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Educational Quality, Reliability, and Content Scope of English-Language YouTube Videos on Keratoconus and Corneal Ectasia: A Cross-Sectional Study

İngilizce YouTube Videolarında Keratokonus ve Korneal Ektazinin Eğitsel Kalitesi, Güvenilirliği ve İçerik Kapsamı: Kesitsel Çalışma

Bora Deniz Argon, Enes Soyyiğit

University of Health Sciences Türkiye, İstanbul Prof. Dr. Cemil Taşcıoğlu City Hospital, Clinic of Ophthalmology, İstanbul, Türkiye

ABSTRACT

Background: To evaluate the educational quality, reliability, treatment-information quality, and topic-specific content scope of English-language YouTube videos on keratoconus and corneal ectasia.

Materials and Methods: This cross-sectional content analysis used a finalized working dataset dated December 14, 2025. A total of 167 videos were screened; 90 underwent structured extraction and 78 met the final eligibility criteria. Eligibility required that content be in English, be unique, and be directly relevant to keratoconus/corneal ectasia education. Videos were independently evaluated by two reviewers, and the evaluations were finalized by consensus using the JAMA benchmark criteria, the Global Quality Score (GQS), the keratoconus-specific content score (KCSS), and DISCERN. Correlations were examined with Spearman correlation analysis, and uploader group differences were tested with the Kruskal-Wallis test followed by Bonferroni-adjusted pairwise comparisons.

Results: Among 78 included videos, mean JAMA, GQS, KCSS, and DISCERN total scores were 2.67 ± 0.86, 3.78 ± 0.86, 18.28 ± 6.39, and 40.68 ± 10.99, respectively. All principal scoring systems were positively correlated with each other. Video duration was positively associated with all four quality scores. Academic/professional videos achieved the highest mean scores across the main instruments and outperformed commercial/industry videos on all major scales. In contrast, popularity metrics, such as views, likes, and views per day, were not reliable surrogates for educational value.

Conclusion: Within this curated English-language sample, YouTube videos on keratoconus and corneal ectasia showed overall moderate-to-good educational value, but substantial heterogeneity remained, and the quality of treatment information was only fair. Academic sources performed best, whereas popularity was not a reliable indicator of content quality. Clinicians should actively direct patients toward vetted, institution-led resources.

Keywords: Keratoconus, corneal ectasia, YouTube, patient education, video quality, DISCERN score

ÖZ

Amaç: Keratokonus ve korneal ektazi ile ilgili İngilizce YouTube videolarının eğitsel kalitesini, güvenilirliğini, tedavi bilgisi kalitesini ve konuya özgü içerik kapsamını değerlendirmek.

Gereç ve Yöntemler: Bu kesitsel içerik analizi, 14 Aralık 2025 tarihli son çalışma veri seti kullanılarak gerçekleştirildi. Toplam 167 video tarandı; 90 video yapılandırılmış veri çıkarımı için değerlendirildi ve 78 video nihai uygunluk kriterlerini karşıladı. Dahil edilme kriterleri İngilizce dilinde olma, özgün içerik sunma ve keratokonus/korneal ektazi eğitimiyle doğrudan ilişkili olma şeklinde belirlendi. Videolar iki değerlendirici tarafından bağımsız olarak değerlendirildi ve nihai skorlar uzlaşı ile oluşturuldu. Değerlendirmede JAMA ölçütleri, Global Kalite Skoru (GKS), keratokonusa özgü içerik skoru (KCSS) ve DISCERN kullanıldı. Korelasyonlar Spearman analiziyle incelendi; yükleyici grupları arasındaki farklar Kruskal-Wallis testi ve Bonferroni düzeltmeli ikili karşılaştırmalarla değerlendirildi.

Address for Correspondence: Bora Deniz Argon, MD, University of Health Sciences Türkiye, İstanbul Prof. Dr. Cemil Taşcıoğlu City Hospital, Clinic of Ophthalmology, İstanbul, Türkiye

E-mail: drboradenizargon@gmail.com **ORCID ID:** orcid.org/0000-0002-8064-6017

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ÖZ

Bulgular: Nihai analize dahil edilen 78 videoda ortalama JAMA, GKS, KCSS ve DISCERN toplam skorları sırasıyla 2,67 ± 0,86, 3,78 ± 0,86, 18,28 ± 6,39 ve 40,68 ± 10,99 idi. Tüm temel skor sistemleri birbiriyle pozitif korelasyon gösterdi. Video süresi dört kalite skorunun tamamıyla pozitif ilişkiliydi. Akademik/profesyonel videolar tüm temel değerlendirme araçlarında en yüksek ortalama skorlara ulaştı ve ticari/endüstri videolarından anlamlı olarak daha yüksek skorlar elde etti. Buna karşılık görüntülenme, beğeni ve günlük görüntülenme gibi popülerlik ölçütleri eğitsel değer için güvenilir göstergeler değildi.

Sonuç: Bu seçilmiş İngilizce örneklemde, keratokonus ve korneal ektazi ile ilgili YouTube videoları genel olarak orta-iyi düzeyde eğitsel değer göstermiştir; ancak belirgin heterojenite devam etmekte ve tedavi bilgisi kalitesi yalnızca orta düzeydedir. Akademik kaynaklar en iyi performansı göstermiştir; popülerlik ise içerik kalitesi için güvenilir bir gösterge değildir. Klinisyenler hastaları doğrulanmış, kurum temelli çevrim içi kaynaklara aktif olarak yönlendirmelidir.

Anahtar Kelimeler: Keratokonus, korneal ektazi, YouTube, hasta eğitimi, video kalitesi, DISCERN skoru

Introduction

Keratoconus is a progressive ectatic corneal disorder characterized by corneal thinning, steepening, irregular astigmatism, and reduced visual quality. Early diagnosis and timely referral are important because progression often begins in adolescence or young adulthood, and modern treatment can alter the natural history of the disease when offered at an appropriate stage (1,2).

Patient education is therefore an essential part of keratoconus care. Many patients now seek health information online before or after clinical visits. YouTube is particularly influential because it is freely accessible, visual, and easily shared. However, YouTube videos are not routinely peer reviewed, and the accuracy, balance, and completeness of medical information can vary substantially (3,4).

This variability is especially relevant to keratoconus and corneal ectasia, where patients may encounter complex and sometimes commercially promoted information about cross-linking, contact lenses, intracorneal ring segments, laser-based procedures, and keratoplasty. Incomplete or biased information may affect expectations and shared decision-making.

The aim of this study was to evaluate English-language YouTube videos on keratoconus and corneal ectasia using complementary instruments to assess reliability, overall educational quality, disease-specific content scope, and treatment information quality. Secondary objectives were to examine whether popularity metrics correlated with educational value and to compare quality scores across uploader categories.

Materials and Methods

This was a cross-sectional content analysis of publicly available YouTube videos. The finalized dataset used for analysis was dated December 14, 2025.

Search Strategy and Platform Access

The YouTube search was performed using a standardized browser session without logging into a personal YouTube or Google account. Browser history, cookies, and cache were cleared before searching, and no personalized recommendations, suggested videos, playlists, or external links were followed. YouTube was searched using the default relevance ranking. The following keywords were entered exactly into the YouTube search engine: “keratoconus”, “keratoconus treatment”, “keratoconus surgery”, “keratoconus screening”, “keratoconus contacts”, “keratoconus cross-linking”, “corneal crosslinking”, “corneal ectasia”, and “keratokonus”.

For each keyword, the first 20 results displayed on YouTube were screened when available. Records from all keyword searches were merged into a working list, yielding 167 records for title, channel, description, and preview screening.

Screening and Eligibility

Screening and scoring were performed by two reviewers with clinical ophthalmology experience and familiarity with corneal disease. Both reviewers independently screened the records and scored the eligible videos. Initial independent scores were used to assess interobserver agreement before consensus was reached. Disagreements about eligibility or scoring were then resolved by consensus discussion, and the final consensus scores were used for all descriptive and comparative analyses.

A video was considered irrelevant if its title, description, transcript, or full video content indicated that keratoconus or corneal ectasia was not the main educational focus, even if the keyword appeared incidentally. Videos were eligible if they were in English, unique, directly relevant to keratoconus or corneal ectasia education, and sufficiently informative for structured scoring. Duplicate or near-duplicate uploads, non-English videos, patient testimonials with limited

educational depth, narrow technical clips without broader educational context, channel-promotion content, live recordings without structured educational value, very short clips, and predominantly promotional material without substantial educational content were excluded.

Of the 167 screened records, 90 underwent full-video eligibility assessment and structured extraction. Seventy-eight videos met the final inclusion criteria. The study selection workflow is summarized in Figure 1.

Data Extraction and Uploader Categories

For each included video, the following variables were extracted from the finalized dataset: keyword group, URL, short title, channel, uploader/source type, content type, upload date, duration, views, likes, days online, views/day, and quality scores.

Uploader categories were defined a priori. Academic/Professional videos were those uploaded by universities, hospitals, academic departments, professional societies, continuing education organizations, patient foundations, or other institution-led educational channels. Clinician-led videos were uploaded through channels primarily associated with individual ophthalmologists, optometrists, or clinicians rather than with institutions. Commercial or industry videos were uploaded by private clinics, companies, device or contact-lens manufacturers, or channels with a clear service-promotion or industry-marketing component. Media/platform videos were uploaded by general media outlets or digital video platforms that did not clearly identify a clinician, academic institution, or professional society as the primary source.

Assessment Instruments

Reliability was assessed using the JAMA benchmark criteria, which allocate one point each for authorship, attribution, disclosure, and currency (0-4 points) (4). Overall

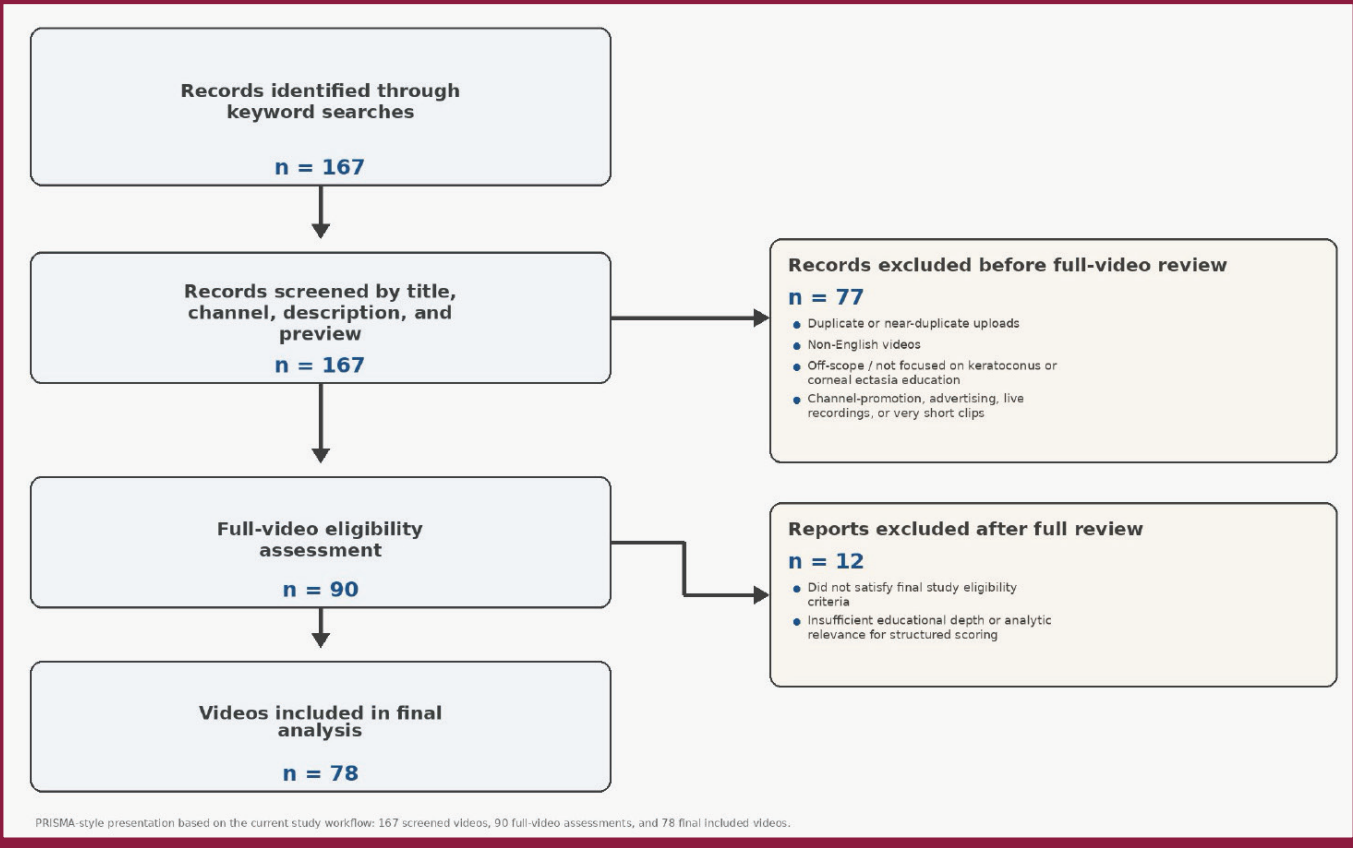


Figure 1. PRISMA-style flow diagram of video selection. A total of 167 records were identified through keyword searches; 90 videos underwent full-video eligibility assessment, and 78 videos met the final inclusion criteria. Exclusions before full-video review (n = 77) consisted mainly of duplicate or near-duplicate uploads, non-English videos, off-scope material, channel-promotion content, live recordings, and very short clips; exclusions after full review (n = 12) resulted from failure to meet final study eligibility criteria or from insufficient educational depth for structured scoring.

educational quality was assessed using the 5-point Global Quality Score (GQS), where higher scores indicate better flow, completeness, and usefulness for patients (5).

Disease-specific content scope was assessed using a keratoconus-specific content score (KCSS) developed for this study to evaluate coverage of eight clinically relevant domains: definition/basic overview, symptoms, risk factors/etiology,diagnosis/examinations,progression/prognosis,non-surgical management, surgical/interventional management, and complications/follow-up. Each domain was scored from 0 to 4 points, giving a total score from 0 to 32.

Treatment-information quality was assessed with DISCERN, a standardized tool for judging consumer health information about treatment choices (6). DISCERN includes 16 items, each scored from 1 to 5 points, producing a total score ranging from 16 to 80. Items 1-8 evaluate reliability, items 9-15 assess information on treatment choices, and item 16 provides an overall quality rating. The assessment instruments and scoring systems are summarized in Table 1.

This study used only publicly accessible online videos and did not involve direct human or animal participation, intervention, or identifiable personal health data. Therefore,

Table 1. Assessment methods and scoring systems applied.

Instrument	Detailed criteria and scoring
JAMA benchmark criteria	1. Authorship: author names, credentials, or affiliations are identifiable. 2. Attribution: references or source attribution for factual content are provided. 3. Disclosure: ownership, sponsorship, advertising, or conflicts of interest are disclosed. 4. Currency: posting and/or update date is stated. Scoring: 1 point for each criterion met; total score 0–4.
Global Quality Score (GQS)	1. Poor quality, poor flow, most information missing, not useful for patients. 2. Limited quality, some information present, of very limited usefulness. 3. Moderate quality, partly useful, some important topics covered. 4. Good quality and flow, most relevant topics covered, useful for patients. 5. Excellent quality and flow, highly useful for patients.
Keratoconus-specific content score	Eight disease-specific domains were rated from 0 to 4 points each: 1. Definition/basic overview 2. Symptoms and patient complaints 3. Risk factors/etiology 4. Diagnosis/examinations 5. Progression/prognosis 6. Non-surgical management 7. Surgical/interventional management 8. Complications/follow-up and indications to seek care Scoring per domain: 0 = absent, 1 = minimal/inaccurate mention, 2 = limited coverage, 3 = adequate coverage, 4 = comprehensive and accurate coverage. Total score 0–32.
DISCERN	Standardized instrument for evaluating consumer health information about treatment choices. All 16 items were scored from 1 to 5 points and summed (total score 16-80); higher scores indicate better quality. Items 1-8: reliability of the publication 1. Are the aims clear? 2. Does the publication achieve its aims? 3. Is it relevant? 4. Are the sources of information clearly stated? 5. Is the date of the information clearly stated? 6. Is it balanced and unbiased? 7. Are additional sources of support and information listed? 8. Are areas of uncertainty mentioned? Items 9-15: quality of information on treatment choices 9. Does it describe how each treatment works? 10. Does it describe the benefits of each treatment? 11. Does it describe the risks of each treatment? 12. Does it describe what would happen if no treatment is used? 13. Does it describe how treatment choices affect quality of life? 14. Is it clear that there may be more than one possible treatment choice? 15. Does it support shared decision-making? Item 16: overall quality rating 16. Overall rating of the publication as a source of information on treatment choices.
Popularity metrics	Recorded exploratory variables were views, likes, days online, views/day, and video duration.

formal ethics committee approval and informed consent were not required.

Statistical Analysis

Continuous variables were summarized as mean ± standard deviation, or as median with interquartile range (IQR) when distributions were skewed. Categorical variables were summarized as numbers and percentages. Because most popularity variables and ordinal quality measures were non-normally distributed, non-parametric analyses were used. Correlations were examined using Spearman's rank correlation analysis. Differences among uploader categories were assessed with Kruskal-Wallis testing followed by Bonferroni-adjusted pairwise Mann-Whitney U tests. Interobserver agreement before consensus was quantified using intraclass correlation coefficients (ICCs) for JAMA, GQS, KCSS, and DISCERN total scores. ICCs were calculated using a two-way mixed-effects model with absolute agreement for single measures. All statistical analyses were conducted using IBM SPSS Statistics for Windows, version 28.0 (IBM Corp., Armonk, NY, USA). A confidence level of 95% was adopted, and p values less than 0.05 were considered statistically significant.

Results

Of 167 screened records, 90 underwent full-video eligibility assessment and 78 met the final inclusion criteria. The PRISMA-style flow diagram is presented in Figure 1.

Among the 78 included videos, 27 (34.6%) were clinician-led, 24 (30.8%) were academic/professional, 23 (29.5%) were commercial/industry, and 4 (5.1%) were media/platform uploads.

Mean total scores for JAMA, GQS, KCSS, and DISCERN were 2.67 ± 0.86, 3.78 ± 0.86, 18.28 ± 6.39, and 40.68 ± 10.99, respectively. Median views, days online, and views/day were 904.50 (IQR, 342.25-2568.00), 1470.00 (IQR, 756.25-2499.75), and 0.78 (IQR, 0.27-2.18), respectively (Table 2).

Before consensus was reached, interobserver agreement was moderate for the narrower ordinal instruments JAMA and GQS and excellent for the KCSS and DISCERN total scores, with ICC values of 0.53, 0.63, 0.94, and 0.98, respectively.

All four principal scoring systems were positively correlated (Table 3). JAMA correlated with GQS (rho = 0.582; $p < 0.001$), KCSS (rho = 0.507; $p < 0.001$), and DISCERN (rho = 0.417; $p < 0.001$). The strongest association was between GQS and DISCERN (rho = 0.798; $p < 0.001$). Video duration correlated positively with JAMA (rho = 0.535; $p < 0.001$), GQS (rho = 0.477; $p < 0.001$), KCSS (rho = 0.689; $p < 0.001$), and DISCERN (rho = 0.515; $p < 0.001$). In contrast, views, likes, days online, and views/day were not reliable indicators of educational quality.

Academic and professional videos achieved the highest mean scores across all four principal rating systems (JAMA 3.17 ± 0.64; GQS 4.21 ± 0.59; KCSS 21.88 ± 5.23; DISCERN 47.96 ± 9.35) (Table 4). Global between-group differences were significant for JAMA ($p = 0.004$), GQS ($p = 0.007$), KCSS ($p = 0.005$), and DISCERN ($p < 0.001$). Bonferroni-adjusted pairwise comparisons showed that academic/professional videos scored significantly higher than commercial/industry videos on all four main scales.

Discussion

This study provides a structured evaluation of English-language YouTube videos on keratoconus and corneal ectasia. The main finding was that the curated sample showed moderate-to-good overall educational quality, whereas the quality of treatment information remained only fair. This pattern suggests that many videos explain the disease reasonably well, but fewer provide balanced and complete guidance on treatment choices.

Table 2. Descriptive characteristics and quality scores of included videos.

Variable	Mean ± SD	Median (IQR)	Range
Views	15138.63 ± 47218.35	904.50 (342.25-2568.00)	12.00-278807.00
Likes	300.74 ± 962.41	12.00 (6.00-32.00)	0.00-5600.00
Days online	1741.06 ± 1308.76	1470.00 (756.25-2499.75)	46.00-5064.00
Views/day	11.56 ± 31.73	0.78 (0.27-2.18)	0.02-172.96
Duration, min	22.20 ± 21.64	13.76 (5.02-30.06)	3.12-111.37
JAMA score	2.67 ± 0.86	3.00 (2.00-3.00)	1.00-4.00
GQS	3.78 ± 0.86	4.00 (3.00-4.00)	2.00-5.00
KCSS	18.28 ± 6.39	18.00 (14.00-23.00)	5.00-30.00
DISCERN total	40.68 ± 10.99	39.50 (35.25-48.75)	16.00-63.00
DISCERN mean item score	2.54 ± 0.69	2.47 (2.21-3.04)	1.00-3.94

IQR, interquartile range; GQS, Global Quality Score; KCSS, keratoconus-specific content score; SD, standard deviation.

Several previous studies have evaluated keratoconus-related YouTube content. Ozdemir Zeydanli and Alkan (7) reported low DISCERN, JAMA, and GQS scores in a broad keratoconus sample. Bozali and Yalinbas Yeter (8) also found predominantly low-quality content. Seyyar and Tıskaoğlu (9) reported intermediate usefulness with marked variability. Çetinkaya Yaprak and Erkan Pota (10), who focused on treatment-related keratoconus videos, found somewhat more favorable results. International survey data also suggest that many patients with keratoconus have incomplete disease knowledge, supporting the need for reliable patient education resources (11). Similar concerns regarding the variable quality of YouTube-based ophthalmic information have also been reported for refractive surgery, multifocal intraocular lenses, uveitis, and dacryocystorhinostomy (12-15).

The higher scores observed in the present study are most likely related to methodological differences rather than a true improvement in YouTube content quality over time. The present analysis intentionally excluded duplicates, testimonials with limited educational depth, narrowly off-scope materials, and videos lacking sufficient standalone educational value. This enriched the final sample of structured educational videos, including lectures, webinars, and institution-led materials. Although this approach is appropriate for evaluating clinician-centered educational value, it may introduce selection bias from a patient education perspective. Some excluded videos may be easier to understand, more engaging, or more likely to be selected by patients in real-world YouTube searches. Therefore, the results should not be interpreted as representing the complete, unfiltered patient viewing experience.

The DISCERN findings are important. Many videos covered disease definitions, symptoms, and diagnoses, but fewer discussed treatment choices in a balanced way. In particular, videos often provided limited information about the risks of different treatments, the consequences of no treatment, effects on quality of life, and shared decision-making. These domains are central to DISCERN and clinically relevant because keratoconus management may involve several staged options, including cross-linking, contact lenses, intracorneal ring segments, laser-based procedures, and keratoplasty.

Video duration was the most consistent video-level correlate of quality. Longer videos may provide sufficient time to cover multiple domains, including diagnosis, progression, and treatment. However, duration alone is not a guarantee of quality. Some longer videos may still be repetitive, incomplete, or promotional.

Popularity metrics did not reliably reflect educational value. Views, likes, and views/day were not meaningfully associated with the principal quality scores. This finding is clinically relevant because YouTube visibility is shaped by

Table 3. Spearman correlation matrix of quality scores and selected popularity metrics.

Variable	JAMA	GQS	KCSS	DISCERN	Views	Likes	Days online	Views/day	Duration
JAMA	1.000	0.582*	0.507*	0.417*	-0.105	-0.034	-0.095	-0.074	0.535*
GQS	0.582*	1.000	0.704*	0.798*	0.071	0.124	-0.119	0.072	0.477*
KCSS	0.507*	0.704*	1.000	0.655*	-0.162	-0.084	-0.121	-0.175	0.689*
DISCERN	0.417*	0.798*	0.655*	1.000	0.060	0.151	-0.080	0.042	0.515*
Views	-0.105	0.071	-0.162	0.060	1.000	0.882*	0.209	0.767*	-0.065
Likes	-0.034	0.124	-0.084	0.151	0.882*	1.000	0.095	0.741*	0.115
Days online	-0.095	-0.119	-0.121	-0.080	0.209	0.095	1.000	-0.365*	-0.213
Views/day	-0.074	0.072	-0.175	0.042	0.767*	0.741*	-0.365*	1.000	-0.010
Duration	0.535*	0.477*	0.689*	0.515*	-0.065	0.115	-0.213	-0.010	1.000

Values are Spearman rho coefficients. *p < 0.01. Pairwise complete-case analysis was used. GQS, Global Quality Score; KCSS, keratoconus-specific content score.

Table 4. Quality scores according to broad uploader category.

Uploader category	n (%)	JAMA	GQS	KCSS	DISCERN
Academic/professional	24 (30.8%)	3.17 ± 0.64	4.21 ± 0.59	21.88 ± 5.23	47.96 ± 9.35
Clinician-led	27 (34.6%)	2.59 ± 0.64	3.78 ± 1.01	16.22 ± 6.78	40.30 ± 10.63
Commercial/industry	23 (29.5%)	2.30 ± 1.11	3.48 ± 0.59	16.52 ± 4.75	34.13 ± 7.70
Media/platform	4 (5.1%)	2.25 ± 0.50	3.00 ± 1.41	20.75 ± 10.05	37.25 ± 15.73

Kruskal-Wallis p-values: JAMA = 0.004; GQS = 0.007; KCSS = 0.005; DISCERN < 0.001. Bonferroni-adjusted pairwise comparisons showed that academic/professional videos scored significantly higher than commercial/industry videos on all four main scales. GQS, Global Quality Score; KCSS, keratoconus-specific content score.

engagement and recommendation algorithms rather than by medical accuracy or completeness. Patients who search without guidance may, therefore, encounter popular videos that are insufficiently educational or balanced.

Academic and professional uploads performed best across all principal scoring systems. This supports active clinician guidance to vetted institutional resources rather than reliance on unguided patient searches. Professional societies, academic centers, and patient foundations may improve digital patient education by producing concise, balanced, and regularly updated videos that address both general disease information and treatment decision-making.

Study Limitations

This study has several limitations. First, YouTube is dynamic; videos, rankings, and engagement metrics change over time. Second, although a standardized, non-logged-in browser session was used, residual platform-related personalization or geographic variation in search results cannot be fully ruled out. Third, only English-language videos were assessed, so the findings may not apply to other languages or regions. Fourth, uploader categories were assigned based on visible channel metadata and therefore involved some degree of reviewer judgment. Fifth, comment counts were inconsistently available in the finalized dataset and therefore were excluded from the correlation analysis. Sixth, DISCERN was originally developed for written consumer health information, although it has been widely adapted for YouTube research. Finally, the strict curation strategy improves analytical interpretability, but may not reflect the broader, unfiltered search experience or preferences of patients using YouTube in real-world settings.

Conclusion

In this curated sample of English-language YouTube videos on keratoconus and corneal ectasia, educational quality and reliability were overall moderate to good, whereas the quality of treatment information was only fair. Academic and professional uploads performed best, whereas popularity metrics were not reliable indicators of educational value. Clinicians should guide patients toward vetted, institution-led online resources.

Ethics

Ethics Committee Approval: Formal ethics committee approval and informed consent were not required because the study used only publicly accessible online video content and did not involve human or animal intervention or identifiable personal health data.

Informed Consent: Informed consent was not required because this study used only publicly accessible online videos and did not involve direct human or animal participation, intervention, or identifiable personal health data.

Footnotes

Authorship Contributions

Concept: B.D.A., E.S., Design: B.D.A., E.S., Data Collection or Processing: B.D.A., E.S., Analysis or Interpretation: B.D.A., E.S., Literature Search: B.D.A., E.S., Writing: B.D.A., E.S.

Conflict of Interest: No conflict of interest was declared by the authors.

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