Evaluating The Quality, Utility And Reliability of Information In Uveitis Videos Shared On YouTube

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Abstract

Background: The aim of this study was to analyze the quality of videos on YouTube as educational resources about uveitis.

Methods: An online YouTube search was performed using the keyword “uveitis”. Total view counts, duration of videos, publishing dates, likes and dislikes, numbers of comments, and source of videos were recorded. Educational quality and accuracy of the video content were evaluated using the DISCERN score, Global Quality Score (GQS), *Journal of the American Medical Association* (JAMA) score. Video popularity was also evaluated using the video power index (VPI) score. All videos were classified according to publishers and types of categories.

Results: From among the 200 videos analyzed, 94 were included. The mean DISCERN score was 38.5 ± 13.2 (poor), the mean JAMA score was 1.8 ± 0.6 (fair), and the GQS was 2.5 ± 0.9 (fair). There were positive correlations between the three checklist ($p < .001$). VPI was not correlated with each score ($p > .05$). The most common upload sources were ophthalmologist (24.4%) and YouTube channel (20.2%). Regarding content, 47 videos (50%) medical education, 26 videos (27.6%) patient education, 16 videos (17%) patient experience, 5 videos (5.3%) surgical procedures in patient with uveitis. While the most popular videos were uploaded by doctors other than ophthalmologists, the videos uploaded by academic institutions and associations were found to be higher educational quality and reliability scores.

Conclusions: Uveitis videos on YouTube are poor quality and reliability and are not adequately educational for patients. Therefore, the physicians must be aware of the limitations of YouTube and ensure the flow of correct medical information to patients.

Introduction

YouTube is the world’s largest media-sharing website, second largest search engine and the third most visited website after Google and Facebook.[1, 2] With the increasing use of smartphones and ease of accessibility, YouTube is being used more frequently. With an upload rate of 500 hr of new video content per minute and approximately 2 billion visitors per month, the platform has become an enormously fast-growing visual library.[1] Given this vast capacity, YouTube is becoming an increasingly popular option for obtaining related information and learning experience both patients and health care professionals.[3] However, besides its popularity, easy accessibility and being free, YouTube may have inaccurate and possibly misleading health-related information due to the lack of peer view and content control for uploading videos. Inaccurate or biased health-related information may be physically, emotionally, and financially harmful to patients. Therefore, it is important for health-related video providers to be aware of the quality and accuracy of medical information that patients are accessing online.[4] Previously, ophthalmologists presented studies on YouTube video quality regarding retinitis pigmentosa, cataract surgery, refractive surgery, strabismus, keratoconus, multifocal intraocular lens, keratoplasty and soft contact lenses. [4,5,6,7, 8, 9]

To the best of our knowledge, no previous study has assessed YouTube videos about uveitis. Thus, the aim of our study was to evaluate the quality of YouTube videos addressing uveitis as educational resources for patients.

Materials And Methods

An online YouTube research was performed on July 25, 2021, using the term “uveitis”. The standard search preferences were selected as “sort videos by view count”. All video searches were made by clearing the entire search history without any user login. Of the 200 videos screened, 94 met the inclusion criteria. Irrelevant, duplicated, soundless, poorly accessible, non-English videos and videos shorter than 60 seconds were excluded from the evaluation process. The following data were recorded for each video: video title, views, duration (second), time since upload date (day), daily views, number of likes and dislikes, number of comments, like ratio (like × 100/ [like + dislike]), DISCERN score, Global Quality Score (GQS), *Journal of the American Medical Association* (JAMA) score, video power index (VPI) score. The video’s source was categorized as follows: ophthalmologist, YouTube channel, academic institution, associations, private hospital or trading company advertising, patient, doctors other than ophthalmologist. The videos were also grouped according to the medical education, patient education, patient experience and surgical treatment in patient with uveitis.

DISCERN is scoring system which developed at Oxford University, evaluates the reliability and educational quality of information, especially regarding treatment. It consists of 3 sections of 16 questions total, each scored from 1 to 5. The first section involves questions 1 to 8 and evaluates the reliability of a publication, followed by the second section that focus on treatment- related information with 7 questions, the third section that addresses the overall quality of video’s content with 1 question. The last question in the third section is excluded from the scoring, and the evaluation is made on 15 questions. The DISCERN scoring system ranges from 15 to 75 point and classifies items excellent (63-75 points), good (51-62 points), fair (39-50 points) poor (27-38 points), or very poor (15-26 points). [10, 11]

The JAMA scoring system is a well-known quality evaluation tool that can be used to assess the transparency and publication information of the video source. It involves 4 criteria; authorship, attribution, disclosure, and currency, each scored from 0 to 1. Four points indicate highest quality. [12]

The Global Quality Score (GQS) is a 5-point scale scoring system which allows users to evaluate the overall quality of video’s content (each scored from 1 to 5 point for a total possible score of 5 points). [13]

Video power index (VPI) is scoring system defined by Erdem and Karaca that evaluate the popularity of the videos. Video power index value is calculated according to the following formula: VPI= like ratio x view ratio /100.[14]

Each video was independently scored by two experienced uveitis specialists (B.T. and M.O.) and the mean values of DISCERN, GQS, JAMA scores were evaluated.

Statistical analysis

The SPSS software, Version 21.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analyses. Descriptive statistics of the continuous variables in the study are shown with means and standard deviations. Categorical variables are shown with frequency and percentage. The Kolmogorov-Smirnov test was initially used to determine whether the data were distributed normally. We compared continuous variables between the groups with the Kruskal-Wallis test. The Mann-Whitney U test was used to test the significance of pairwise differences using Bonferroni correction. The correlation statistics were performed using Spearman test. All *P* values less than 0.05 were considered to indicate statistical significance.

Results

A total of 200 uveitis videos were analyzed by two experienced ophthalmologists (B.T. & M.O.). Total of 94 videos met inclusion criteria. Videos in any language other than English (n = 80), soundless videos (n = 16), videos of animal eye diseases (n = 7), duplicate video (n=1), video shorter than 60 seconds (n = 1) or video unrelated to uveitis (n = 1) were excluded. Table 1 summarizes the descriptive statistics of the 94 included videos.

Table 1
Descriptive statistics of uveitis videos.

Descriptive statistics	Mean ± SD	Range
View count, (n)	11669.5 ± 14698.3	1729-79751
Duration of video (second)	1332.6 ± 1615.7	71-9935
Time since upload date (day)	1557.5 ± 1217.3	30-4392
View ratio (Daily views)	10.1 ± 12.6	0.48-79.8
Likes, (n)	147.0 ± 258.8	4-2023
Dislikes, (n)	5.1 ± 7.4	0-35
Comments,(n)	26.5 ± 68.8	0-562
Like ratio	96.3 ± 3.0	86.3-100
DISCERN score	38.5 ± 13.2	16-75
GQS score	2.5 ± 0.9	1-5
JAMA score	1.8 ± 0.6	0-4
VPI score	9.7 ± 12.4	0.4-78.9

Abbreviation: GQS, Global Quality Score; JAMA, Journal of American Medical Association; SD, standart deviation; VPI, video power index.

Of the 94 videos, 47 videos (50%) medical education, 26 videos (27.6%) patient education, 16 videos (17%) patient experience, 5 videos (5.3%) surgical procedures in patient with uveitis. Regarding publishers, 23 videos (24.4%) were uploaded by ophthalmologist, 19 (20.2%) by YouTube channel, 18 (19.1%) by academic institution, 12 (12.7%) by associations, 9 (9.5%) by private hospital and trading company, 9 (9.5%) by patient, and 4 (4.2%) by doctors other than ophthalmologists. When evaluated according to the country of origin, most videos had been uploaded from the United States and India (38.3% and 36.2%, respectively).

The DISCERN, GQS, JAMA and VPI scores were compared among categories and publishers, and the results are shown in Table 2 and 3. While there was statistically significant difference in the DISCERN, GQS, JAMA scores among categories and publishers (p <.01), there was no significant difference between the groups in terms of mean VPI score (popularity of video) (p >.05). In the evaluation based on video categories, medical and patient educational videos had significantly higher quality of information (DISCERN score) than videos of patient experience (patient experience vs patient education videos p <.05; patient experience vs medical education videos p <.001). There was no significant difference between the other video categories (p >.05). Mean GQS (educational value) and JAMA score (transparency) of patient experience videos were significantly lower than the patient and medical educational videos (p <.01). There was no significant difference for GQS and JAMA score between the other groups (p >.05). When classifying each video according to publishers, DISCERN scores of academic sourced videos were significantly higher than the patient and advertising sourced videos (p <.01, p <.05, respectively). Videos uploaded by patients show lower GQS compared to ophthalmologist, academic institution and association sourced videos (p <.05, p <.01, p <.01 respectively). Videos uploaded by associations show higher JAMA scores compared to YouTube channel and patient sourced videos (p <.05, p <.05, respectively). JAMA scores of academic institution sourced videos were significantly higher than the YouTube channel and patient sourced videos (p <.01, p <.01, respectively).

Table 2
DISCERN score, GQS score, JAMA score and VPI score according to categories of uveitis videos

Categories	n	DISCERN	GQS	JAMA	VPI
Medical education	47	43.4 ± 12.7	2.6 ± 0.8	1.9 ± 0.6	9.6 ± 10.8
Patient education	26	38.0 ± 13.9	2.8 ± 1.2	1.9 ± 0.4	10.4 ± 11.9
Patient experience	16	27.1 ± 6.7	1.7 ± 0.7	1.3 ± 0.5	5.8 ± 4.6
Surgical treatment in patient with uveitis	5	32.4 ± 2.1	1.8 ± 0.4	2.0 ±0.1	19.8 ± 33.1
Total	94	38.5 ± 13.2	2.5 ±0.9	1.8 ± 0.6	9.7 ± 12.4

Abbreviation: GQS, Global Quality Score; JAMA, Journal of American Medical Association; SD, standart deviation; VPI, video power index.

Table 3
DISCERN score, GQS score, JAMA score and VPI score according to categories of publishers.

Publishers	n	DISCERN	GQS	JAMA	VPI
Ophthalmologist	23	39.3 ± 13.4	2.5 ± 0.9	1.8 ± 0.5	14.4 ± 17.8
Youtube channel	19	36.5 ± 6.9	2.2 ± 0.5	1.4 ± 0.5	7.6 ± 10.9
Academic institution	18	47.1 ± 15.1	2.8 ± 0.8	2.2 ± 0.6	5.6 ± 4.5
Associations	12	43.5 ± 15.3	3.1 ± 1.2	2.1 ±0.6	7.5 ± 5.2
Private hospital or Trading company advertising	9	31.7 ± 12.3	2.2 ± 1.1	1.6 ±0.5	11.2 ± 6.9
Patient	9	27.1 ± 5.7	1.4 ± 0.5	1.3 ±0.5	6.2 ± 5.4
Doctors other than ophthalmologists	4	31.2 ± 7.4	2.2 ± 1.2	2.1 ±0.1	22.0 ± 26.6
Total	94	38.5 ± 13.3	2.5 ±0.9	1.8 ± 0.6	9.7 ± 12.4

Abbreviation: GQS, Global Quality Score; JAMA, Journal of American Medical Association; SD, standart deviation; VPI, video power index.

Table 4 presents correlations between DISCERN score, Global Quality score, JAMA score, VPI score, duration of video, time since upload date and number of comments. DISCERN score was significantly correlated with GQS, JAMA score (p <.001). Video power index was significantly correlated with time since upload date and number of comments (r = -.401, p < .001; r = .416, p < .001, respectively). Furthermore, duration of video was positively correlated with DISCERN score, GQS, JAMA score (r = .565, p < .001; r = .376, p < .001; r = .29, p< .01, respectively).

Table 4
Correlation Between DISCERN score, GQS score, JAMA score, VPI score, Duration of video, Time since upload date and Number of Comments

	DISCERN	**GQS**	**JAMA**	**VPI**	**Duration of video**	**Time since upload date**	**Number of Comments**
DISCERN	-	r **= .812**	r **= .528**	*r* = .07	r **= .565**	r **= -.259**	*r* = -.132
		p **< .001**	p **< .001**	*p* =.504	p **< .001**	p **= .012**	*p* = .219
GQS	r **= .812**	-	r **= .469**	*r* = .083	r **= .376**	*r* = -.075	*r* = -.014
	p **< .001**		p **< .001**	*p* = .426	p **< .001**	*p* = .473	*p* = .901
JAMA	r **= .528**	r **= .469**	-	*r* = -.009	r **= .29**	r **= -.205**	*r* = -.164
	p **< .001**	p **< .001**		*p* = .928	p **= .005**	p **= .047**	*p* = .128
VPI	*r* = .07	*r* = .083	*r* = -.009	-	*r* = .144	r **= -.401**	r **= .416**
	p =.504	*p* = .426	*p* = .928		*p* = .166	p **< .001**	p **< .001**
Duration of video	r **= .565**	r **= .376**	r **= .29**	*r* = .144	-	r **= -.307**	*r* = -.157
	p **< .001**	p **< .001**	p **= .005**	*p* = .166		p **= .003**	*p* = .145
Time since upload date	r **= -.259**	*r* = -.075	r **= -.205**	r **= -.401**	r **= -.307**	-	*r* = .066
	p **= .012**	*p* = .473	p **= .047**	p **< .001**	p **= .003**		*p* = .544
Number of Comments	*r* = -.132	*r* = -.014	*r* = -.164	r **= .416**	*r* = -.157	*r* = .066	-
	p = .219	*p* = .901	*p* = .128	p **< .001**	*p* = .145	*p* = .544	
Spearman correlation test (n=94)							

Abbreviation: GQS, Global Quality Score; JAMA, Journal of American Medical Association; SD, standart deviation; VPI, video power index.

Discussion

Uveitis is the third leading cause of blindness worldwide, defined as inflammation of the uveal tissue.[15] The incidence of uveitis has been calculated at 25 to 341 cases per 100,000 person years.[16,17,18] In comparison, YouTube videos associated with uveitis are watched frequently, and some have more than approximately 30,000 views per year. Recent surveys have reported that 75–80% of the patients use Internet to access medical information.[19] However, easy accessibility and being free, YouTube may have inaccurate and possibly misleading health-related information due to the lack of peer view and content control for uploading videos.

In our study, we used DISCERN, Global Quality scores, and *JAMA* to investigate the accuracy and reliability of uveitis videos available online, the mean values of which were 38.5 ± 13.2 (poor), 2.5 ±0.9 (fair), and 1.8 ± 0.6 (fair), respectively. Those results demonstrate that although patients have preferred to access YouTube videos to learn about uveitis, these videos have not appropriately educated them about the disease. When the videos were separated according to their categories and evaluated according to their popularity with the objective scoring system VPI, it was seen that the highest VPI score was in the surgical videos of patients with uveitis, and the lowest VPI score was found in the patient experience and medical education videos. Although, the mean DISCERN and GQS score of medical education was higher than other categories, VPI score was found be lower than other categories. Similar results have been demonstrated in previous studies. These results show an inverse relationship between the DISCERN and VPI scores in our study, which suggests that the VPI decreases as the educational quality of the videos increases. Similar results were also found by other studies. [4,11, 20] Among the reasons for the high VPI score of surgical videos may be that clinicians learn about surgical procedures or patients are curious about the surgical procedure steps. It is thought that the low quality and reliability of the videos containing the patient experiences may be due to the fact that some incorrectly obtained information is presented directly to YouTube users without any filtering. In our study, when uveitis videos were divided according to their categories, nearly 50% were videos uploaded for medical staff training (medical education), whereas 25% were videos uploaded for patient education purposes. It was seen that the GQS of the patient education videos were at the highest level. However, it was observed that patient education videos had a lower DISCERN score than medical education videos. The reason for this is that while educational information for patients is included more in patient education videos; it may be that more academic subjects are included in medical training videos.

In our study, videos were also classified according to publishers. The high DISCERN score was seen in videos published by academic institutions. The DISCERN and VPI scores of the academic institute videos was 47.1 ± 15.1, 5.6 ± 4.5, respectively. It has been determined that the videos published by academic institutes have high DISCERN scores although they have low VPI scores. Many videos about uveitis consisted of videos where academic institutions and ophthalmologists directly transferred the course recordings to YouTube in order to train medical staff. Therefore, these videos have high educational quality but low popularity. Patients may have difficulty understanding these lectures, which contain medical terms. As a matter of fact, when the first 200 videos in our study were examined according to the criteria of the study, it was noted that most of them have not contain phrases such as "for patients" or "for

healthcare professionals" in their titles. Accordingly, physicians who upload videos to train healthcare personnel should know that patients can also watch these videos. To clear the ambiguity, it may be helpful to create an upload option that identifies medical videos targeting patients or healthcare professionals. Kucuk et al. obtained similar results in their study and emphasized the importance of specifying the target audience of the videos in the video title. [11]

Recently, there has been an increase in studies evaluating YouTube videos about ocular conditions. In the first reported studies from the field of ophthalmology, Guthrie et al. investigated YouTube videos about retinitis pigmentosa and observed that 50% of the videos were misleading and that only one-third of the videos were usefull.[5] In another study, Bae and Baxter investigated 72 YouTube videos about cataract surgery and determined that the educational quality was inadequate for patients. [7] In studies evaluating the quality of YouTube videos that are related with refractive surgery, soft contact lenses, multifocal lenses and keratoplasty, the quality of these videos was found to be poor or fair.[9,11,21,22] Similar results were obtained in our study. Although some YouTubes videos contain useful information for uveitis patients, most videos have poor quality, reliability and include inadequate information.

Another main finding of the present study was that the main scoring checklist (DISCERN, JAMA and GQS score) showed positive correlations among themselves. However, no correlation was observed between VPI scores and these main scoring systems. A statistically significant positive correlation was found between the duration of the video and the main scoring systems. However, no statistically significant correlation was found between VPI score and video duration. As a result of these findings, it was seen that the main scoring systems generally gave parallel results in reflecting the educational quality and reliability of the video. Similar results were found in the study of Kucuk et al. and Yildiz et al.[9,11] In general, other studies have also shown an inverse relationship between video popularity (VPI score) and main scoring systems. [9,11,20] The relationship between video durations and main scoring systems has not been evaluated in previous studies. In our study, it was observed that the main scoring systems increased with the increase of video duration, but no statistically significant correlation was found between the VPI score. The reason why short duration videos get low scores may be due to the fact that the educational content is not adequately conveyed to the YouTube users. Gill et al. reported that the videos with longer term popularity tended to have durations well below the maximum of ten minutes.[23] During the preparation process of the videos, it should not be ignored that the viewers should be prepared in a reasonable time so that they get enough information and do not get bored while watching the videos. The average duration of the videos in our study was over 20 minutes. It was determined that the average video duration was quite high compared to other studies. [4,11,20]

The reason for this is that most of the videos in our study are medical education videos and medical education videos are published directly on YouTube without any editing. In order to reach a wider audience, attention should be paid to the quality and duration of the videos.

There are a few limitations. Firstly, we evaluated the videos at one specific time moment. Considering the dynamic origin of YouTube parameters, the content of YouTube may change over time. Finally, we

evaluated only English language videos.

In conclusion, we found that YouTube is an inadequate source of information for uveitis. Although most of the videos were scored as moderate in terms of their educational quality, YouTube videos should still not be considered a fully reliable source of information about uveitis. Therefore, more participation is need from especially academic institutes and universities to contribute usefull videos. In the developing digital world, Youtube can be used as an effective communication tool in the field of health communication because it can reach large audiences. The videos were evaluated by health professionals before reaching the viewers, and videos of inappropriate content can be banned by YouTube administrators after comprehensive analyzes were performed by institutional or peer review system.

Declarations

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Supplementary Files

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