DOI: 10.14744/eer.2024.57442
Eur Eye Res 2024;4(3):202–208

EUROPEAN EYE RESEARCH

ORIGINAL ARTICLE

An evaluation of quality and usefulness of information on YouTube videos about pterygium and its treatment

Bahadir Azizagaoglu, Leyla Asena, Dilek Dursun Altinors

Department of Ophthalmology, Baskent University, Ankara, Türkiye

Abstract

Purpose: We aimed to evaluate the quality of information available on YouTube regarding the basic information, examination, diagnosis, and treatment of pterygium.

Methods: An online YouTube search was performed on January 10, 2023, for the following three terms: pterygium surgery, pterygium surgery for patients, and pterygium surgery patient education. The first 50 videos were evaluated for each term. Videos were evaluated using three checklists (the modified DISCERN criteria, the Journal of the American Medical Association [JAMA] criteria, and the Global Quality Score [GQS]). Videos were classified into three groups according to the source of the upload: Group 1, doctors; Group 2, profit-oriented clinics; and Group 3, independent users.

Results: After the exclusion of duplicate videos, a total of 133 videos were included for analysis. Sixty-nine (51.9%) videos were uploaded by physicians/doctors, 54 (40.6%) by profit or non-profit-oriented clinics, and 10 (7.5%) by independent users including patients and content creators. The JAMA score was significantly lower in videos uploaded by patients and content creators when compared to videos uploaded by doctors and clinics ($p<0.001$). All quality scores including the DISCERN score, GQS, and JAMA score were significantly lower in videos describing patient experiences ($p<0.001$, $p<0.001$, and $p=0.011$, respectively), when compared to narrated surgery videos and informative videos. The highest positive correlation was observed between the DISCERN score and the GQS. View rates were significantly correlated with the number of likes. In addition, videos with higher subscriber numbers tended to have a significantly higher number of likes and a higher GQS.

Conclusion: Health-related videos on social media platforms, which serve as informational resources, need to be produced by more qualified professionals, and the information they include needs to be objectively provided regarding all available treatment options, potential side effects, and the healing process.

Keywords: DISCERN, Global Quality Score, Journal of the American Medical Association, patient education, pterygium, reliability, youtube.

Cite this article as: Azizagaoglu B, Asena L, Dursun Altinors D. An evaluation of quality and usefulness of information on YouTube videos about pterygium and its treatment. Eur Eye Res 2024;4(3):202–208.

Correspondence: Bahadir Azizagaoglu, M.D. Department of Ophthalmology, Baskent University, Ankara, Türkiye
E-mail: bazizagaoglu@gmail.com

Submitted Date: 04.02.2024 **Revised Date:** 15.06.2024 **Accepted Date:** 25.06.2024 **Available Online Date:** 29.11.2024

Pterygium is a conjunctival fibrovascular degenerative lesion that only affects humans. Clinically, it appears as a conjunctival hyperplasia with a triangle shape and an apex pointing toward the cornea. The interpalpebral conjunctiva on the nasal side is the region of pterygium that occurs most frequently. By disrupting the tear film, causing astigmatism, and, in extreme cases, obstructing the visual axis, pterygia reduces vision. In addition, they may limit eye mobility and result in ocular irritation and a feeling of a foreign body. The primary mechanisms of pterygium formation, which include the development of proliferative limbal stromal cell clusters, epithelial metaplasia, the development of active fibrovascular tissue, inflammation, and the disruption of Bowman's layer along the infiltrating apex of the pterygium, are brought on by changes in the local homeostasis of the ocular surface.[1]

UV exposure, advancing age, and male gender are the main risk factors for pterygia.[2] Pterygia typically occurs in the nasal rather than temporal regions of the interpalpebral zone.[3] Pterygia signs and symptoms include redness, itchiness, dryness, tearing, and reduced vision. The involvement of the visual axis, induced astigmatism, and tear film disruption are the usual causes of decreased vision.[4]

With a 12% incidence worldwide, pterygium development is one of the most frequent issues affecting the anterior eye surface. Sunlight exposure is linked to the prevalence of pterygium. A pterygium is 24% more likely to form when exposed to sunlight for an extended period.[5]

Ophthalmologists have spent the last 2000 years searching for the best way to treat both primary and recurring pterygia. Conjunctival grafting with or without limbal tissue which is fixed with either absorbable or non-absorbable sutures, fibrin glue, or even autologous blood or fibrin is the most often used procedure.[6] Furthermore, antimetabolites such as mitomycin-C (MMC) and 5-fluorouracil have been used on pterygium. They have been applied in a variety of ways, including intraoperatively as a single dosage and postoperatively as subconjunctival injections or drops.[7]

Amniotic membrane grafting has also been implemented with a recurrence rate of 13.8–18.6% at 6–12 months after excision of primary pterygium. Clearfield et al. concluded that conjunctival autograft was superior to amniotic membrane in avoiding pterygium recurrence after thoroughly reviewing 20 randomized controlled studies with more than 1900 eyes.[8] However, the recurrence rate was reduced to 5.8% for an average follow-up of 17 months with the inclusion of intraoperative MMC and amniotic membrane.[9]

From this aspect of view, we can see that pterygium is a very common disease for the anterior segment of the eye and there is not enough information for patients who are suffering from pterygium. For those patients, the first place to seek information is the Internet and social media. The second-most used website worldwide and the largest media-sharing website in the world is YouTube. In June 2018, there were an estimated 30 million daily active YouTube users, and 5 billion videos were watched each day. Given the size of its online video library, YouTube is a popular resource for the public, patients, medical students, doctors, and other health-care professionals looking for information on illnesses and treatment options.[10-12] However, YouTube videos, like many other Internet sources, do not go through an editorial review process and may not be updated on a regular basis. As a result, it may deliver low-quality and inaccurate information to patients.[13]

For treatment compliance, it is critical to properly inform the patients. The purpose of the current study was to assess the quality of YouTube content available on basic information, examination, diagnosis, and treatment of pterygium.

Materials and Methods

YouTube videos about pterygium were assessed in this retrospective, cross-sectional, register-based investigation. Because it was an observational study, YouTube videos are public, and there was no direct patient interaction; the study did not need ethics committee permission. An online YouTube search was performed on January 10, 2023, for the following three terms: pterygium surgery, pterygium surgery for patients, and pterygium surgery patient education. Without modifying the default search settings on the website. The standard search preferences were selected as sort videos by relevance. The origin country was chosen as the United States and the video language was filtered as English. All video searches were performed by clearing the entire search history without any user login. For each term, the first 50 videos were assessed since these are the most accessible and popular videos that patients might see.[14] Duplicate videos and videos that are not in the English language were excluded.

Videos were classified into three groups according to the source of the upload: Group 1, doctors; Group 2, profit-oriented clinics; and Group 3, independent users. They were also classified into three groups according to the content: Group 1, surgery videos; Group 2, informative videos; and Group 3, videos describing patient experiences.

All videos were also assessed for quality, dependability,

and educational value using the modified DISCERN score, the Journal of the American Medical Association (JAMA) score, and the Global Quality Score (GQS). The updated DISCERN scoring system assesses the content uncertainty, presentation of other information sources, dependability, bias, and clarity of the content.[15]

The DISCERN scoring system consists of three parts, each with 16 questions answered on a 5-point scale (5 = greatest quality), as shown in Table 1. Thus, the scoring method assigns a total of 16–75 points, which are divided into five categories: Excellent (63–75 points), good (51–62 points), fair (39–50 points), poor (27–38 points), and very poor (i.e., 16–26 points).[15,16] In contrast, the JAMA scoring system, a well-known tool for evaluating the quality of information, was used to assess the reliability of online health-related resources based on four criteria (authorship, attribution, disclosure, and currency), each of which was assigned 0 or 1 point, as shown in Table 2. Finally, as illustrated in Table 3, the GQ rating system was used which allows users to evaluate the overall quality of videos based on the general simplicity of use of interpretation and flow of information presented.[17]

Each video was independently analyzed by two experienced anterior segment surgeons (LA and BA), and the obtained data were recorded. The reproducibility of the DISCERN, JAMA, and GQS was tested before the primary analysis, and interobserver intraclass correlation coefficients revealed a Spearman's correlation coefficient of >0.90. The mean values of scores from the two observers were subjected to statistical analysis.

Ethics statement and institutional review board approval was unnecessary for this study, because only public access data were used.

Statistical Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (v. 23.0, Chicago, Illinois, USA). Descriptive statistics in the form of mean±standard deviation values were used to describe quantitative data and frequencies and percentages for qualitative data. The Shapiro–Wilk test was applied to assess the normal distribution of each continuous variable. The Kruskal–Wallis test was applied to compare variables between groups, and the Spearman's correlation test was applied to examine the relationships among variables. $P < 0.05$ was accepted as statistically significant.

Results

After the exclusion of duplicate videos, a total of 133 videos were included for the analysis. Sixty-nine (51.9%) videos were uploaded by physicians/doctors, 54 (40.6%) by profit- or non-profit-oriented clinics, and 10 (7.5%) by independent users including patients and content creators. The content included narrated surgery videos in 66 (49.6%), information and lectures in 54 (40.6%), and patient experiences in 13 (9.8%) videos. Descriptive statistics regarding the videos are shown in Table 1.

When we compared the number of likes, subscribers, views, DISCERN score, GQS, and JAMA scores according to the source of the upload, the only significant difference

Table 1. Descriptive statistics of Pterygium videos

	Mean±SD	Range
Likes (n)	207.1±500.1	0–3 800
Subscribers (n)	29 342.9±114 055.5	100–850 000
Views (n)	26 421.1±70 213.2	100–534 000
Video age (months)	39.9±31.7	6–140
Video length (min)	8.9±17.0	1–160
DISCERN score	44.4±11.6	19–73
JAMA score	2.1±0.8	0–4
Global Quality Score	3.0±1.3	1–5

JAMA: Journal of the American Medical Association.

Table 2. The comparison of descriptive properties and quality results for videos with different upload sources

	Videos uploaded by physicians/doctors (n=69)	Videos uploaded by profit or non-profit-oriented clinics (n=54)	Videos uploaded by patients and content creators (p=10)	p*
Likes (n)	230.4±487.2	168.4±527.4	255.7±470.0	0.229
Subscribers (n)	26 308.7±102 434.4	21 761.1±106 264.8	91 220.0±200 864.0	0.873
Views (n)	24 236.2±53 962.5	29 670.4±91 471.5	23 950.0±30 403.3	0.407
DISCERN score	45.0±10.4	44.9±11.9	36.9±15.8	0.179
JAMA score	2.2±0.8	2.3±0.8	1.1±0.6	<0.001
Global Quality Score	3.1±1.3	3.1±1.3	2.2±1.4	0.112

*Kruskal-Wallis test. JAMA: Journal of the American Medical Association.

between groups was observed for the JAMA score. The JAMA score was significantly lower in videos uploaded by patients and content creators when compared to videos uploaded by doctors and clinics (P < 0.001). The comparison of descriptive properties and quality results for videos with different upload sources is given in Table 2.

We also compared the number of likes, subscribers, views, DISCERN score, GQS, and JAMA scores according to the content of the videos. All quality scores including DISCERN score, GQS, and JAMA score were significantly lower in videos describing patient experiences (P < 0.001, P < 0.001, and P = 0.011, respectively) when compared to narrated surgery videos and informative videos. The number of views and likes was highest in surgical videos and lowest in videos describing patient experiences (P = 0.014 and P = 0.001). Interestingly, videos describing patient experiences had the highest number of subscribers (P = 0.021). The comparison of descriptive properties and quality results for videos with different content is given in Table 3.

The correlations among the DISCERN score, JAMA score, GQS, view rate, number of likes, number of subscribers, and content are shown in Table 4. The JAMA score was significantly correlated with the DISCERN and GQSs. The highest positive correlation was observed between the DISCERN score and the GQS. View rates were significantly correlated with the number of likes. In addition, videos with higher subscriber numbers tended to have a significantly higher number of likes and a higher GQS.

Discussion

Social media and video-sharing websites have become viable environments for medical professionals and private health-care organizations due to the increase of health-related information on the Internet.[18] In the past, patients and their families primarily learned about their operation or procedure from their own doctors when Internet information was unavailable. People now have many options to conveniently and without charge

Table 3. The comparison of descriptive properties and quality results for videos with different content

	Narrated surgery video (n=66)	Informative video or lecture (n=54)	Patient experience (p=13)	p*
Likes (n)	253.3±528.5	168.8±486.1	131.8±412.6	0.001
Subscribers (n)	16 610.6±19 836.7	39 237.0±156 078.5	52 884.6±177 310.2	0.021
Views (n)	30 477.3±70 326.4	24 844.4±77 471.5	12 376.9±24 810.7	0.014
DISCERN score	42.3±9.4	49.3±12.5	34.5±8.9	<0.001
JAMA score	2.1±.71	2.3±0.9	1.5±0.7	0.011
Global Quality Score	2.7±1.1	3.6±1.2	1.9±1.3	<0.001

*Kruskal–Wallis test. JAMA: Journal of the American Medical Association.

Table 4. The correlations among DISCERN score, JAMA score, Global Quality Score, view rate, number of likes, number of subscribers, and content

	Content	JAMA score	DISCERN score	GQS	Likes	Views	Subscribers
Content		r=-0.107	r=0.009	r=0.043	r=−0.092	r=−0.073	r=0.115
		P=0.221	P=0.916	P=0.627	P=0.292	P=0.401	P=0.188
JAMA score	r=−0.107		r=0.577**	r=0.666**	r=−0.084	r=−0.117	r=0.100
	P=0.221		P=0.000	P=0.000	P=0.336	P=0.179	P=0.252
DISCERN score	r=0.009	r=0.577**		r=0.816**	r=0.050	r=−0.045	r=0.109
	P=0.916	P=0.000		P=0.000	P=0.567	P=0.605	P=0.213
GQS	r=0.043	r=0.666**	r=0.816**		r=0.124	r=0.024	r=0.239
	P=0.627	P=0.000	P=0.000		P=0.156	P=0.784	P=0.006
Likes	r=−0.092	r=−0.084	r=0.050	r=0.124		r=0.835**	r=0.343
	P=0.292	P=0.336	P=0.567	P=0.156		P=0.000	P=0.000
Views	r=−0.073	r=−0.117	r=−0.045	r=0.024	r=0.835**		r=0.091
	P=0.401	P=0.179	P=0.605	P=0.784	P=0.000		P=0.296
Subscribers	r=0.115	r=0.100	r=0.109	r=0.239**	r=0.343**	r=0.091	
	P=0.188	P=0.252	P=0.213	P=0.006	P=0.000	P=0.296	

**Correlation is significant at the 0.01 level (2-tailed). JAMA: Journal of the American Medical Association.

obtain a lot of important information because of the Internet revolution. Due to the increasing accessibility of websites featuring videos, like YouTube, people are using these platforms to find information in a variety of fields, including health. Nevertheless, there are several challenges with using YouTube as a source of health-related information. These challenges include the uploading of videos by non-health-care professionals who share their opinions without having enough knowledge or expertise in the field, videos being used for marketing reasons, a lack of comprehensive information on the risks and contraindications of a proposed operation or procedure, and the lack of an independent review procedure to ensure the relevance and quality of the content.

However, not enough research has been done to evaluate the accuracy of the content on pterygium pterygium in YouTube videos targeted for patients in the future. YouTube is used by 2 billion people monthly and receives over 5 billion views every day. For this reason, assessing the standards of video content regarding pterygium is crucial.

At present, an extensive number of written consumer health resources, including the Internet, are available to provide information about treatment options. Only a small percentage of this material is supported by solid evidence, and not all of it is of high quality. Choosing which publications to use and which to ignore can be challenging because a lot of them offer unclear or inaccurate advice. Previous studies have utilized several rating systems to assess the reliability and quality of Internet videos. There are some scoring systems such as GQS, JAMA Score, and DISCERN Score. The DISCERN tool was created to assist consumers of medical data in evaluating the caliber of provided treatment choices information.[19] The Global Quality Scale, or GSQ, was a 5-point scale that ranged from 1 (low quality) to 5 (high quality).[20] Authorship, attribution, disclosure, and currency are the four areas that compose the basis of the JAMA benchmark criteria, which were first published by Silberg et al.[17] Our study is the first that combines global quality scores, DISCERN, and JAMA ratings.[21-23] The mean scores in this study were 3.0 for GQS (1–5 points), 2.1 for JAMA (0–4 points), and 44.4 for DISCERN (15–75 points). According to these results, patients who watch YouTube videos to learn about pterygium only get a moderate amount of knowledge related to the treatment. Films published by physicians had significantly higher JAMA scores than those uploaded by non-physicians when the videos were analyzed based on the upload sources. In addition, the movies that physicians have published are more trustworthy, helpful, and provide more precise information in a more fluid manner. These results suggest that patients who prefer to watch YouTube videos to learn about pterygium and the procedures related to its treatment are typically not adequately informed.

Previous studies have shown that videos uploaded by physicians were viewed at greater rates than those uploaded by non-physicians.[24,25] In our study, we found that the view rates were higher in narrated video surgeries and informative videos. One probable reason for this might be that the viewers mostly consist of health professionals, seeking training for surgical procedures. On the other hand, scores of narrated surgery videos were significantly lower than informative videos, lectures, and patient experience videos. The reason for this may be that narrated surgery videos do not follow a specific pattern of reporting and lack technical descriptions or detailed instructions. The characteristics of YouTube videos can be used to explain why they are insufficient as educational tools for patients. Patients looking for less technical information on specific surgical procedures may become alienated from certain YouTube videos, as most of them were made with the intention of training medical staff. Most of the videos in our study were found to lack phrases like “for patients” or “for health professionals” in their names. Therefore, doctors who post videos online to educate medical staff should be aware that patients may also view those videos. To eliminate any confusion, it could be useful to include an upload option that classfies medical recordings as either patient- or healthcare staff-focused. While most of the videos showed one or two surgical choices, very few went into great depth about the options that were presented. However, unbiased balanced information is essential for patients to give their informed consent and to avoid having irrational expectations that could lead to patient unhappiness.

While several studies have been done recently on the efficacy of YouTube as a source of medical knowledge, only a few of them have examined videos that discuss ocular disorders and possible treatments. Of these, 72 YouTube videos about cataract surgery were evaluated by Bae and Baxter; they were determined to be insufficient as patient teaching tools.[10] In addition, Guthrie et al. evaluated YouTube videos about retinitis pigmentosa and found that just 31.5% of the videos offered helpful, scientifically accurate information and that 50% of the videos were misleading. While some of the videos in our study do offer helpful information for patients, YouTube cannot be considered a good source of information about ocular conditions in general.[26]

Our study had a few limitations. First, because YouTube is an interactive website, search results based on a particular date may vary depending on whether the uploader has removed or added new relevant videos. Second, the keyword that has been used can affect the search results. Third, since users typically log into YouTube using their own accounts, search history and cookies may have an impact on results. The study exhibited strengths despite these limitations, including the blind evaluation of the three distinct scoring systems by two experienced ophthalmologists and a significant connection between the scoring systems and the scores of the two ophthalmologists.

Conclusion

These videos, which serve as informational resources, need to be produced by more qualified professionals, and the information they include needs to be objectively provided regarding all available treatment options, potential side effects, and the healing process. Viewers need to consider if the videos have these features. To guide patients toward the best course of therapy, health-care providers should evaluate the validity of online resources that provide medical information from the perspective of the patient.

Ethics Committee Approval: Ethics statement and institutional review board approval was unnecessary for this study, because only public access data were used.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: B.A., L.A., D.D.A.; Design: B.A., L.A., D.D.A.; Supervision: B.A., L.A., D.D.A.; Resource: B.A., L.A., D.D.A.; Materials: B.A., L.A., D.D.A.; Data Collection and/or Processing: B.A., L.A., D.D.A.; Analysis and/or Interpretation: B.A., L.A., D.D.A.; Literature Search: B.A., L.A., D.D.A.; Writing: B.A., L.A., D.D.A.; Critical Reviews: B.A., L.A., D.D.A.

Conflict of Interest: None declared.

Use of AI for Writing Assistance: Not declared.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Shahraki T, Arabi A, Feizi S. Pterygium: An update on pathophysiology, clinical features, and management. Ther Adv Ophthalmol 2021;13:25158414211020152. [CrossRef]
2. onseca EC, Rocha EM, Arruda GV. Comparison among adjuvant treatments for primary pterygium: A network meta-analysis. Br J Ophthalmol 2018;102:748-56. [CrossRef]
3. Lu P, Chen X, Kang Y, Ke L, Wei X, Zhang W. Pterygium in Tibetans: A population-based study in China. Clin Exp Ophthalmol 2007;35:828-33. [CrossRef]
4. McCarty CA, Fu CL, Taylor HR. Epidemiology of pterygium in Victoria, Australia. Br J Ophthalmol 2000;84:289-92. [CrossRef]
5. Rezvan F, Khabazkhoob M, Hooshmand E, Yekta A, Saatchi M, Hashemi H. Prevalence and risk factors of pterygium: A systematic review and meta-analysis. Surv Ophthalmol 2018;63:719-35. [CrossRef]
6. Young AL. The use of conjunctival rotational autograft in the management of Pterygium. Asia Pac J Ophthalmol (Phila) 2013;2:209-10. [CrossRef]
7. Kaufman SC, Jacobs DS, Lee WB, Deng SX, Rosenblatt MI, Shtein RM. Options and adjuvants in surgery for pterygium: A report by the American Academy of Ophthalmology. Ophthalmology 2013;120:201-8. [CrossRef]
8. Clearfield E, Hawkins BS, Kuo IC. Conjunctival autograft versus amniotic membrane transplantation for treatment of pterygium: Findings from a cochrane systematic review. Am J Ophthalmol 2017;182:8-17. [CrossRef]
9. Rosen R. Amniotic membrane grafts to reduce pterygium recurrence. Cornea 2018;37:189-93. [CrossRef]
10. Bae SS, Baxter S. YouTube videos in the English language as a patient education resource for cataract surgery. Int Ophthalmol 2018;38:1941-5. [CrossRef]
11. Erdem MN, Karaca S. Evaluating the accuracy and quality of the information in kyphosis videos shared on YouTube. Spine (Phila Pa 1976) 2018;43:E1334-9. [CrossRef]
12. Drozd B, Couvillon E, Suarez A. Medical YouTube videos and methods of evaluation: Literature review. JMIR Med Educ 2018;4:e3. [CrossRef]
13. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK. Healthcare information on youtube: A systematic review. Health Informatics J 2015;21:173-94. [CrossRef]
14. Morahan-Martin JM. How internet users find, evaluate, and use online health information: A cross-cultural review. Cyberpsychol Behav 2004;7:497-510. [CrossRef]
15. Singh AG, Singh S, Singh PP. YouTube for information on rheumatoid arthritis--a wakeup call? J Rheumatol 2012;39:899-903. [CrossRef]
16. Weil AG, Bojanowski MW, Jamart J, Gustin T, Lévêque M. Evaluation of the quality of information on the Internet available to patients undergoing cervical spine surgery. World Neurosurg 2014;82:31-9.[CrossRef]
17. Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the Internet: Caveant lector et viewor--Let the reader and viewer beware. JAMA 1997;277:1244-5. [CrossRef]
18. McNab C. What social media offers to health professionals and citizens. Bull World Health Organ 2009;87:566. [CrossRef]
19. Charnock D, Shepperd S, Needham G, Gann R. DISCERN: An instrument for judging the quality of written consumer health information on treatment choices. J Epidemiol Community Health 1999;53:105-11. [CrossRef]
https://doi.org/10.1136/jech.53.2.105
20. Steeb T, Reinhardt L, Harlaß M, Heppt MV, Meier F, Berking C. Assessment of the quality, understandability, and reliability of YouTube Videos as a source of information on basal cell

carcinoma: Web-Based analysis. JMIR Cancer 2022;8:e29581. [CrossRef]
21. Kloosterboer A, Yannuzzi NA, Patel NA, Kuriyan AE, Sridhar J. Assessment of the quality, content, and readability of freely available online information for patients regarding diabetic retinopathy. JAMA Ophthalmol 2019;137:1240-5. [CrossRef]
22. Pager CK. Randomised controlled trial of preoperative information to improve satisfaction with cataract surgery. Br J Ophthalmol 2005;89:10-3. [CrossRef]
23. Shukla AN, Daly MK, Legutko P. Informed consent for cataract surgery: Patient understanding of verbal, written, and videotaped information. J Cataract Refract Surg 2012;38:80-4. [CrossRef]
24. Desai T, Shariff A, Dhingra V, Minhas D, Eure M, Kats M. Is content really king? An objective analysis of the public's response to medical videos on YouTube. PLoS One 2013;8:e82469. [CrossRef]
25. Tartaglione JP, Rosenbaum AJ, Abousayed M, Hushmendy SF, DiPreta JA. Evaluating the quality, accuracy, and readability of online resources pertaining to hallux valgus. Foot Ankle Spec 2016;9:17-23. [CrossRef]
26. Guthrie G, Davies R, Fleming C, Browning AC. YouTube as a source of information about retinitis pigmentosa. Eye (Lond) 2014;28:499-500. [CrossRef]