

Quality of YouTube videos on botulinum toxin management in bruxism, assessed using the DISCERN instrument

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D – writing the article; E – critical revision of the article; F – final approval of the article

Dental and Medical Problems, ISSN 1644-387X (print), ISSN 2300-9020 (online)

Dent Med Probl. 2024;61(6):865–873

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Funding sources

None declared

Conflict of interest

None declared

Acknowledgements

None declared

Received on April 26, 2023

Reviewed on June 2, 2023

Accepted on June 15, 2023

Published online on December 20, 2024

Abstract

Background. Patients are increasingly turning to Internet platforms for health-related information. An example is YouTube, one of the largest media-sharing networks in the world.

Objectives. The aim of the present study was to assess the informational value of YouTube videos on the treatment of bruxism with botulinum toxin, a procedure that is becoming increasingly popular in the field of dentistry.

Material and methods. After collecting 30 videos for each of the 5 keywords, a total of 150 videos were examined. The following search terms were used: ‘bruxism Botox treatment’; ‘tooth grinding Botox treatment’; ‘jaw clenching Botox treatment’; ‘Botox for bruxism’; and ‘Botox for masseter reduction’. Two researchers independently assessed the quality of the video content using the DISCERN scoring system. Additionally, the relationships between quantitative variables, such as video duration, the source of upload and video popularity, and the DISCERN scores, were examined.

Results. The mean overall DISCERN score was 32.3. The YouTube videos were divided into the following categories based on their DISCERN scores: very poor (26.3%); poor (61.4%); fair (10.5%); good (1.8%); and excellent (0.0%). Videos that addressed risk factors during therapy, treatment outcomes, bruxism symptoms, and the muscle anatomy had significantly higher overall DISCERN scores.

Conclusions. In general, YouTube videos on botulinum toxin treatment for bruxism had poor informational value. It is important that dentists recognize the significance of YouTube as a source of health-related information, and ensure that the content they provide is of the highest quality, accurate and up-to-date.

Keywords: bruxism, quality, YouTube, DISCERN, Botox

Cite as

Komisarek O, Śledzińska A, Kwiatkowski J, Bebyn M, Śledzińska P. Quality of YouTube videos on botulinum toxin management in bruxism, assessed using the DISCERN instrument. *Dent Med Probl.* 2024;61(6):865–873. doi:10.17219/dmp/168410

DOI

10.17219/dmp/168410

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Introduction

Bruxism is a repeated activity of the jaw muscles, defined as tooth grinding or jaw clenching.¹ It can be manifested in 2 distinct forms: sleep bruxism (SB); and awake bruxism (AB).² Bruxism may result in the hypertrophy of the masticatory muscles, the loss of the tooth surface, hypersensitive teeth, the breakage of restorations or teeth, the loss of periodontal support, and arthralgia characteristic of temporomandibular disorders (TMD).¹

Although etiological factors such as emotional stress, neurological disorders, certain drugs, and occlusal interferences have been proposed,^{3,4} the exact etiology and pathophysiology of bruxism remain unknown. However, it appears to have a multifactorial origin that is mediated by the central and autonomous nervous systems.^{5,6}

There are numerous methods of treating bruxism, including occlusal splints, drugs such as benzodiazepines or L-DOPA, and cognitive behavioral therapy (CBT). However, their ultimate efficacy has yet to be demonstrated, since they do not seem to address the fundamental cause, and are primarily used for the management of the patient's signs and symptoms, thereby reducing the harmful consequences of bruxism for anatomical structures.^{7,8} Botulinum toxin, or onabotulinumtoxinA, represents another highly successful treatment method that has been validated by prior research⁹ and will be the focus of this study.

The complexity of bruxism has led to many misconceptions about the behavior. Patients are often interested in their condition and treatment options. A well-informed patient may participate in the decision-making process more actively, and hence feel less anxious. However, healthcare providers may be unable to deliver sufficient information due to the lack of consultation time or by communicating in a manner that the patient cannot comprehend. Consequently, more and more patients are turning to the Internet for easily accessible medical information, with YouTube being one of the most prominent online resources.

YouTube is the world's largest media-sharing network and the second most popular website after Google.¹⁰ Anyone may contribute movies, including non-peer-reviewed medical content.¹¹ Contradictory advice might undermine the credibility of medical professionals, particularly when addressing alternative treatment options.¹² Therefore, examining the integrity of patient information about bruxism therapy on YouTube is essential.

Prior to the present study, no research had been conducted using the DISCERN scale¹³ to evaluate the quality of YouTube videos on bruxism therapy with botulinum toxin. Consequently, we aimed to assess the effectiveness of YouTube videos as a source of patient education. A secondary goal was to investigate the relationships between quantitative data, such as video duration, the source of upload and video popularity, and the quality of the videos.

Material and methods

Study design

This was a cross-sectional analysis of publicly accessible videos that did not involve human or animal subjects, and therefore ethics committee approval was not required.

YouTube search

A YouTube search was conducted on October 30, 2022, using the incognito mode. The following keywords were used in the search: 'bruxism Botox treatment'; 'tooth grinding Botox treatment'; 'jaw clenching Botox treatment'; 'Botox for bruxism'; and 'Botox for masseter reduction.' The video search was performed after erasing all the browsing data from the Google web browser, and with no user account. The YouTube results were sorted using relevance-based ranking, and the first 30 videos for each keyword were evaluated. It has been stated that 95% of YouTube viewers do not watch more than the first 60 videos returned by a search query. Additionally, the majority of prior research has only examined the first 60–200 videos.¹⁴

Selection criteria

The study included English-language videos that explained the mechanism of treatment with its benefits and risks, as well as the potential treatment options for bruxism. Duplicate or irrelevant videos, where "irrelevant" was defined as offering no information about bruxism treatment, were excluded from the study.

Video quality assessment

A fifth-year and a fourth-year medical dentistry students separately evaluated the video content using the DISCERN scoring system for video quality analysis. The DISCERN instrument is employed to assess the credibility of a publication and the quality of the treatment information provided to patients.¹³ The DISCERN tool was also designed for individuals without medical expertise. DISCERN provides a set of guidelines for the evaluation of health information for users, both consumers and professionals, as well as standards for information producers. The DISCERN criteria are used to evaluate the reliability and credibility of the information.¹⁵ The instrument comprises 15 questions, each scored from 1 to 5 points. The first part consists of 8 questions designed to assess the credibility of a publication (in this case, an Internet video), followed by 7 questions that analyze treatment-related details.¹⁶ The 16th question evaluates the overall quality of the video. In accordance with the methodology proposed by Weil et al.,¹⁷ the total DISCERN score was presented as the sum of the scores for the first 15 ques-

tions, ranging from 15 to 75 and grouped into 5 DISCERN categories: excellent (63–75 points); good (51–62 points); fair (39–50 points); poor (28–38 points); or very poor (15–27 points).

Video classification

The type of YouTube channel was a criterion used to classify videos into 5 groups based on the source of upload:

- “hospital/clinic” when the source of upload was a hospital or clinic channel;
- “health” when the source of upload was a health information channel;
- “educational” when the source of upload was an educational channel;
- “news” when the source of upload was an information channel;
- “patient” when the source of upload was the patient.

Video features

In order to evaluate a set of statistics, the YouTube data was utilized. We collected details regarding the name of the YouTube channel, the view count, video duration (converted into seconds), the number of subscribers to the channel, the number of comments, and the number of likes. The last 2 variables may be hidden by the channel. We used the “timeanddate” calculator (<https://www.timeanddate.com/date/duration.html>) to determine the time elapsed since the video upload (in days). A Google Chrome extension called “return YouTube dislike” (<https://returnyoutubedislike.com>) was used to calculate the number of dislikes. The functionality of this extension relies upon the visibility of likes and comments on a YouTube channel, which may or may not be hidden.

In addition, the ratio of likes, the ratio of views and the video power index (VPI) were applied in the examination of video popularity.

The ratio of likes was calculated according to the following formula (Equation 1):

$$\text{ratio of likes} = \frac{\text{number of likes}}{\text{number of likes} + \text{number of dislikes}} \times 100 \quad (1)$$

The ratio of views was calculated according to the following formula (Equation 2):

$$\text{ratio of views} = \frac{\text{view count}}{\text{time since upload}} \quad (2)$$

The VPI was calculated as follows (Equation 3):

$$\text{VPI} = \frac{\text{ratio of likes} \times \text{ratio of views}}{100} \quad (3)$$

where:

VPI – video power index.

In the course of the analysis, the qualitative information included in the videos was examined in accordance with the following questions: Were the symptoms of bruxism discussed?; Were the risk factors during treatment explained?; Were the results of treatment presented?; Were the steps of the procedure described?; Was the prognosis discussed?; Was any form of animation incorporated in the video?; Were there diagrams?; Was the muscle anatomy explained?; Was the speaker a doctor?; Was it a patient's experience?

Statistical analysis

The statistical analysis was performed using the R-Studio program (8.9 build 680; R-Tools Technology Inc., Richmond Hill, Canada) and Google Sheets (Google LLC, Mountain View, USA).

The normality of the data was evaluated using the Shapiro–Wilk test. The Mann–Whitney and Kruskal–Wallis tests were employed to determine statistically significant differences with regard to an independent variable between two or more than two groups, respectively. For pairwise comparisons, the Dunn–Bonferroni post hoc test was utilized following a statistically significant outcome in the Kruskal–Wallis test. Spearman's test was used to analyze the correlations between variables. The intraclass correlation coefficient (ICC) was employed to establish the degree of inter-rater agreement. The results were interpreted using a 95% confidence interval (CI) and a significance threshold of 0.05.

Results

A total of 150 videos were analyzed after collecting 30 videos for each of the 5 keywords. Subsequently, 55 duplicates were removed. After the screening process, which was conducted based on the established inclusion and exclusion criteria, 57 videos were subjected to further analysis (Fig. 1).

Table 1 presents the mean DISCERN score for each inquiry. The question “Is it clear when the information used or reported in the publication was produced?” obtained the lowest mean score (1.0), while the question “Are the aims clear?” obtained the highest score (4.3). The mean total DISCERN score was 32.3 ± 7.3 . According to the DISCERN categories, 26.3% of the YouTube videos were classified as very poor, 61.4% as poor, 10.5% as fair, 1.8% as good, and 0.0% as excellent (Table 2).

The videos uploaded by patients were the most prevalent (49.1%), followed by educational (26.4%), hospital/clinic (21.1%), and news (3.5%) sources (Table 2). The mean total DISCERN score was the highest for news

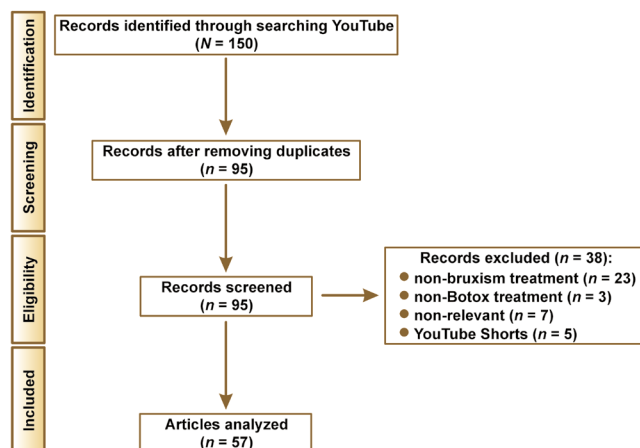


Fig. 1. Flowchart of the study

Table 1. Mean scores for each DISCERN inquiry (score range: 1–5)

Question number	Question	Score
1	Are the aims clear?	4.3 ±1.0
2	Does it achieve its aims?	3.3 ±0.9
3	Is it relevant?	2.9 ±0.8
4	Is it clear what sources of information were used to compile the publication?	1.3 ±0.8
5	Is it clear when the information used or reported in the publication was produced?	1.0 ±1.0
6	Is it balanced and unbiased?	2.6 ±0.8
7	Does it provide details of additional sources of support and information?	1.2 ±0.5
8	Does it refer to areas of uncertainty?	1.4 ±0.7
9	Does it describe how each treatment works?	2.5 ±1.0
10	Does it describe the benefits of each treatment?	2.4 ±0.9
11	Does it describe the risks of each treatment?	2.0 ±1.3
12	Does it describe what would happen if no treatment is used?	1.2 ±0.6
13	Does it describe how the treatment choices affect the overall quality of life?	2.3 ±1.1
14	Is it clear that there may be more than one possible treatment choice?	1.6 ±1.0
15	Does it provide support for shared decision making?	2.3 ±0.9

Data presented as mean ± standard deviation ($M \pm SD$).

sources (37.0 ± 19.8), followed by the videos uploaded by patients (33.0 ± 5.5), hospital or clinic channels (32.5 ± 9.8), and educational channels (30.3 ± 6.5) (Table 3).

The average number of views per video was $32,587 \pm 58,515$, with the mean length of $561 \pm 1,156$ s or 9.4 ± 19.3 min. Each video had an average of 448 ± 947 likes and 29 ± 69 dislikes (Table 4).

Table 2. Characteristics of the YouTube videos ($N = 57$)

Characteristic	<i>n</i> (%)	
Video quality (DISCERN)	very poor	15 (26.3)
	poor	35 (61.4)
	fair	6 (10.5)
	good	1 (1.8)
	excellent	0 (0.0)
Source of upload	hospital/clinic	12 (21.1)
	educational	15 (26.3)
	news	2 (3.5)
	patient	28 (49.1)

Videos that provided information about bruxism symptoms ($p = 0.024$), the risk factors during therapy ($p = 0.001$) and the results of treatment ($p < 0.001$), as well as the explanation of the muscle anatomy ($p = 0.010$) had substantially higher overall DISCERN scores. The average DISCERN score remained consistent regardless of whether the treatment phases were described, the prognosis was discussed, the presence of animations or diagrams was indicated, or the identity of the speaker (doctor or patient) was specified ($p > 0.05$) (Table 5).

There were no significant correlations between the mean total DISCERN score and the time elapsed since upload, the number of channel subscribers, the ratio of likes, or VPI. A weak positive correlation was observed between the DISCERN score and the view count ($p = 0.044$; $r = 0.268$). The DISCERN score was moderately positively correlated with the video duration ($p = 0.002$; $r = 0.395$), the number of comments ($p = 0.013$; $r = 0.329$), the number of likes ($p = 0.010$; $r = 0.343$), and the number of dislikes ($p = 0.018$; $r = 0.350$) (Table 4). The average ICC value was 0.823, indicating good agreement between the observers.

Discussion

Patients with bruxism are willing to undergo therapy due to the chronic symptoms associated with the disease, including fatigue, headaches, discomfort in the masticatory muscles and the temporomandibular joints (TMJs), and tooth hypersensitivity.¹⁸ An increasing number of medical professionals are recommending the use of botulinum toxin. However, the term “toxin” continues to elicit apprehension among patients, despite the evidence supporting its efficacy in managing bruxism. According to a study by Zhang et al., the administration of botulinum toxin to the masseter muscles resulted in a notable reduction in occlusal force.¹⁹ Furthermore, Al-Wayli observed a significant decrease in pain after adopting this approach.²⁰ It is there-

Table 3. Characteristics of the YouTube videos according to the source of upload

Characteristic	Source of upload			
	hospital/clinic	educational	news	patient
DISCERN total score	32.5 ±9.8 ^a	30.3 ±6.5 ^a	37.0 ±19.8 ^a	33.0 ±5.5 ^a
Question 1	4.0 ±1.3 ^a	4.2 ±1.1 ^a	4.0 ±1.4 ^a	4.6 ±0.6 ^a
Question 2	3.2 ±1.2 ^a	3.2 ±0.9 ^a	3.3 ±1.8 ^a	3.3 ±0.8 ^a
Question 3	3.1 ±1.2 ^a	3.0 ±0.8 ^a	3.0 ±1.4 ^a	2.8 ±0.6 ^a
Question 4	1.7 ±1.2 ^{acd}	1.0 ±0.1 ^{ab}	2.8 ±2.5 ^c	1.1 ±0.3 ^{bd}
Question 5	1.0 ±1.0 ^a	1.0 ±0.0 ^a	1.0 ±0.0 ^a	1.0 ±0.0 ^a
Question 6	2.5 ±0.8 ^a	2.6 ±0.8 ^a	2.8 ±0.4 ^a	2.6 ±0.9 ^a
Question 7	1.3 ±0.7 ^a	1.0 ±0.1 ^a	1.5 ±0.7 ^a	1.1 ±0.4 ^a
Question 8	1.7 ±0.9 ^{ab}	1.5 ±0.8 ^{ab}	2.5 ±2.1 ^a	1.1 ±0.3 ^b
Question 9	2.8 ±1.2 ^a	2.6 ±1.0 ^a	2.0 ±1.4 ^a	2.3 ±0.9 ^a
Question 10	2.3 ±0.9 ^a	2.0 ±1.0 ^a	2.3 ±1.1 ^a	2.8 ±0.8 ^a
Question 11	2.0 ±1.5 ^a	1.9 ±1.4 ^a	3.0 ±2.8 ^a	2.0 ±1.1 ^a
Question 12	1.1 ±0.3 ^a	1.4 ±1.0 ^a	1.8 ±1.1 ^a	1.1 ±0.4 ^a
Question 13	1.5 ±0.7 ^a	1.7 ±0.7 ^a	1.8 ±0.4 ^{ab}	2.9 ±1.1 ^b
Question 14	1.6 ±1.2 ^a	1.4 ±1.1 ^a	3.0 ±1.4 ^a	1.6 ±0.8 ^a
Question 15	2.2 ±1.0 ^{ab}	1.8 ±0.9 ^a	2.5 ±2.1 ^{ab}	2.6 ±0.8 ^b
Question 16	2.6 ±1.1 ^a	2.3 ±0.9 ^a	3.0 ±1.4 ^a	2.3 ±0.7 ^a
View count <i>n</i>	23,029 ±54,191 ^a	22,092 ± 53,870 ^a	1,040 ±1,208 ^a	44,560 ± 63,846 ^a
Video duration [s]	221 ±178 ^a	221 ±139 ^a	170 ±111 ^a	917 ±1,578 ^a
Time since upload [days]	973 ±643 ^a	1,149 ±611 ^a	1,633 ±52 ^a	936 ±538 ^a
Channel subscribers <i>n</i>	43,149 ±102,281 ^a	84,602 ±247,099 ^a	303,232 ± 428,178 ^a	115,188 ±344,053 ^a
Comments <i>n</i>	19 ±39 ^a	39 ±73 ^a	0 ±0 ^a	136 ±230 ^a
Likes <i>n</i>	272 ±786 ^a	329 ±712 ^a	4 ±5 ^a	610 ±1,120 ^a
Dislikes <i>n</i>	11 ±23 ^a	9 ±17 ^a	NA	47 ±92 ^a
Ratio of likes	94.64 ±7.95 ^a	91.49 ±13.53 ^a	NA	95.63 ±4.11 ^a
VPI	23.0 ±45.6 ^a	25.8 ±41.0 ^a	NA	49.1 ±56.6 ^a

Data presented as $M \pm SD$.

VPI – video power index; NA – data not available. The mean values in the same row and subtable not sharing the same superscript are significantly different at $p < 0.05$ in the two-sided test of equality for column means. The tests assume equal variances and are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

fore recommended that patients be provided with accurate information regarding the botulinum toxin treatment strategy.

To the best of our knowledge, this is the first research to use a validated instrument to evaluate the effectiveness

of YouTube videos on the use of Botox for the treatment of bruxism. In our study, the majority of YouTube videos exhibited a low level of informational quality regarding Botox and bruxism. The videos were classified as very poor (26.3%), poor (61.4%), fair (10.5%), and good (1.8%).

Table 4. Descriptive statistics and correlations for the study variables

Variable	<i>M</i> ± <i>SD</i>	1	2	3	4	5	6	7	8	9
DISCERN total score	32.3 ± 7.3	–	–	–	–	–	–	–	–	–
View count <i>n</i>	32,587 ± 58,515	0.268*	–	–	–	–	–	–	–	–
Video duration [s]	561 ± 1,156	0.395**	0.380**	–	–	–	–	–	–	–
Time since upload [days]	1,024 ± 580	0.180	0.253	–0.223	–	–	–	–	–	–
Channel subscribers <i>n</i>	98.57 ± 282.86	0.234	0.445**	0.312*	0.136	–	–	–	–	–
Comments <i>n</i>	82 ± 175	0.329*	0.829**	0.640**	0.009	0.433**	–	–	–	–
Likes <i>n</i>	448 ± 947	0.343*	0.924**	0.582**	0.066	0.549**	0.936**	–	–	–
Dislikes <i>n</i>	29 ± 69	0.350*	0.888**	0.438**	0.367*	0.575**	0.796**	0.848**	–	–
Ratio of likes	94.43 ± 8.06	0.085	–0.326*	–0.012	–0.364*	–0.222	–0.069	–0.153	–0.445**	–
VPI	38.6 ± 51.8	0.220	0.873**	0.464**	–0.125	0.453**	0.816**	0.935**	0.745**	–0.153

M – mean; *SD* – standard deviation. * statistically significant ($p < 0.05$, Spearman's test); ** highly statistically significant ($p < 0.01$, Spearman's test).

Table 5. Relationships between video features and the total DISCERN score

Video features	DISCERN total score		<i>p</i> -value
	no	yes	
Were the symptoms of bruxism discussed?	30.4 ± 7.0	34.6 ± 7.1	0.024*
Were the risk factors during treatment explained?	30.0 ± 6.2	37.3 ± 7.2	0.001*
Were the results of treatment presented?	26.6 ± 6.1	35.4 ± 5.9	<0.001*
Were the steps of the procedure described?	32.6 ± 8.1	32.0 ± 6.5	0.462
Was the prognosis discussed?	32.1 ± 7.1	36.5 ± 10.0	0.442
Was any form of animation incorporated in the video?	31.7 ± 6.4	32.6 ± 7.7	0.986
Were there diagrams?	32.3 ± 7.3	NA	–
Was the muscle anatomy explained?	30.9 ± 6.6	37.8 ± 7.1	0.010*
Was the speaker a doctor?	31.1 ± 6.8	33.7 ± 7.6	0.233
Was is a patient's experience?	31.4 ± 7.6	32.9 ± 7.1	0.546

* statistically significant; NA – data not available.

Factors affecting the DISCERN scores

The overall low DISCERN ratings indicate that the material regarding botulinum toxin therapy for bruxism on YouTube is of low quality and in need of improvement. The videos did not accurately depict the period during which the information utilized in the publications was created (mean (*M*): 1.0), nor did they describe the source of the information used in the video (*M*: 1.3) or suggest other sources that could be used to explore the topic (*M*: 1.2). Moreover, the videos presented the effects of not

using bruxism treatment only to a small extent (*M*: 1.2). However, they expressed video aims, with a mean DISCERN score of 4.3, and provided substantial support for collaborative decision making (*M*: 2.3) (Table 1).

The lowest mean overall DISCERN scores were associated with educational videos. This might be attributable to the fact that some of the videos were produced for commercial gain rather than patient education. Additionally, a considerable portion of educational videos lacked information about the advantages and disadvantages of treatment, as well as guidance for collaborative

decision making (Table 3). Patients should be informed of the numerous risks and benefits associated with each treatment option so that they could engage in discourse with medical experts about specific treatment that would be relevant to their individual situation. The highest mean overall DISCERN scores were achieved by the videos uploaded by news channels, which also appear to have greater resources than other channels to produce high-quality videos with suitable information, animations and diagrams (Table 3).

As the provision of accurate and comprehensive information is a time-consuming process, longer videos demonstrated a moderately positive correlation with the DISCERN scores. A considerably higher overall DISCERN score was associated with videos that were more popular, as indicated by higher view counts and greater numbers of likes and dislikes. This may be attributed to the fact that users like to share videos with other viewers when the content is clear and comprehensive, which leads to an elevated view count. The time elapsed since upload, the number of channel subscribers, the ratio of likes, and VPI were not related to the DISCERN score (Table 4).

According to Table 5, the DISCERN scores for the videos that described the symptoms ($p = 0.024$), risk factors ($p = 0.001$) and outcomes ($p < 0.001$) of bruxism treatment were significantly higher. This information is necessary for making an informed decision regarding therapy. Patients are better informed about the potential consequences of onabotulinumtoxinA treatment if they are presented with the risk factors associated with the procedure. On the other hand, showing the results of treatment encourages patients to undergo this therapy.

Other studies have shown that higher-quality videos often last longer than lower-quality videos.^{21,22} Contrary to studies that correlate the popularity of videos with a low quality,²³ our analysis indicated that more popular videos had richer information and obtained higher DISCERN scores. Our findings suggest that patients prefer to read comprehensive information regarding botulinum toxin treatment for bruxism rather than watch emotionally charged or more captivating video content. Our research did not support the claim made in other studies that adding animation or graphics to videos might improve their quality.^{22,24,25} Nevertheless, diagrams and animations may prove useful to better understand the therapeutic process.

A study by Grippaudo et al. demonstrated the inadequate quality of information on Botox available online.²⁶ The Internet content, particularly on the websites of practitioners, did not provide sufficient information about the alternatives, statistical advantages and risk factors associated with Botox therapy. The authors speculate that the information provided about Botox may serve an advertising purpose, aiming to increase the number of Botox patients.²⁶ It is worth noting that a recent study conducted by Ornello et al. demonstrated the potential efficacy of botulinum toxin injections in reducing both

the frequency and intensity of migraines.²⁷ Moreover, the excellent response status can be identified as early as after the first injection.²⁷ In a group of senior chronic migraine patients with a long history of migraines, botulinum toxin may offer considerable improvement over the first 3 treatment cycles, just as it would in younger individuals.²⁸ However, older patients are unable to obtain adequate information about botulinum toxin therapy from YouTube due to the potential restriction of their access to relevant and reliable sources on the issue. Additionally, older individuals may encounter difficulties in accurately evaluating the reliability of online sources of information, such as YouTube, which can render them more vulnerable to misinformation.

In a study published in 2000, entitled “How will the Internet change our health system?,” it was reported that information on the Internet could not be limited by any policy aims, as it might prove to be a significant differentiator for the competing health portals and suppliers of health information.²⁹ Twenty-two years later, the issue regarding medical restrictions on the treatment information remains unchanged. According to Yagiz et al., YouTube is an inadequate source for students or specialists seeking high-quality information on botulinum toxin therapy for gummy smile.³⁰ Similarly, Patel et al. identified a paucity of reliable material on the use of botulinum toxin in cosmetic surgery on YouTube and other Internet websites.³¹ The most knowledgeable medical experts in this field are dental professionals and cosmetic surgeons, who should modify the abundance of poor-quality online resources available to people. In order to help patients better understand the advantages and disadvantages of available treatment options and to facilitate informed decision making, it is important to evaluate the content of the various websites that provide medical information. Even if their primary subject is Botox, YouTube videos should provide a more accurate and comprehensive overview of the benefits and risks associated with accessible bruxism treatment options. Castillo-Abdul et al. observed that Spanish YouTube influencers who used Botox for cosmetic purposes exhibited positive attitudes toward the procedure-related content.³² This highlights the commercial nature of the tutorial content and the interaction-seeking strategies employed, reflecting the lack of content focusing on the care required beyond the procedure in most cases.³² Thus, it is recommended that experts provide unbiased material which covers every aspect of therapy, without including any promotional content, and which solely serves to support medical and scientific evidence instead of focusing on a patient’s experience.

Limitations

Our study have some limitations. The analysis was constrained to videos published in English on a single video-sharing platform (YouTube). The results could have been

impacted by the collection of data on a single day, given the continual evolution of the Internet's informational landscape. Only the first 30 videos for each keyword at a specific time point (October 30, 2022) were included due to the fact that the top search results on YouTube are typically the most viewed and influential videos, and thus have the greatest impact on viewers. Furthermore, we used the incognito mode and erased all the browsing data from the Google web browser. However, a formal power analysis to determine the sample size was not conducted. In order to ensure the inclusion of videos that patients might use when searching for health information online, an effort was made to use common phrases rather than medical terminology in the search process. This approach may have led to the discovery of other, possibly less useful or deceptive videos. The search results were sorted using relevance-based ranking by default; however, it should be noted that search rankings may change over time and depend on the user's location. The fact that the 2 reviewers were DISCERN-trained medical dental students in their fifth and fourth years represents a strength of our study. DISCERN is a powerful tool that was developed not just for experts, but also for non-specialists to help them evaluate medical videos objectively.

Future directions

Future research could focus on evaluating the quality of information available on other online platforms, such as social media or patient support groups. Additionally, the impact of inaccurate or incomplete information on patient decision making and treatment outcomes could be investigated. Ultimately, it is essential to ensure that patients have access to accurate and comprehensive information to make informed decisions about their healthcare.

Conclusions

In conclusion, the findings of our study indicate that the quality of information about Botox therapy for bruxism available on YouTube is generally poor. The educational videos had the lowest overall DISCERN scores, with many of them seemingly created for commercial purposes rather than for the purpose of patient education. Conversely, the videos produced by news channels had the highest overall DISCERN scores, indicating that these channels have the requisite resources to produce high-quality videos with accurate information.

The findings of the present study have significant implications for healthcare providers and patients. Healthcare providers need to be aware that patients may be accessing inaccurate or incomplete information about Botox therapy for bruxism on YouTube, and should take steps to educate their patients about the risks and benefits of this

treatment. Patients, on the other hand, should be cautious when accessing medical information on YouTube and should consult their healthcare providers before making any decisions regarding their health.

Ethics approval and consent to participate

Not applicable.

Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Consent for publication

Not applicable.

Use of AI and AI-assisted technologies

Not applicable.

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