ORIGINAL ARTICLE

Quality and Reliability of YouTube Videos in the Dix-Hallpike Test

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Abstract

Objective: This study is designed to evaluate the quality and reliability of informative videos on YouTube about the Dix-Hallpike test.

Methods: A YouTube search was conducted with the keywords "dix-hallpike maneuver", "dix-hallpike test", "positional vertigo", "benign paroxysmal positional vertigo", "benign paroxysmal positional vertigo (BPPV) diagnosis". The top 100 videos were evaluated in terms of duration, time since upload date (days), number of total views, number of likes and dislikes, number of comments, and uploaded (healthcare provider/non-healthcare professional). Descriptive statistical data were obtained from the video duration, number of total views, number of likes and dislikes, number of comments and upload date

Results: There was no statistically significant difference between the healthcare provider and non-healthcare professional groups in terms of mean DISCERN, JAMA, and GQS scores (p=0.190, p=0.69 and p=0.946; respectively). The total view counts were higher in the healthcare provider group than in the non-healthcare professionals, the difference was not statistically significant (p=0.104). The mean number of likes was statistically higher in the videos uploaded by healthcare providers (p=0.012).

Conclusion: YouTube should still not be considered a fully reliable source of information on the diagnosis of BPPV in patients. It is essential to direct patients to videos that are updated, provide accurate and reliable information about the diagnosis and treatment of BPPV, and are free of misleading information about vertigo.

Keywords: Dix-hallpike, benign paroxysmal vertigo, YouTube, positional vertigo, BPPV diagnosis

INTRODUCTION

The internet has become one of the most popular and essential reference resources for health-related information (1). According to the report of the Health Information National Trends Survey (HINTS), there is a significant increase in the search for health information on the internet. Surveys show that 8 of 10 internet users access health information online (2,3). Social media platforms such as Youtube play an expanding role in the dissemination of medical information.

YouTube is the world's largest and most popular online video streaming site with over 5 billion daily views, 1.68 billion active users, and over 50 million content creators (4). It serves as an open access, simple, and integrated online platform where people can upload, share, watch, and comment on videos on any topic. However, the quality of unfiltered information may be unscientific, misleading, or even harmful (5). Many studies have shown that healthcare providers have concerns about the accuracy and quality of the information available on this platform. Two main reasons for this concern are; insufficient guidelines regulating the content of the material uploaded on the site and, more importantly, increased use of YouTube to post non-peer-reviewed anecdotal information (6,7).

One of the most common benign causes of vertigo is benign paroxysmal positional vertigo (BPPV), which occurs as a result of the displacement of otoliths into semicircular canals (8).

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The dix-hallpike test is the most commonly used bedside test for diagnosing BPPV (9). The use of the canalith repositioning maneuver is indicated in patients with positive test findings. If applied correctly, the dix-hallpike test enables accurate diagnosis and hence successful treatment of BPPV (10). Unsuccessful application of the dix-hallpike test leads to misdiagnosis, longer duration of symptoms, use of unnecessary imaging modalities, and unnecessary visits to emergency departments (11).

There is a lot of content related to the dix-hallpike test on YouTube. The purpose of this study was to evaluate the content quality of dix-hallpike test videos on YouTube as a health education resource.

METHODS

The study was exempted from ethics committee approval because only publicly available data were used. Within the scope of this prospective cross-sectional study, a YouTube search was conducted on June 12, 2022 with the keywords "dix-hallpike maneuver", "dix-hallpike test", "positional vertigo", "benign paroxysmal positional vertigo", "BPPV diagnosis" at https://www.youtube.com. No changes have been made to the standard search preferences of the website. The video search was performed without logging in as a user and clearing the search history of the browser. The default search preference was chosen as "sort videos by relevance". All English- narrated videos or videos with English subtitles accessible on YouTube as of June 12, 2022 with content related to dix-hallpike were included in the study. Videos

in which the like-dislike button and/or comments were disabled by the uploaded were excluded from the study.

The recorded data consisted of duration, time since upload date (days), number of total views, number of likes and dislikes, number of comments, and uploader occupation obtained from "about" section of the video (healthcare provider: medical doctor, physiotherapist, audiologist, healthcare institution etc.)/non-healthcare professional: uploaded occupied in other professions or videos with no uploaded information). Descriptive statistical data were obtained from the video duration, number of total views, number of likes and dislikes, number of comments, and upload date.

The top 100 videos were evaluated by two independent double-blinded reviewers with dix-hallpike maneuver experience. The aim for selecting the top 100 videos was that the search results were limited to the first 3 pages on the website because 95% of people conducting an online search will not look further than the first three pages of the search output (12). The DISCERN scoring system, Journal of the American Medical Association (JAMA) scoring system, and Global Quality Score (GQS) criteria were used to evaluate the quality and reliability of the videos.

DISCERN (Table 1) is a scoring system with two sections consisting of 15 items, each rated from 1 to 5 to evaluate the reliability of medical information and the quality of information on the treatment options offered in that particular publication. The first section consists of eight questions and evaluates the reliability of the publication, whereas the secondsection evaluates treatment-

Table 1. DISCERN scoring system. Each question is rated from 1 to 5
Section 1: Is the publication reliable?
1. Are the aims clear?
2. Does it achieves its aims?
3. Is it relevant?
4. Is it clear what sources of information were used to compile the publication (other than the author or producer)?
5. Is it clear when the information used or reported in the publication was produced?
6. Is it balanced and unbiased?
7. Does it provides details of additional sources of support and information?
8. Does it refers to areas of uncertainty?
Section 2: How good is the quality of information regarding treatment choices?
9. Does it describes how each treatment works?
10. Does it describes the benefits of each treatment?
11. Does it describes the risks of each treatment?
12. Does it describes what would happen if no treatment was used?
13. Does it describes how treatment choices affect overall quality of life?
14. Is it clear that there may be more than 1 possible treatment choice?
15. Does it provides support for shared decision making?

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related information with seven questions. The DISCERN score ranges from 15 to 75 points and is classified into five groups as excellent (63-75 points), good (51-62 points), fair (39-50 points), poor (27-38 points), and very poor (16-26 points) (13).

JAMA (Table 2) is another scoring system that evaluates the reliability of online health-related resources using the four criteria of authorship, attribution, disclosure, and currency. Each criterion can be rated 0 or 1. A score of four points indicates the highest quality (14).

The GQS (Table 3), first proposed by Bernard et al. (15), allows users to assess the overall quality of a video's content on a scale ranging from 1 to 5. The system considers the flow, ease of use, and video quality of the information presented in online videos. A score of one point indicates the poorest quality, whereas a score of five points indicates excellent quality.

Statistical Analysis

SPSS software version 21.0 was used for statistical analyzes Descriptive analyzes were performed using means and standard deviations for normally distributed variables. Percentiles were used for non-normally distributed and ordinal variables.

After investigating normality, independent-samples t-test or Mann-Whitney U test was used to compare the variables. While investigating the associations between the variables, the correlation coefficients and their significance were calculated using the Spearman test. A 5% type 1 error level was considered statistically significant.

RESULTS

A total of 93 videos were included in the study. While 65 (69.9%) videos were uploaded by healthcare providers, 28 (30.1%) videos were uploaded by non-healthcare professionals. A comparison of the videos' parameters and scoring system values according to their sources is given in Table 4. The mean DISCERN score was 44.1±11.5; the mean GQS score was 3.01±0.86 and the mean JAMA score was 1.85±0.72 for the videos uploaded by healthcare providers, whereas the mean DISCERN score was 41.4±7.6; the mean GQS score was 2.67±0.65 and the mean JAMA score was 1.86±0.73 for the non-healthcare professionals. There was no statistical difference between the groups regarding the aforementioned parameters (p=0.190, p=0.69, and p=0.946; respectively). The total view counts and the mean duration of the videos were also comparable between the healthcare providers

Table 2. Journal of the American Medical Association (JAMA) scoring system. Each question is rated 0 or 1
Authorship: Authors and contributors, their affiliations, and relevant credentials should be provided
Attribution: References and sources for all content should be clearly listed, and all relevant copyright information should be noted
Disclosure: Website "ownership" should be prominently and fully disclosed, as should any sponsorship, advertising, underwriting, commercial funding arrangements or support, or potential conflicts of interest.
Currency: Dates when content was posted and updated should be indicated

Table 3. Global Quality Score (GQS). Each question is rated from 1 to 5
1. Poor quality, very unlikely to be of any use to patients
2. Poor quality but some information present, of very limited use to patients
3. Suboptimal flow, some information covered but important topics missing, somewhat useful to patients
4. Good quality and flow, most important topics covered, useful to patients 5) Excellent quality and flow, highly useful to patients

Table 4. Videos' parameters and scoring system values			
Parameters	**Healthcare providers**	**Non-healthcare professionals**	**P value**
Number of videos	61 (65.6%)	32 (34.4%)	
Mean DISCERN score	44.1±11.5	41.4±7.6	0.190[a]
Mean GQS scores	3.01±0.86	2.67±0.65	0.69[a]
Mean JAMA score	1.85±0.72	1.86±0.73	0.946[b]
Total views	104641.96±251247.16	43015.42±122612.68	0.104[b]
Mean duration	243.07±243.82	184.64±204.62	0.490[b]
Likes	487.04±1224.29	282.25±973.85	**0.012[b]**
Dislikes	0.00	0.00	
[a]Independent Samples t-test, [b]Mann-Whitney U test			
GQS: Global Quality Scores, JAMA: Journal of the American Medical Association			

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Table 5. Crosstab of the correlation coefficient and p values of the variables

Parameters	Healthcare status		Mean DISCERN		Mean GQS scores		Mean JAMA score		Total views		Mean duration		Likes	
	r	p	r	p	r	p	r	p	r	p	r	p	r	p
Healthcare status	1.00	-	-0.101	0.521	-0.196	0.336	0.007	0.060	-0.169	0.947	-0.072	0.105	-0.260	**0.012**
Mean DISCERN score	-0.101	0.336	1.00	-	0.878	**<.001**	0.528	**<.001**	0.283	**<.001**	0.656	**<.006**	0.345	**0.001**
Mean GQS scores	-0.196	0.060	0.878	**<.001**	1.00	-	0.534	**<.001**	0.326	**<.001**	0.639	**0.001**	0.459	**<.001**
Mean JAMA score	0.007	0.947	0.528	**<.001**	0.534	**<.001**	1.00	-	-0.013	0.901	0.402	0.901	0.130	0.213
Total views	-0.169	0.105	0.283	**<.001**	0.326	**<.001**	-0.013	0.901	1.00	-	0.145	0.164	0.816	**<.001**
Mean duration	-0.072	0.493	0.656	**<.001**	0.639	**<.001**	0.402	**<.001**	0.145	**<.001**	1.00	-	0.366	**<.001**
Likes	-0.260	**0.012**	0.345	**0.001**	0.459	**<.001**	0.130	0.213	0.816	**<.001**	0.366	**<.001**	1.00	-

GQS: Global Quality Scores, JAMA: Journal of the American Medical Association
r: Spearman correlation coefficient

and non-healthcare professionals (104641.96±251247.16 versus 43015.42±122612.68 and 243.07±243.82 versus 184.64±204.62) (p=0.104 vs p=0.490; respectively). However, the mean number of likes was statistically higher in the videos uploaded by healthcare providers (487.04±1224.29 vs 282.25±973.85; p=0.012). The mean dislike count was null for all videos.

DISCUSSION

The content quality of dix-hallpike test videos on the YouTube platform was assessed in this study from a health education resource perspective. A video search was conducted with the keywords "dix-hallpike maneuver", "dix-hallpike test", "positional vertigo", "benign paroxysmal positional vertigo", "BPPV diagnosis" and top 100 videos were evaluated for content quality.

BPPV is the most common peripheral vestibular disorder with an estimated lifetime prevalence of 10% (16). It can have a significant negative impact on daily activities and quality of life. However, with an accurate diagnosis, it can be treated with a simple repositioning maneuver that can be performed in the examination room (9). The dix-hallpike test is widely accepted as a standard for the diagnosis of BPPV (17). Due to the large number of patients admitted to emergency departments with vertigo and lack of information or insufficient experience about the dix-hallpike maneuver among healthcare professionals, the application of the test in emergency rooms and primary healthcare institutions is limited (18,19). Self-diagnosis of the disease by the patients may help to overcome this limitation. Previous studies have shown that patients with BPPV can successfully perform the dix-hallpike maneuver when given face-to-face instructions by a specialist (20,21). However, it should be considered that misuse of the dix-hallpike maneuver may also lead to misdiagnosis. In their study, Dmitriew et al. (11) showed that the dix-hallpike test is both underutilized and frequently applied to patients whose symptoms are inconsistent with BPPV, which in return may result in prolonged patient discomfort and increased resource utilization, as well as increasing the risk of misdiagnosing central vertigo. Therefore, it is crucial to evaluate the quality of the training provided to healthcare professionals and patients.

Informative videos on social media and online platforms such as YouTube are becoming more widespread as sources of information, most probably because visually presented information is often preferred over written- and auditory information (22). YouTube was the first company to enable online video sharing in 2005 and currently receives billions of uploads and visits per day (23). Along with a great number of videos related to personal experiences, there are also a significant number of informative videos on various types of diseases and procedures. As YouTube has no policy of filtering videos according to their potency or effectiveness, there are myriads of videos on the platform, and while some may be useful, others may be misleading or even harmful (24). Therefore, the quality of dix-hallpike videos uploaded to YouTube was evaluated in our study.

Online videos about BPPV evaluated for reliability can serve many purposes. There are no studies in the literature on self-diagnosis in BPPV. Most patients may self-diagnose and self-treat BPPV with the help of reliable informative videos. When the comments section of the videos were evaluated, it was observed that the patients referred to

these videos for self-diagnostic and/or self-treatment purposes. There is evidence in the literature stating that BPPV can be self-treated (20,21). However, the limitation of these studies is that the maneuvers were evaluated after face-to-face instructions by healthcare professionals to the subjects.

A recent systematic review published by Ulep et al. (25) showed that studies on social media use in vestibular disorders are emerging, especially in the last decade. To our knowledge, there are no studies regarding online video education of the dix-hallpike test for self-diagnosing BPPV, and this is the first study assessing the quality and reliability of informative videos on YouTube about the dix-hallpike maneuver.

In our study, the top 100 videos were evaluated by two independent double-blinded reviewers with Dix Hallpike maneuver experience. The aim for selecting the top 100 videos was that the search results were limited to the first 3 pages on the website since 95% of people conducting an online search will not look further than the first three pages of the search output (12). Seven videos were excluded because there were no instructions about the dix-hallpike maneuver. Sixty-five videos (69.9%) were uploaded by healthcare providers, whereas 28 videos (30.1%) were uploaded by non-healthcare professionals.

We observed that there were a variety of dix-hallpike test videos on YouTube and that the view counts were fairly high. All videos were accessible with appropriate keywords, and the maneuver was performed correctly in each of them. Videos were evaluated using the DISCERN, GQS, and JAMA scoring systems, and the scores for the videos were 44.1 11.5, 3.01 0.86, and 1.85 0.72, respectively. The poor to fair results in DISCERN and low JAMA scores indicate that the reliability and credibility of the videos are fairly low. In addition, 3.01 GQS score out of 25 shows that the content quality of the videos is suboptimal, missing useful important information for patients. There was no statistically significant difference between the healthcare provider and non-healthcare professional groups in terms of mean DISCERN, JAMA, and GQS scores (p=0.190, p=0.69 and p=0.946; respectively). Even though the total view counts were higher in the healthcare provider group than in the non-healthcare professionals (104641.96±251247.16 versus 43015.42±122612.68), the difference was not statistically significant (p=0.104). This might be related to the fact that there was mostly no information about the uploaded in the video titles. However, the mean number of likes was statistically higher in the videos uploaded by healthcare providers (487.04±1224.29 vs 282.25±973.85; p=0.012). Similar to our study, Yildiz et al. (26) evaluated educational videos for vestibular rehabilitation on YouTube using the DISCERN, JAMA,

and GQS scoring systems. They also observed that the quality of the videos used in vestibular rehabilitation training was poor and unreliable (26).

With easy accessibility of the videos and the high number of views, the potential limitation we would like to emphasize is that there is no information in the videos regarding the possible outcomes of misuse of the dix-hallpike maneuver and the conditions in which the maneuver is contraindicated. Another limitation of this study was the inclusion of only the first 100 videos for each keyword, as after applying the exclusion criteria, the sample size was limited.

Despite these limitations, this was the first study to assess the quality and reliability of informative videos on YouTube about the dix-hallpike test. Although most of the videos were rated moderate regarding their sufficiency of information, with only fair quality, this study demonstrated that YouTube should still not be considered a fully reliable source of information on the diagnosis of BPPV for patients. It is essential to direct patients to videos that are updated, provide accurate and reliable information about the diagnosis and treatment of BPPV, and are free of misleading information about vertigo.

Ethics

Ethics Committee Approval: The study was exempted from ethics committee approval because only publicly available data were used.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Concept: S.H.Ç., Design: S.H.Ç., H.Ç.K., Data Collection or Processing: D.Ş., S.H.Ç., Analysis or Interpretation: S.H.Ç., P.E., Literature Search: H.Ç.K., Writing: S.H.Ç., P.E.

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