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ORIGINAL RESEARCH

# Quality Analysis of YouTube and Facebook Videos for Glaucoma Treatment Options

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**Purpose:** Patients increasingly seek information about medical treatment options from the internet. This study evaluated the quality and accuracy of YouTube and Facebook videos on glaucoma treatment options.

**Methods:** A comprehensive search of "glaucoma" and "eye pressure" combined with "treatment" or "cure" was performed. YouTube videos with at least 25,000 views and 25 views per day and Facebook videos with at least 1000 total views were included. Videos were excluded if they were not in English or about humans. The quality of videos was evaluated by two independent reviewers using a modified Currency, Relevance, Authority, Accuracy, and Criteria (CRAAP) metric. Videos were categorized as educational, testimonial, or advertisement.

**Results:** A total of 74 YouTube videos and 19 Facebook videos were included. Of the YouTube videos, 89.7% were educational, 5.5% testimonials, and 4.8% adverts. Of the Facebook videos, 65.8% were educational, 21.1% testimonials, and 13.2% adverts. The inter-rater reliability was acceptable after kappa values were calculated. Fifteen percent of YouTube videos and eighteen percent of Facebook videos were graded as containing misinformation or misleading information. Audio and video quality scores were similar between categories. Higher accuracy and comprehensiveness scores were seen for educational videos. Seventy-four percent of YouTube videos and 66% of Facebook videos addressed the question of what is glaucoma, 65% of YouTube videos and 47% of Facebook videos discussed the course of untreated disease, 64% of YouTube videos and 34% of Facebook videos discussed the goals of treatment, and only 17% of YouTube videos and 0% of Facebook videos discussed the risks of the proposed treatment options.

**Conclusion:** Patients are increasingly using YouTube and Facebook for medical information. This study found that many videos lack useful information and some provide information that may be detrimental. Physicians should be aware of this risk and educate patients appropriately.

**Keywords:** glaucoma treatment, YouTube, Facebook, patient education

## Introduction

Glaucoma is a leading cause of irreversible blindness in both the United States and the world.[1] Furthermore, intraocular pressure (IOP) is the only known modifiable glaucoma risk factor and thus treatment is primarily focused on IOP reduction.[2] Initial treatment usually involves topical medications, or laser therapy, but surgical interventions are considered as the disease progresses.

With the advent of widespread internet access, many patients are consuming medical information from online resources. One study found that 70% of Europeans with internet access utilize the internet for health purposes.[3] Patients often utilize the internet as the initial tool for investigating information about a disease including symptoms and potential treatments, somewhat altering a traditional component of the physician–patient relationship.[4,5] Since patients view online information without the guidance and expertise of a medical professional, patients may erroneously

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interpret factual information or be introduced to non-factual or misleading information; members of the general population may lack the level of health information literacy necessary to thoroughly understand medical terminology.[6]

Glaucoma patients are likely to use online resources to understand their disease and treatment options. A recent representative survey found that over 40% of patients with glaucoma in the USA search the internet for health information.[7] Furthermore, McGregor et al found that patients with glaucoma access internet resources, with many patients disproportionally using YouTube for treatment information compared to other resources.[8] While glaucoma has many phenotypes, it is largely a disease of the elderly.[9] Given the irreversible nature of glaucoma and the importance of vision in quality of life, patients with advanced glaucoma are likely to use online resources to investigate options for glaucoma treatment and/or management.

YouTube.com is a popular, free video platform that is increasingly being used by patients as a source for obtaining medical information. With 2.3 billion active users and 74% of Americans using the platform, YouTube represents a significantly utilized resource.[10,11] Additionally, Facebook.com represents a social media platform that allows users to upload, share, and discuss content in the form of text, images, videos which represents another platform utilized for collecting medical information. With approximately three billion monthly active users, Facebook represents a platform with a large amount of information available to users.[12] Older adults predominantly use YouTube and Facebook as their chosen social media sites; a survey by the Pew Research Center found that 86% of adults ages 50 through 64 and 65% of adults ages 65 and older have used YouTube, and 70% of adults ages 50 through 64 and 59% of adults ages 65 and older have used Facebook.[13] The majority of adults older than age 50 did not ever use other social media sites such as Instagram, X, Reddit or TikTok.

For popular media sites such as YouTube and Facebook, there is no quality control process on uploaded content, which could lead to the spread of medical misinformation. Previous literature has described a variable degree of misinformation on YouTube in regards to healthcare-related subjects.[14–16] Prior literature described Facebook as a source of potentially harmful medical misinformation; moreover, posts containing medical misinformation were more likely to receive increased viewer engagement.[17–19] This stresses the need for providers to be aware of information being accessed online as patients may come to providers with questions regarding what they find online. Additionally, providers should be aware of particular misleading aspects or deficits of information available to patients online so that they can spend time discussing these specific aspects with patients. While YouTube and Facebook may not be the primary source of medical information for all patients, its status as a highly frequent source in a standardized format allows for standardized evaluation. Additionally, as glaucoma patients tend to be older adults, examination of YouTube and Facebook as the most utilized social media sites was deemed appropriate. Through the present study, we sought to analyze the quality and accuracy of YouTube and Facebook videos on education and treatment options for glaucoma. We also sought to see if there were any particular areas of information lacking in the videos that providers could help address.

## Methods

YouTube.com (San Bruno, CA) and Facebook.com (Meta Platforms, Inc., Menlo Park, CA) were searched using all combinations of terms “glaucoma” and “eye pressure” combined with “treatment” or “cure”. YouTube videos with >25,000 views and an average of at least 25 views per day, and Facebook videos with >1000 total views were included to best approximate the videos actively being watched by patients. Static search elements represent the most common way individuals search for health information, and this methodology was mimicked by our search criterion of commonly searched phrases. Incognito mode and cache clearing was not performed as patients likely do not clear this information prior to searching. This information was collected and updated last in August of 2025. Videos not entirely in English, not about glaucoma, or not about humans were excluded. Institutional Review Board Exemption was obtained for this study through Yale University. This research adhered to the tenets of the Declaration of Helsinki.

Three independent, masked observers, two trained medical students and one fellowship-trained glaucoma faculty (JL, AM and SS), graded each video using a customized CRAAP criteria rubric (current, relevant, accurate, authority, purpose) as shown in Table 1.[20,21] The CRAAP criteria has been used for several previous studies on medical information found online, including in pediatric ophthalmology, pediatric neurosurgery and obstetrics.[21–23] The videos were also

**Table 1** Modified CRAAP Criteria Used to Evaluate YouTube and Facebook Videos on Glaucoma Treatment Including List of Glaucoma Specific Questions

| Category | Question/Criteria |
|---|---|
| Current | What year was the video produced? |
| Relevance | Intended audience is Providers/Patients |
| Audio Quality | 1) All words can be clearly heard without significant background noise or distracting audio effects |
| | 2) Most words are understandable, there may be minimal background noise |
| | 3) Poor quality limits comprehension of the material |
| Video Quality | 1) Professionally produced video with excellent quality and effects |
| | 2) Home video |
| | 3) Grainy video that affects ability to see details of relevant presentation |
| Accuracy Score | 1) All information is medically accurate |
| | 2) Information is accurate but either make minor mistakes, or leaves out important, relevant facts |
| | 3) Information is largely inaccurate |
| | 4) Information has active disinformation |
| Comprehensiveness Score | 1) Complete presentation for its goal |
| | 2) Mostly complete for its goal with minor omissions |
| | 3) Incomplete presentation for its goal with major omissions |
| | 4) Incomplete presentation that was actively misleading |
| Glaucoma specific questions (1 if addressed, 0 if not addressed) | 1) What is glaucoma? |
| | 2) What is the course of untreated/poorly treated glaucoma? |
| | 3) What is the goal of glaucoma treatment (ie pressure control)? |
| | 4) What is the proposed glaucoma treatment? |
| | 5) What are the risks of the proposed glaucoma treatment? |
| Authority[a] | (T)estimonial, (A)dvertisement, (E)ducational |

**Notes**: [a]Testimonials were video reports by patients. Educational videos were those produced by an academic institution or if it claimed that its primary purpose was to educate the viewers. Advertisements were those that advertised a practice's services at any point.

evaluated to determine whether five glaucoma-specific questions were answered (Table 1). These questions were derived from discussion amongst the authors to determine the basic information deemed most relevant and important for glaucoma patients to know. Furthermore, an additional fellowship trained glaucoma faculty graded and reviewed a sample of videos to confirm the observers' evaluations.

Reliability of the grading was examined by calculating kappa coefficients. Scores for the videos in each category were compared using Mann–Whitney test. Videos that were a combination of two categories were assigned a value of 0.5 in each category to effectively capture the dual categorical nature of a video while maintaining the correct sum of videos. The correlation of scores with total views and with views per day was studied using ordinary least squares regression.

All data handling and analysis were carried out using Excel (Microsoft, Seattle, WA) and Python (Python Language Reference, version 3.7.6), using libraries such as Pandas, NumPy, and Statsmodel.

## Results

A total of 74 YouTube and 19 Facebook videos met inclusion criteria. For YouTube videos, the average view count was 104.0 per day, or an average of about 37,960 views per year. Of the 74 YouTube videos analyzed, 65.5 (89.7%) were primarily educational videos, 3.5 (4.8%) were primarily advertisements, and 4 (5.5%) were primarily testimonials. Of the 19 Facebook videos analyzed, 12.5 (65.8%) were primarily educational videos, 4 (21.1%) were primarily advertisements, and 2.5 (13.2%) were primarily testimonials.

Overall, the inter-rater reliability was acceptable for all categories. Validity was assessed by comparison between the two observers, with an additional fellowship trained glaucoma specialist evaluating a randomly selected subset of data. The kappa coefficient was found to be between 0.60 and 0.79 for video and audio ratings (considered moderate

**Table 2** Summary Statistics of Average Quality of Advertisement (A), Educational (E), Testimonial (T) Videos, Followed by Inter-Category Comparisons (Mann–Whitney *U*-TesT)

| Category (Max) | Audio (3) | Video (3) | Accuracy (4) | Comp (4) | Glaucoma Total (5)[a] |
|---|---|---|---|---|---|
| Advertisement | 2.50 | 2.21 | 2.13 | 1.67 | 2.46 |
| Educational | 2.84 | 2.58 | 3.32 | 2.95 | 3.06 |
| Testimonial | 2.13 | 2.25 | 2.31 | 1.88 | 1.75 |
| A-E | 0.045 | 0.127 | 0.004 | 0.002 | 0.261 |
| A-T | 0.070 | 0.238 | 0.040 | 0.017 | 0.013 |
| E-T | 0.643 | 0.939 | 0.589 | 0.537 | 0.487 |

**Note**: [a]The total number of questions of the five glaucoma specific questions as described in the Methods section that were answered.

**Table 3** Rate at Which Glaucoma-Related Questions Were Answered in YouTube Videos

| Question | Percentage of Videos Addressing the Question (n=74) |
|---|---|
| What is glaucoma? | 73.6 |
| What is the course of untreated/poorly treated glaucoma? | 64.9 |
| What is the goal of glaucoma treatment? | 63.5 |
| What is the proposed glaucoma treatment? | 83.8 |
| What are the risks of the proposed glaucoma treatment? | 16.9 |

reliability) and 0.80–0.89 for accuracy and comprehensive ratings (considered strong reliability).[24] The average score for advertisement-type videos, educational-type videos, and testimonial-type videos are shown in Table 2 along with comparisons between the categories.

Eleven YouTube videos (15.1% of videos) and four Facebook videos (18.4% of videos), were graded as actively misleading. Though some videos discussed options including established surgical procedures, laser procedures, those with actively misleading information included suggestion or endorsement of treatment options that are potentially harmful, clinically unproven or outside the medical recommendations by glaucoma specialists (eg Preferred Practice Pattern).[25,26] For example, treatments such as applying digital ocular pressure, applying topical mixtures of honey, raw onion, lemon juice, and garlic, or use of unproven supplements including urea or marijuana were recommended or suggested to be cures for glaucoma. Several videos containing misinformation had high number of views. For the YouTube videos containing misinformation, the videos that had the highest number of views were 959,642 views, 358,286 views, and 308,346 views. The Facebook video with the highest number of views containing misinformation was 120,000 views.

None of the categories, when considered together in linear regression model, significantly correlated with total views nor with views per day. This was true overall, as well as for each of the video categories.

The most commonly answered question in the videos was what the proposed glaucoma treatment was, with approximately 83.8% of YouTube videos and 68.4% of Facebook videos answering this question. The question least addressed was what the risks of the proposed glaucoma treatment were, with only 16.9% of YouTube videos and 0.0% of Facebook videos answering the question. Further breakdown of glaucoma-related questions answered by videos is presented in Table 3 and Table 4.

**Table 4** Rate at Which Glaucoma-Related Questions Were Answered in Facebook Videos

| Question | Percentage of Videos Addressing the Question (n=19) |
|---|---|
| What is glaucoma? | 65.8 |
| What is the course of untreated/poorly treated glaucoma? | 47.4 |
| What is the goal of glaucoma treatment? | 34.2 |
| What is the proposed glaucoma treatment? | 68.4 |
| What are the risks of the proposed glaucoma treatment? | 0.0 |

A total of 36 videos were excluded from review. Three videos were excluded as the videos were made private or removed from YouTube prior to their review. Two videos were excluded as they were related to glaucoma in animals and one video was excluded as it was a song. The remaining 30 videos were excluded because they were not entirely in English.

## Discussion

Glaucoma is highly prevalent, with over 3 million Americans affected by glaucoma and numbers estimated to hit 111 million by 2040 worldwide.[1] In comparison, the top 10 search results on YouTube regarding "Glaucoma Treatment" have an average of 743,000 views total (average 442 views per day) with the most popular video receiving over 1,219,000 views (over 1562 views per day). Though this includes repeat views as well as views by patients outside USA and by patients' families and providers, these counts support previous data that a large number of patients are utilizing internet resources including YouTube to learn about glaucoma treatment options.[7,8] Facebook similarly has a multitude of posts, comments, support groups and videos dedicated to understanding glaucoma and glaucoma treatment options.

Surveys by Pew Research Center suggest that upwards of 75% of patients utilize the internet to make informed decisions, and previously published papers looking at strabismus surgery content on YouTube have found that 16% of videos offered potentially harmful or misleading information.[21,27] Furthermore, a study which examined social media topics which glaucoma patients reviewed suggests that treatment was one of the most commonly viewed topics, with unproven, complementary treatments generally being presented more positively than established evidence-based treatments.[8] Notably, a study interviewing patients found that patients expect their providers to acknowledge and discuss information they find online and offer a professional opinion.[28] As such, it is important for physicians to be aware of treatments being discussed online. Little research has been performed examining the quality of videos on glaucoma treatments available on social media outlets.

Notably, 15% of YouTube videos and 18% of Facebook videos actively spread misinformation that could be potentially harmful to patients, generally by advocating unproven treatments, including the application of dangerous products directly to the eye or forceful massage directly to the eyes. These videos reported potential cures for glaucoma, promising elimination of the need for medications as well as improving vision. Over half of these were portrayed to be educational. Given no evidence for any of these techniques to cure glaucoma coupled with the fact that only 64.9% of YouTube videos and 47.4% of Facebook videos discussed the potential harm from not treating glaucoma, a serious potential danger exists for patients seeking online information about glaucoma treatments.

A discussion of artificial intelligence algorithmic influence on social media is relevant. On social media sites such as Facebook and YouTube, a user's individualized feed is specifically tailored to that person's beliefs, interests, and prior search history based on complex artificial intelligence algorithms that attempt to perfectly match content to the individual.[29,30] In this way, individuals with glaucoma that are interested in health content, alternative treatments or novel approaches to existing medical treatments may be at higher risk of viewing potentially misinformative content if they have a history of viewing other potentially misinformative content.[31,32] In this way, an echo chamber of misinformation can form, leading some patients to vehemently believe misinformation and carry strong feelings of doubt when speaking to their physician about traditional glaucoma treatment. In our study, the focus was on a static search element search to approximate the initial experience of a patient learning more about their glaucoma and treatment options, and to mimic the likely method of how a patient is exposed to these videos. Moreover, if an individual is not signed in to a personalized account on a media site, there is less of an influence (and in some cases, zero influence) of the algorithmic recommendations. However, future studies may examine (perhaps through an experimental patient algorithmic simulation) how long-term suggested videos may provide a different experience for patients that commonly utilize a personal account on different media sites.

Moreover, patients may often be exposed to personal narratives discussing an individual's experience with a medical issue such as glaucoma. Testimonials and narratives may utilize sensationalized stories to encourage emotionally vulnerable patients to take actions and seek treatments that may contradict and undermine scientifically proven medical practices.[33,34] The potential outcome of severely worsening vision may prompt glaucoma patients to identify videos and resources that provide them with a false sense of hope, control, and security.[35] Physicians should be aware of their

patients' emotional states and how the diagnosis of glaucoma may impact patients' consumption and understanding of online health information.

Interestingly, even though patients may utilize internet-based applications such as YouTube and Facebook for initial education, the patient population overall demonstrates a higher level of trust in physicians over online resources.[4] Patients often view information online, but prefer discussion with their physician to improve their understanding of medical terminology.[36] Consequently, it is important for providers to understand how increasingly widespread access to internet and various resources may change patient discussions and the role of the physician in deciphering and disseminating medical information. Patients may come to clinic with a set of preconceived ideas concerning glaucoma and the treatment they may require; at this point, the physician can first determine how much the patient understands about the disease and then explain, address, and correct any misinformation the patient has encountered.[37] It is helpful for providers to be acquainted with the type of information patients may encounter during their own online research.

We found that the majority of videos viewed on YouTube and Facebook in relationship to glaucoma treatments were portrayed as educational (89.7% of YouTube videos and 65.8% of Facebook videos) as opposed to advertisements or testimonials. On average, the accuracy of these educational videos was found to be higher than that of adverts or testimonials as seen in Table 2. Even so, the majority of videos did not inform viewers of the risks of untreated glaucoma or the goals of glaucoma treatment. Furthermore, only 16.9% of YouTube videos and no Facebook videos discussed potential risks for procedures described in videos. Though not all videos are expected to answer each question, this does highlight the type of information that is readily available to patients online. Physicians should be aware that their patients may be accessing the internet, including YouTube and Facebook, for treatment information and explanations. They should note what options are being advertised and what issues are not being discussed in these videos so that providers can spend extra time addressing these deficiencies with patients. Physicians may also want to prepare explanations of how certain medical treatment options are more effective than other advertised methods by citing relevant research studies and statistics to emphasize the thorough scientific processes utilized in approving a therapeutic treatment option.

There was no correlation between view count and quality, comprehension, or accuracy. As such, providers cannot assume patients will filter out low quality content by popularity. Furthermore, it suggests that videos including misleading information or lacking pertinent facts could be popularized as much as well-produced, well-researched videos. The data collected supports this possibility; on both platforms, there were videos that contained misinformation that had several hundred thousand views, demonstrating that misinformative videos have a strongly destructive potential even if small in number of absolute videos. Thus, rather than seeking false reassurance in number of views or trust in the website's algorithm, providers may wish to review a few select videos and websites to recommend to their patients. Alternatively, they may pursue even higher control over the content quality by producing and uploading such videos themselves, joining a rising trend.[38]

Limitations of this study include the subjective nature of the analysis. Video and audio categories had the least agreement with kappa values of 0.60 and 0.76, respectively. These categories may have had more disagreement because of the inherent subjective interpretation involved in these specific categories. However, two independent reviewers were used with acceptable reliability based on kappa values. Additionally, an additional fellowship-trained glaucoma attending reviewed a sample of videos. The CRAAP criteria method used has been previously validated, but the CRAAP criteria does have a heavier focus on currency and authority which may not adequately capture the nuances of medical accuracy in a video format. In future studies, using other criteria in addition to the CRAAP criteria may provide further insight. The search terms used in this review may not be the search terms used by the general population, though terms such as "cure", "treatment", and "eye pressure" were used to best approximate patient searches. Of note, patients may not be the only source of views for videos; physicians, patient family members, and industry representatives could be viewing the videos in addition to patients. Moreover, there is constant addition and removal of online videos, so the availability of these videos may fluctuate over time. We have captured the availability of videos at a point in time (namely August 2025) but recognize that shifts can occur over time. In addition, the inclusion of sponsoring status would be another measure that can be used to determine the impact and provide further depth of perspective of the reviewed videos. However, although social media platforms provide tools for creators to label sponsored videos, compliance is often inconsistent; reports suggest only a fraction of sponsored content is properly marked so it is difficult to accurately capture this

information. The number of Facebook videos is lower than the number of YouTube videos and thus analysis is weaker powered. However, there is value in including the statistical analysis of Facebook videos as Facebook is a developing online location for video misinformation, and, although it is not as high content as YouTube, it is a utilized resource that is helpful to share information about. Lastly, YouTube and Facebook may not be the primary source of information for patients; however, given the popularity of YouTube and Facebook as unified sources of information, the large number of views these videos received, and the propensity for older adults to use these social media sites, YouTube and Facebook are a reasonable proxy for quality of overall internet-based information for glaucoma patients.

In conclusion, many YouTube and Facebook videos on glaucoma treatments are lacking relevant or important content, with 15% of YouTube videos and 18% of Facebook videos potentially spreading dangerous or misleading information. Being cognizant of the popularity of these videos among patients, and the specific deficiencies therein may inform the discussion of glaucoma treatment options between physicians and patients.

## Ethics Statement

Social media platforms utilized include YouTube and Facebook which did not require additional permission requirements for the purposes of this project. All videos were publicly available content and no personal or identifiable information was utilized. Data collection adhered to the ethical guidelines for digital research from the British Sociological Association.

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