interactions between these videos, which were deemed useful, and other groups that were deemed not useful (8). Delli et al (29) found that there was no correlation between the number of dislikes and comments among useful, misleading, and personal experience videos; Leong et al (30) stated that misleading videos were more popular than useful videos and that this was alarming because of its impact on ordinary people; and finally, Altan et al showed that a positive correlation was detected in descriptive data such as the number of likes, dislikes, and comments of misleading videos, and these misleading videos were more popular (12). In our study, it was shown that the duration of the videos that were evaluated comprehensively was significantly longer. In the sub-analyzes of the factors related to the number of video likes and channel subscribers, a positive relationship was observed between increasing video duration and the number of views. Based on this, it might be necessary to prepare videos with appropriate duration to explain the content and to rearrange the YouTube™ video ranking algorithms in a way that allows more visibility of comprehensive videos. When we looked at the video sources, it was seen that the ratings of the modified DISCERN Instrument, GQS, and content were significantly higher in videos uploaded by healthcare professionals than those uploaded by independent users. However, contrary to this relationship, it has been observed that the interaction indexes of videos uploaded by independent users are higher than the ones uploaded by health professionals. Based on this, it was concluded that the viewers preferred to watch the videos of independent users instead of the more comprehensive, reliable, and quality ones prepared by healthcare professionals.

About the limitations of our study, the keywords used in searching videos might vary according to viewers. Some viewers might use different search terms and encounter different results. On YouTube™, where videos are continuously uploaded and deleted, our data has been created only from the videos in English and the first 3 pages with an instant view. Search results might vary depending on the search time or different languages in different geographies. Since it was an instant evaluation, it might not be possible to comment on the quality, comprehensiveness, and reliability of future videos.

CONCLUSION

According to the data in our study, YouTube™ might not be considered a completely reliable source of information on

bruxism in children as most videos were not sufficient in terms of content and reliability. Videos prepared by healthcare professionals are more comprehensive, more reliable, and better-quality. However, it was observed that the viewers could not distinguish which videos were prepared by healthcare professionals. It was found that most of the liked videos had more views and duration. Health professionals should be encouraged to create and publish more comprehensive, reliable, and accurate videos on bruxism in children, and health literacy should be increased.

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