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Quality and reliability evaluation of brain glioma-related video content on social short video platforms: a cross-sectional study

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Abstract

Background

Short-video platforms have become important sources of health information for patients and the public. However, the quality and reliability of online information on glioma remain unclear. This study aimed to evaluate the content characteristics, quality, and reliability of glioma-related videos on TikTok and Bilibili.

Methods

A cross-sectional analysis was conducted by searching for glioma-related videos on TikTok and Bilibili. Relevant videos were screened according to predefined inclusion and exclusion criteria. Data on video duration, engagement metrics, uploader identity, and content domains were collected. Video quality and reliability were assessed using the Global Quality Score (GQS), modified DISCERN tool (mDISCERN), and Journal of the American Medical Association (JAMA) benchmark criteria. Mann–Whitney U tests, Kruskal–Wallis tests, Dunn's post-hoc tests with Bonferroni correction, and Spearman correlation analyses were performed.

Results

A total of 262 glioma-related videos were included. Compared with Bilibili, TikTok videos had significantly higher engagement metrics, including likes, collections, comments, and shares (all $P < 0.001$). Content distribution was imbalanced: treatment (75.6%) and diagnosis (66.4%) were frequently addressed, whereas epidemiology (18.7%), etiology (13.0%), recurrence (27.9%), and prognosis (35.1%) were underrepresented. The educational quality and reliability of glioma-related videos were generally limited on both platforms, with median GQS, mDISCERN, and JAMA scores of 2.00 (IQR, 2.00–3.00), 2.00 (IQR, 2.00–3.00), and 3.00 (IQR, 3.00–3.00), respectively. TikTok videos received significantly higher GQS ($P = 0.030$) and JAMA scores ($P < 0.001$) than Bilibili videos, whereas mDISCERN scores did not differ significantly between the platforms ($P = 0.325$). By uploader type, videos uploaded by specialists received significantly higher GQS, mDISCERN, and JAMA scores than those uploaded by nonspecialists and individual users (all $P < 0.05$). Engagement metrics were weakly positively correlated with GQS and mDISCERN scores, whereas video duration was weakly negatively correlated with JAMA scores ($\rho = -0.31$).

Conclusions

Glioma-related videos on the two platforms showed limited educational quality and incomplete coverage of several clinically relevant topics. In the future, healthcare professionals should be encouraged to participate more actively in the creation of glioma-related educational videos. Greater attention should

also be given to underrepresented topics such as recurrence, prognosis, epidemiology and etiology to improve the accessibility and educational value of online glioma information.

1 Introduction

Glioma is a type of tumor that originates from glial cells in the central nervous system, accounting for approximately 27% of all central nervous system tumors[1, 2]. It typically presents with symptoms such as headache, seizures, cognitive impairment, and motor dysfunction[3]. Approximately 70% of patients exhibit varying degrees of cognitive dysfunction at the time of diagnosis, and 10–15% also experience depressive symptoms[4, 5]. Owing to their rapid progression and tendency to recur, gliomas impose a significant physical burden on patients, contributing to substantial psychological stress and a decline in quality of life[6, 7]. Furthermore, patients require long-term care and continuous medical support, which further increases the burden on patients and caregivers[8]. The dissemination of accurate and reliable health information is crucial for raising public awareness of gliomas, promoting early detection, and improving disease management in affected individuals.

With the development of the mobile internet, short video platforms have become a key channel for the dissemination of health information[9]. Platforms such as TikTok and Bilibili, with their broad user bases and efficient distribution mechanisms, have become prominent outlets for health education[10]. Their interactivity and extensive reach have made short videos an increasingly prominent medium for health education[11]. However, short video platforms also face the challenge of inconsistent content quality, which may lead to public misunderstanding of diseases and influence health decision-making[12]. Previous studies on videos related to bipolar disorder[13], gonorrhea[14], and diabetes[15] found that although these videos often have high engagement metrics, their quality and reliability are generally limited. Given that glioma patients often experience cognitive impairments, depressive symptoms, and a high recurrence rate during treatment, along with a generally poor prognosis[16], it is essential to assess the quality and reliability of glioma-related videos.

This study provides a systematic evaluation of glioma-related videos on Bilibili and TikTok, examining not only the informational quality but also uploader characteristics, content completeness, and user engagement metrics. The aim of this study was to offer an updated and comprehensive overview of the current landscape of digital health communication surrounding glioma, with implications for patients, clinicians, and platform administrators.

2 Materials and methods

2.1 Research Design and Data Retrieval

This cross-sectional content analysis was conducted to evaluate the quality, reliability, and content characteristics of glioma-related videos on TikTok and Bilibili. On 12 December 2025, we searched Bilibili

(version 8.74.0) and Douyin (version 37.0.0) using the Chinese term “□□□□” (“brain glioma”). Videos were retrieved according to the default comprehensive ranking order generated by each platform, which was used to approximate the search results most likely to be encountered by general users. The top 150 videos from each platform were initially collected, yielding 300 videos for preliminary screening.

To minimize the potential influence of personalized recommendation algorithms, newly registered accounts without previous browsing or search history were used for the searches. Before retrieval, browsing history and cache data were cleared. The default platform settings were maintained during the search process. The ranking order at the time of retrieval was recorded, and the retrieved videos were saved for subsequent screening and evaluation.

2.2 Inclusion and Exclusion Criteria

Inclusion criteria: 1. Videos in Chinese; 2. Videos related to gliomas. Exclusion criteria: 1. videos unrelated to gliomas; 2. Duplicate videos; 3. promotional or advertisement videos; 4. Non-Chinese videos; Two reviewers independently screened the initially retrieved videos according to the predefined inclusion and exclusion criteria. Disagreements were resolved through discussion, and unresolved discrepancies were adjudicated by a third researcher. After screening, 262 eligible videos were included in the final analysis, including 140 videos from TikTok and 122 videos from Bilibili. The screening process is presented in Fig. 1.

2.3 Data Collection and Processing

For each eligible video, data were extracted using a standardized data collection form. The extracted information included platform, title, video duration, uploader identity, and user engagement metrics, including likes, comments, shares, and collections. Uploader identity was determined based on the information publicly available on the uploader’s profile and video page.

The uploaders were categorized into three groups: specialists, nonspecialists, and individual users. Specialists included neurosurgeons and oncologists. Nonspecialists included radiologists, pediatricians, pathologists, traditional Chinese medicine practitioners, and nurses. Individual users included patients, non-medical blogger,and other non-healthcare users. When the uploader category was unclear, classification was determined through discussion among the research team.

The video content was classified into seven predefined domains: epidemiology, etiology, clinical presentation, diagnosis, treatment, recurrence, and prognosis. These domains were selected to reflect key aspects of glioma-related patient education and disease information. Each video could be coded as containing more than one content domain. Content classification was performed according to predefined criteria, and disagreements were resolved through discussion or consultation with a third researcher.

2.4 Quality and Reliability Assessment

Video quality and reliability were assessed using the Global Quality Score (GQS)[17], modified DISCERN tool (mDISCERN)[18], and JAMA benchmark criteria (JAMA)[19]. The GQS is a five-point ordinal scale (1 = poor, 5 = excellent) that evaluates the overall educational quality based on criteria such as content completeness, ease of understanding, and usefulness to patients. Higher scores indicated better overall quality. The mDISCERN tool (maximum score: 5) evaluates the reliability of health information using five binary items: clarity and understandability, citation of reliable sources, balanced and unbiased presentation, provision of additional sources for patients, and acknowledgment of uncertainty. The JAMA score (total score: 4) emphasizes transparency and accountability and evaluates four domains: disclosure of author credentials and institutional affiliation, citation and copyright information, content timeliness (publication or update date), and comprehensive disclosure of conflicts of interest, funding sources, and ownership. Each item was scored dichotomously (1 point if present). Detailed descriptions of the three scoring systems are provided in Tables 1, 2, and 3. Each video was independently evaluated by two reviewers (Hu YD and Gu SS) and any discrepancies were resolved by a third researcher (Song JY).

Table 1
The Global Quality Score (GQS) quality criteria.

Item features	**Points**
Poor quality; poor flow of the videos; most information missing; not at all useful for patients	1
Generally poor quality; some information listed, but many important topics missing; of very limited use to patients	2
Moderate quality; suboptimal flow; some important adequately discussed, but other information poorly discussed; somewhat useful for patients	3
Good quality and generally good flow; most of the relevant information listed, but some topics not covered; useful for patients	4
Excellent quality and flow; very useful for patients	5

Table 2
The Modified DISCERN (mDISCERN) quality criteria.

Reliability Score
1. Is the video clear, concise, and understandable?
2. Are valid sources cited?
3. Is the content presented balanced and unbiased?
4. Are additional sources of content listed for patient reference?
5. Are areas of uncertainty mentioned?
* Each item was scored as 1 for “yes” and 0 for “no”, with a total score ranging from 0 to 5.

Table 3
The Journal of the American Medical Association (JAMA) benchmark criteria.

Score*	Score component	
1 score	Authorship	Author and contributor credentials and their affiliations should be provided.
1 score	Attribution	Clearly lists all copyright information and states references and sources for content.
1 score	Currency	Initial date of posted content and subsequent updates to content should be provided.
1 score	Disclosure	Conflicts of interest, funding, sponsorship, advertising, support, and video ownership should be fully disclosed.

*The criteria for each aspect were scored separately, with 1 point for each criterion and a total score of 4 points.

In addition, the study employed a content completeness checklist initially developed by Zhang et al. [20]and later refined by Hu et al.[21] to evaluate the informational integrity of the videos. Owing to the lack of a standardized assessment tool in this field, we expanded the original framework by incorporating a core domain on recurrence to account for the high recurrence rate associated with glioma. The final evaluation domains included epidemiology, etiology, clinical presentation, diagnosis, treatment, recurrence, and prognosis. Each domain was scored as follows: 2 points for a “full explanation,” indicating adequately and accurately presented information; 1 point for a “partial mention,” where the information was noted but not thoroughly elaborated; and 0 points if the information was “not mentioned.”

2.5 Statistical Analysis

Continuous variables and ordinal scores are presented as medians with interquartile ranges, whereas categorical variables are presented as frequencies and percentages. The Mann–Whitney U test was used to compare continuous variables between the two platforms. For comparisons among the three uploader categories, the Kruskal–Wallis test was first performed. When the overall Kruskal–Wallis test showed a statistically significant difference, Dunn’s post-hoc test with Bonferroni correction was used for pairwise comparisons.

Spearman’s rank correlation analysis was conducted to examine the associations between video quality and reliability scores and user engagement metrics. Inter-rater agreement between the two reviewers was evaluated using weighted kappa statistics. All statistical tests were two-sided, and a p-value < 0.05 was considered statistically significant. For post-hoc pairwise comparisons, Bonferroni-Bonferroni-adjusted p-values were used to determine statistical significance. Statistical analyses and data visualization were performed using R software, version 4.0.3.

3 Results

3.1Characteristics of glioma-related online videos

After screening the 300 retrieved videos according to the predefined inclusion and exclusion criteria, 262 eligible videos were included in the final analysis, comprising 122 (46.56%) videos from Bilibili and 140 (53.44%) videos from TikTok. The most common video formats on both platforms were live videos, accounting for 70% on Bilibili and 96% on TikTok (Fig. 2A– B). As shown in Table 4, the median video duration was 101.00 s (IQR, 66.00–193.50 s). The videos displayed a high level of interactivity, with median values for likes (Median = 381.50, IQR: 67.25–1060.00), collections (Median = 74.50, IQR: 26.00–269.75), comments (Median = 36.50, IQR: 2.25–166.00), and shares (Median = 34.50, IQR: 9.00–149.25). Comparative analysis revealed significant platform-specific disparities. Bilibili videos were significantly longer than TikTok videos ($p < 0.001$). Conversely, TikTok videos had higher median numbers of likes, collections, comments, and shares than Bilibili videos (all $p < 0.05$). The detailed characteristics of the glioma-related videos across different platforms are summarized in Table 5.

Table 4
Characteristics of glioma-related videos.

Variables	Total (n = 262)
General information	
Video duration(s),Median (IQR)	101.00 (66.00, 193.50)
Likes,Median (IQR)	381.50 (67.25, 1060.00)
Collections,Median (IQR)	74.50 (26.00, 269.75)
Comments,Median (IQR)	36.50 (2.25, 166.00)
Shares,Median (IQR)	34.50 (9.00, 149.25)
Uploader	
Specialist	150
Nonspecialist	63
Individual user	49
Video formats	
Animation	43
Live video	219
Content completeness	
Content completeness score	4.00 (2.00,5.00)
Video quality	
GQS score,Median (IQR)	2.00 (2.00, 3.00)
mDISCERN score,Median (IQR)	2.00 (2.00, 3.00)
JAMA score, Median (IQR)	3.00 (3.00, 3.00)

Table 5
Characteristics of glioma-related videos on TikTok and Bilibili.

Variables	Bilibili (n = 122)	TikTok (n = 140)	Statistic	P
Video duration, Median (IQR)	195.00 (103.00, 521.75)	76.50 (57.75, 102.50)	Z=-8.60	< 0.001
Likes, Median (IQR)	74.00 (9.25, 691.00)	603.00 (229.00, 2302.00)	Z=-6.91	< 0.001
Collections,Median (IQR)	45.50 (9.25, 129.75)	113.50 (47.00, 391.75)	Z=-5.16	< 0.001
Comments, Median (IQR)	1.50 (0.00, 69.50)	75.00 (23.75, 311.75)	Z=-7.69	< 0.001
Shares, Median (IQR)	14.00 (2.00, 57.75)	80.00 (23.50, 259.00)	Z=-6.68	< 0.001

3.2 Sources of glioma-related online information

In this study, uploaders were categorized into three groups: specialists (n = 150, 57.25%), nonspecialists (n = 63, 24.05%), or individual users (n = 49, 18.70%) (Table 6; Fig. 2C). Among specialists, neurosurgeons accounted for 105 (70.0%) and oncologists for 45 (30.0%). Among nonspecialists, traditional Chinese medicine practitioners represented the largest subgroup (n = 23, 36.5%), followed by radiologists (n = 18, 28.6%), pediatricians (n = 9, 14.3%), pathologists (n = 8, 12.7%), and nurses (n = 5, 7.9%). Among individual users, non-medical bloggers predominated (n = 29, 59.2%), followed by patients (n = 14, 28.6%) and other users (n = 6, 12.2%). Figure 2D illustrates clear differences in uploader composition between the two platforms. The TikTok platform was characterized by the highest proportion of specialist uploaders. Conversely, a relatively balanced uploader distribution was observed on the Bilibili platform, with individual users comprising 31.1%, specialists comprising 50%, and nonspecialists comprising18.9%.

Table 6
Uploader categories of glioma-related videos.

Variables	Total (n = 262)
Specialist	150
Neurosurgeon	105 (70%)
Oncologist	45 (30%)
Nonspecialist	63
Radiologist	18 (28.60%)
Pediatrician	9 (14.3%)
Pathologist	8 (12.7%)
Traditional Chinese medicine practitioner	23 (36.5%)
Nurse	5(7.9%)
Individual user	49
Patient	14 (28.6%)
Non-medical blogger	29 (59.2%)
Other non-healthcare users	6 (12.2%)

Overall differences across uploader categories were observed for video duration and all engagement metrics (all Kruskal–Wallis $p < 0.001$;Table 7). For video duration, the longest median was observed for individual user uploads (Median = 387.00 s, IQR: 122.00–1297.00 s). Regarding the engagement metrics, the highest median values across all engagement measures were observed for specialist uploaded videos: likes (Median = 641.00, IQR: 216.00–1636.00), collections (Median = 91.00, IQR: 36.00–314.00), comments (Median = 72.00, IQR: 20.00–252.00), and shares (Median = 61.00, IQR: 16.00–230.00).

Table 7
Characteristics of glioma-related videos on different uploaders.

Variables	Specialist (n = 150)	Nonspecialist (n = 63)	Individual user (n = 49)	Kruskal–Wallis H	P
Video duration, Median (IQR)	89.00 (60.00, 125.00)^a^	125.50 (80.75, 214.75)^b^	387.00 (122.00, 1297.00)^c^	48.97	< 0.001
Likes, Median (IQR)	641.00 (216.00, 1636.00)^a^	22.00 (4.25, 115.50)^b^	40.00 (11.00, 633.00)^b^	57.04	< 0.001
Collections, Median (IQR)	91.00 (36.00, 314.00)^a^	11.00 (1.25, 115.00)^b^	54.00 (26.50, 160.50)^ab^	15.47	< 0.001
Comments, Median (IQR)	72.00 (20.00, 252.00)^a^	1.00 (0.00, 13.00)^b^	0.00 (0.00, 6.00)^b^	72.52	< 0.001
Shares,Median (IQR)	61.00 (16.00, 230.00)^a^	8.00 (1.25, 63.00)^b^	13.00 (5.00, 64.00)^b^	26.02	< 0.001

Note: ^a,^b,^c Different superscript letters indicate significant differences between groups (P < 0.05, Dunn's post-hoc test with Bonferroni correction). Groups sharing the same letter are not significantly different.

3.3 Coverage of glioma-related neurological and clinical information

Across both platforms, videos most frequently addressed treatment (75.6%) and diagnosis (66.4%), whereas epidemiology (18.7%), etiology (13.0%), recurrence (27.9%), and prognosis (35.1%) were less frequently covered (Table 8). As shown in Fig. 3A, no statistically significant difference in content completeness scores was detected between the two platforms ($P = 0.54$). In contrast, content completeness scores differed significantly across uploader categories ($P < 0.001$; Fig. 3B). Dunn–Bonferroni post hoc comparisons showed that specialist-uploaded videos had significantly higher content completeness scores than videos uploaded by individual users. No significant differences were observed between specialist and nonspecialist uploaders or between nonspecialist uploaders and individual users.

Table 8
Content domains of glioma-related videos.

Video content	Total (n = 262)	Bilibili(n = 122)	TikTok (n = 140)
Epidemiology	49 (18.7%)	18 (14.8%)	31 (22.1%)
Etiology	34 (13.0%)	27 (22.1%)	7 (5.0%)
Clinical presentation	129 (49.2%)	73 (60.0%)	56 (40.0%)
Diagnosis	174 (66.4%)	93 (76.2%)	81 (57.9%)
Treatment	198 (75.6%)	88 (72.1%)	110 (78.6%)
Recurrence	73 (27.9%)	38 (31.1%)	35 (25.0%)
Prognosis	92 (35.1%)	44 (36.1%)	48 (34.3%)

Note: Content domains were not mutually exclusive; each video could be assigned to more than one domain.

3.4 Quality and reliability of online patient-education information

Inter-rater agreement was assessed using weighted Cohen's kappa coefficients. The weighted kappa values were 0.72 (95% CI, 0.61–0.83) for GQS scores, 0.73 (95% CI, 0.62–0.84) for mDISCERN scores, and 0.81 (95% CI, 0.71–0.91) for JAMA scores (Appendix A). Among the 262 videos included in the analysis, the median GQS and mDISCERN scores were both 2.00 (IQR: 2.00–3.00), whereas the median JAMA score was 3.00 (IQR: 3.00–3.00). The overall quality and reliability of the videos were generally low-to-moderate (Table 4).

Compared with Bilibili videos, TikTok videos had significantly higher GQS scores ($P = 0.030$) and JAMA scores ($P < 0.001$), whereas mDISCERN scores did not differ significantly between the two platforms ($P = 0.325$;Table 9). The score distribution graph showed that in terms of GQS and JAMA, the scores of TikTok videos are more concentrated in the middle range, whereas Bilibili videos showed broader score distributions and a greater representation of lower-scoring videos(Fig. 4A– C). For mDISCERN, the score distributions displayed overlap between the two platforms. TikTok videos tended to cluster around intermediate scores, whereas Bilibili videos showed greater representation at both lower and higher score levels (Fig. 4B).

Table 9
Quality and reliability scores of glioma-related videos on TikTok and Bilibili.

Variables	Bilibili (n = 122)	TikTok (n = 140)	Statistic	P
GQS, Median (IQR)	2.00 (2.00, 3.00)	2.00 (2.00, 3.00)	Z=-2.17	0.030
mDISCERN, Median (IQR)	2.00 (2.00, 3.00)	2.00 (2.00, 3.00)	Z=-0.98	0.325
JAMA, Median (IQR)	3.00 (2.00, 3.00)	3.00 (3.00, 3.00)	Z=-6.67	< 0.001

Videos uploaded by specialists had the highest GQS, mDISCERN, and JAMA scores among the three uploader categories (Fig. 5A–C). The Kruskal–Wallis test showed significant differences across uploader categories for all three scores (all $P < 0.001$, Table 10). Intergroup comparisons showed that specialists outperformed both nonspecialists and individual users across all instruments (all $P < 0.05$). Nonspecialists also had significantly higher JAMA scores than individual users (Bonferroni-adjusted $P = 0.002$), but no significant differences was found between these two groups in GQS (Bonferroni-adjusted $P = 0.103$) or mDISCERN (Bonferroni-adjusted $P = 1.00$).

Table 10
Quality and reliability scores of glioma-related videos by uploader category.

Variable	Specialist (n = 150)	Nonspecialist (n = 63)	Individual user (n = 49)	Kruskal–Wallis H	P
GQS, Median (IQR)	3.00 (2.00, 3.00)^a	2.00 (2.00, 2.00)^b	2.00 (1.00, 2.00)^b	43.52	< 0.001
mDISCERN, Median (IQR)	3.00 (2.00, 3.00)^a	2.00 (2.00, 2.75)^b	2.00 (1.00, 2.50)^b	35.85	< 0.001
JAMA, Median (IQR)	3.00 (3.00, 3.00)^a	3.00 (3.00, 3.00)^a	2.00 (2.00, 3.00)^b	107.31	< 0.001

Note: ^a,^b,^c Different superscript letters indicate significant differences between groups (P < 0.05, Dunn's post-hoc test with Bonferroni correction). Groups sharing the same letter are not significantly different.

3.5 Associations between engagement metrics and information quality

Spearman correlation analysis in Fig. 6 demonstrated the relationships among video duration, engagement metrics, and information assessment scores. Strong positive correlations were observed among engagement metrics, with correlation coefficients ranging from 0.72 to 0.94. Video duration showed negligible correlations with GQS ($\rho = 0.02$) and mDISCERN scores ($\rho = 0.11$) and a weak negative correlation with JAMA scores ($\rho = -0.31$). GQS and mDISCERN scores showed weak positive correlations with engagement metrics (likes, collections, comments, and shares; for GQS, likes $\rho = 0.27$, collections $\rho = 0.14$, comments $\rho = 0.36$, shares $\rho = 0.19$; for mDISCERN, likes $\rho = 0.24$, collections $\rho =$

0.15, comments ρ = 0.30, shares ρ = 0.16), whereas JAMA scores showed relatively limited associations with engagement. The three assessment instruments were positively correlated with one another (ρ = 0.31–0.54) indicating partial consistency among the three assessment tools.

4 Discussion

This study assessed the characteristics, content completeness, quality, and reliability of glioma-related videos on TikTok and Bilibili. Despite substantial user engagement, the overall educational quality and reliability of the included videos were limited. Content was concentrated on diagnosis and treatment, whereas epidemiology, etiology, recurrence, and prognosis were less frequently addressed. TikTok videos had higher GQS and JAMA scores than Bilibili videos, while mDISCERN scores did not differ significantly between the two platforms. Specialist-uploaded videos achieved higher GQS, mDISCERN, and JAMA scores than videos uploaded by nonspecialists and individual users, and also had higher content completeness scores than videos uploaded by individual users. Engagement metrics showed only weak positive correlations with GQS and mDISCERN scores, whereas video duration showed a weak negative correlation with JAMA scores. These findings suggest that neither video popularity nor duration consistently reflected the educational quality or reliability of glioma-related information. Overall, the findings highlight important gaps in glioma-related online education and support the development of more comprehensive and reliable video content.

4.1 Engagement patterns of glioma-related videos

This study found that short glioma-related videos demonstrated relatively high engagement, particularly in terms of likes. This finding is consistent with the general trend that health-related content on short-video platforms commonly attracts user engagement[13]. Further analysis revealed that at the platform level, TikTok videos received significantly higher numbers of likes, comments, and shares than Bilibili videos. This pattern is consistent with observations by Wang et al. in uterine fibroid-related videos, indicating that platform-specific characteristics may partly shape video duration and patterns of user engagement[22]. The higher engagement observed on TikTok may be partly related to its short-form presentation style and rapid content consumption pattern, while Bilibili may allow longer and more detailed video presentations.

Engagement metrics also differed across uploader categories. Videos uploaded by specialists received the highest median numbers of likes, comments, collections, and shares. This finding is supported by Paul et al., who found that healthcare professional-generated content was associated with more favorable public engagement, likely because of its higher perceived credibility[11]. In addition, the higher engagement metrics of videos by individual users, compared to nonspecialists, may be attributed to their more relatable narrative style. This enables users to express their attitudes and participate in dissemination through actions, such as liking, commenting, and sharing. Therefore, it is recommended that domain experts actively participate in short video creation and collaborate with individual users to

enhance the emotional resonance of the content. By fully utilizing the platform's interactive features, public engagement can be increased, thereby expanding the reach of knowledge dissemination.

4.2 Content gaps in glioma-related videos

A closer examination of video content revealed clear platform-specific patterns. We found that current short-video content may be more oriented toward immediate clinical concerns, such as disease recognition and treatment options, while providing relatively limited information on disease background, recurrence risk, prognosis, and long-term management. No significant difference in content completeness scores was observed between TikTok and Bilibili, indicating similar limitations in the breadth of glioma-related information across platforms. Additionally, specialist-uploaded videos had significantly higher content completeness scores than individual-user videos. In glioma-related education, specialists may be more likely to present information according to the clinical pathway of the disease, including symptom recognition, diagnostic evaluation, neuroimaging, pathology, treatment decision-making, recurrence monitoring, prognosis, and follow-up care. By contrast, nonspecialists and individual users may focus on isolated topics, selected treatment issues, or personal experiences, resulting in less comprehensive coverage.

Given that gliomas are characterized by high disability and recurrence rates, the current imbalance in content coverage may lead to an incomplete understanding of the disease. Insufficient dissemination of knowledge regarding the etiology and epidemiology of brain tumors may hinder public awareness of related risk factors, and potentially lead to unnecessary misunderstandings or anxiety[23]. Moreover, the lack of prognostic information may result in a fragmented understanding of the disease, causing the public to overlook key issues, such as long-term progression and rehabilitation management[24]. Therefore, creators, particularly medical professionals, should be encouraged to develop a series of educational content focused on gliomas in the future. This content should address currently underrepresented areas, including etiology and mechanisms, epidemiology, prevention, recurrence, long-term rehabilitation, and quality of life, to enhance the public's overall understanding of the disease.

4.3 Quality and reliability of glioma-related videos

The evaluation in this study showed that the overall quality and reliability of glioma-related information on short-video platforms remained suboptimal. This finding is consistent with previous studies evaluating health-related short videos on social media platforms, which have commonly reported unsatisfactory quality and reliability of online medical information.[14, 15, 25]. Across the three assessment instruments, TikTok videos showed a tendency toward higher score distributions, particularly for GQS and JAMA, whereas Bilibili included a larger proportion of lower-scoring videos. This pattern differs from findings reported in some studies of other disease topics, in which longer-form or more user-generated platforms were associated with comparable or higher-quality medical information[26, 27]. It is important to consider whether the modest between-platform differences in unBonferroni-adjusted assessment scores translate into meaningful benefits for patients remains uncertain. They may reflect underlying differences in platform design, user demographics, and recommendation algorithms rather than intrinsic

differences in content quality alone. TikTok's recommendation algorithm may prioritize high-impact clips from verified professionals in its "Discover"feed, whereas Bilibili contains a relatively diverse range of user-generated content, which may contribute to greater variability in video quality and professional rigor[28, 29].

Consistent with previous studies, this study also found that the content uploaded by specialists was of higher quality than that created by individual users[30, 31]. This aligns with existing literature demonstrating that medical professionals tend to produce more comprehensive, and guideline-based health information[32]. Among specialist uploaders, neurosurgeons accounted for the majority of contributors, which is consistent with their central role in the evaluation and treatment of glioma. In addition, videos uploaded by nonspecialists received significantly higher JAMA scores than those uploaded by individual users. This suggests that a healthcare background may contribute to more structured, transparent, and clinically relevant health communication and individual users may provide more fragmented or anecdotal health information.

For a complex disease such as glioma, patients and caregivers may seek online information to better understand symptoms, diagnosis, treatment options, recurrence risk, and long-term management. High-quality videos produced by specialists and other healthcare professionals may help improve preliminary disease understanding and facilitate communication between patients and clinicians, but they should be regarded as a complement to, rather than a substitute for, professional medical consultation. In the future, short-video platforms could strengthen verification systems for medical content creators and improve the visibility of videos produced by qualified healthcare professionals. In addition, collaboration among specialists, healthcare institutions, and platform operators may help improve the quality, timeliness, and accessibility of glioma-related patient education videos.

4.4 Associations between video characteristics and information quality

Spearman correlation analysis demonstrated strong positive associations among engagement metrics, indicating that videos receiving more likes were also more likely to generate comments, shares, and collections. In contrast, the associations between engagement metrics and GQS or mDISCERN scores were weak, suggesting that engagement counts alone were insufficient proxies for assessed educational quality and reliability-related characteristics[14, 33]. This finding highlights the challenges associated with health communication based on short videos, as videos with high engagement and medium quality may reach a large audience, but lack the clinical details necessary for managing glioma. In contrast, the inconsistent associations between video duration and quality scores further suggest that longer videos do not necessarily provide more complete, reliable information[34, 35]. Therefore, patients or caregivers should be cautious when interpreting the basic features and engagement indicators of online information related to glioma, and should not rely solely on these indicators.

4.5. Limitations

This study had several limitations. First, it included only Bilibili and TikTok, without covering other platforms such as Xiaohongshu or international platforms like YouTube. Second, the study was cross-sectional and the quality and reliability of glioma-related videos on TikTok and Bilibili may change over time. Finally, although validated scales were used, the scoring process inevitably involved a degree of subjectivity. Future research could expand the platform scope, introduce multidimensional evaluation tools, adopt a longitudinal design, and conduct user behavior surveys to further deepen the systematic assessment of health information quality on social media.

5 Conclusion

The quality and reliability of glioma-related information on the two major Chinese video-sharing platforms were generally limited. Most videos focused on diagnosis and treatment, whereas epidemiology, etiology, recurrence, and prognosis were underrepresented. Specialist-uploaded videos may be the most reliable sources of glioma-related information and demonstrated greater content completeness than videos uploaded by individual users. In the future, increasing the visibility of authoritative specialist creators and fostering coordinated efforts among platforms, healthcare professionals, individual users, and regulatory bodies may help improve the quality of glioma-related online health communication and enhance public health literacy.

Declarations

Author contributions

Conceptualization, J.S. and Y.X.; methodology, J.S. and Z.Z.; validation, J.S., J.D., Y.H. and S.G.; formal analysis, S.G.; investigation, J.D., Y.H. and S.G.; resources, L.F. and Y.X.; data curation, J.D.; visualization, J.D. and S.G.; writing—original draft preparation, J.S. and J.D.; writing—review and editing, J.S., J.D., S.G., Y.H., Z.Z., L.F. and Y.X.; supervision, Y.X.; project administration, L.F. and S.G.; funding acquisition,Y.X. All authors have read and agreed to the published version of the manuscript. J.S. and J.D. contributed equally to this work.

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Competing interests

The authors declare no competing interests.

Patient and public involvement

Patients and/or the public were not involved in the design, conduct, reporting, or dissemination of this research.

Patient consent for publication

Not applicable.

Ethics approval

Ethical review and approval were waived for this study by the Ethics Committee of Xiyuan Hospital, China Academy of Chinese Medical Sciences (protocol code 2025XLE-12; date of exemption: [8 December 2025]), because the study analyzed only publicly available videos and did not involve participant recruitment, clinical data, human specimens, laboratory animals, or access to private account information (Appendix B).

Data availability statement

The deidentified dataset generated and analyzed during the current study is available in the Appendix A and B. Direct video links, account names, profile identifiers, and other potentially identifying information are not publicly available to protect uploader privacy. Additional deidentified data are available from the corresponding author upon reasonable request.

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Not applicable.

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Figures

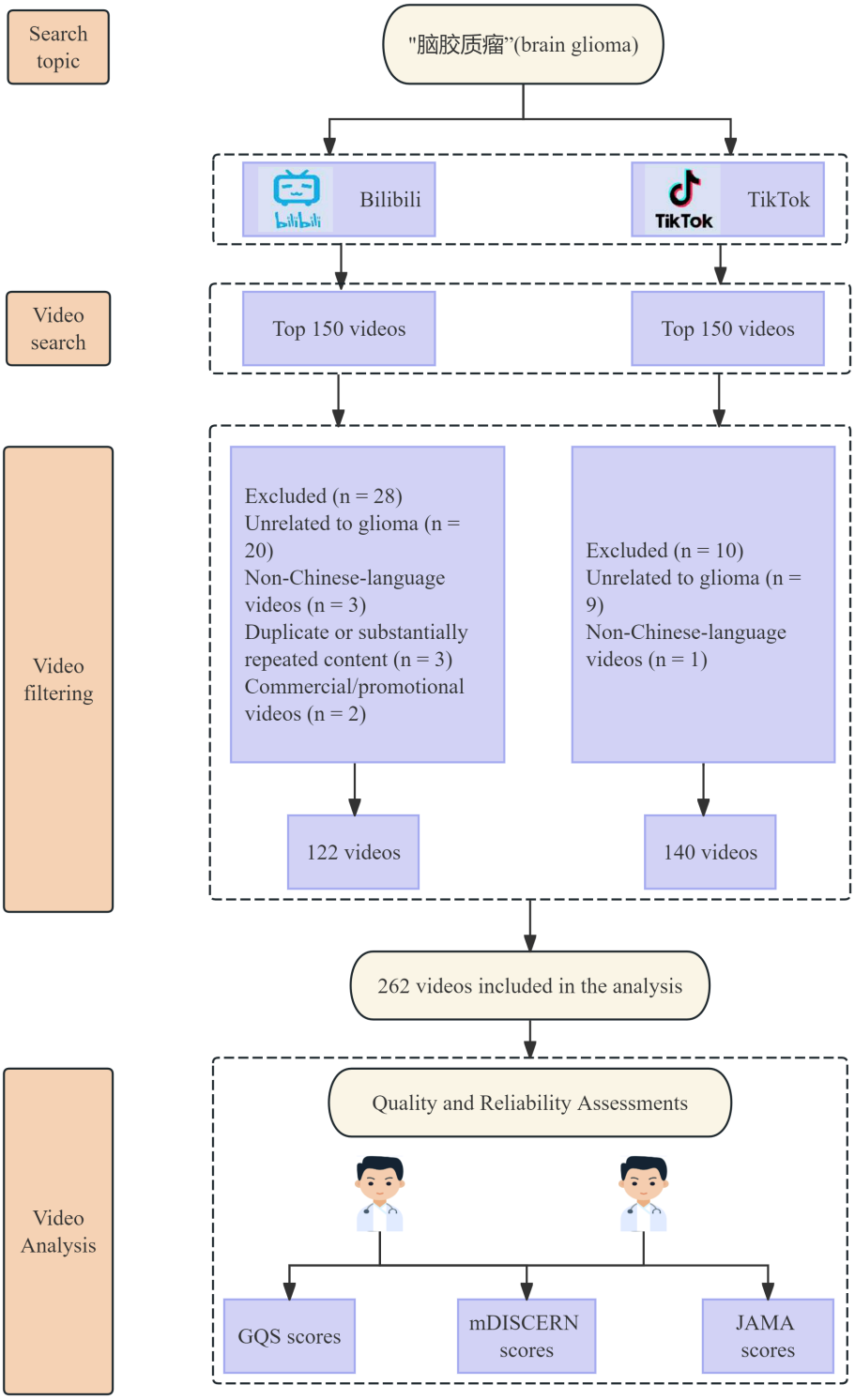


Figure 1

Flowchart illustrating the video selection process for analysis of glioma on Bilibili and TikTok.

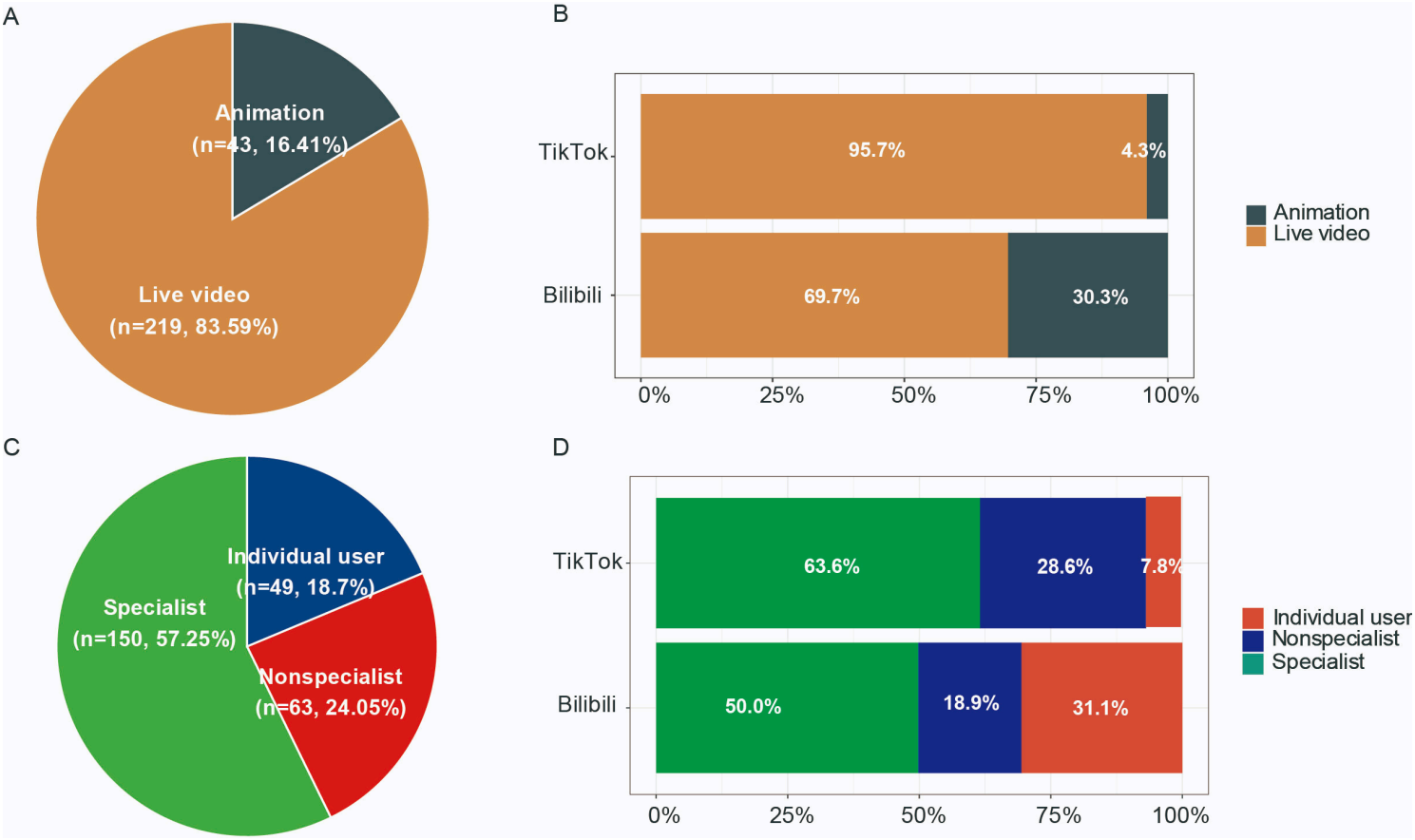


Figure 2

Distribution of video formats and uploader categories among the included glioma-related videos. **A** Overall distribution of video formats. **B** Distribution of video formats on TikTok and Bilibili. **C** Overall proportion of uploader categories. **D** Distribution of uploader types on TikTok and Bilibili.

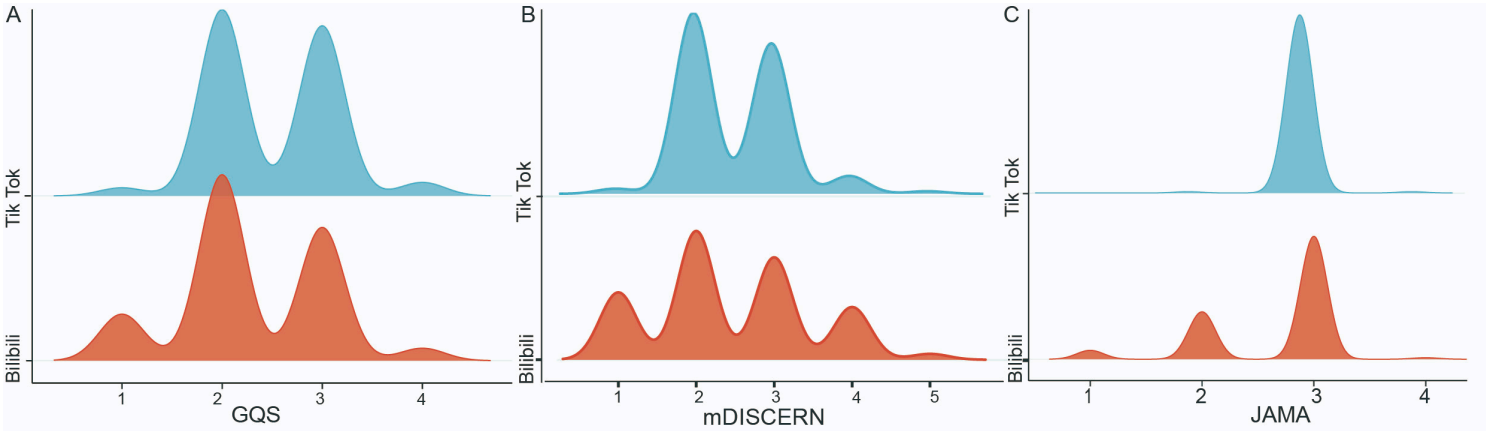


Figure 3

Content completeness scores of glioma-related videos. **A** Comparison between TikTok and Bilibili. **B** Comparison among uploader categories. n, not significant,**P<0.01.

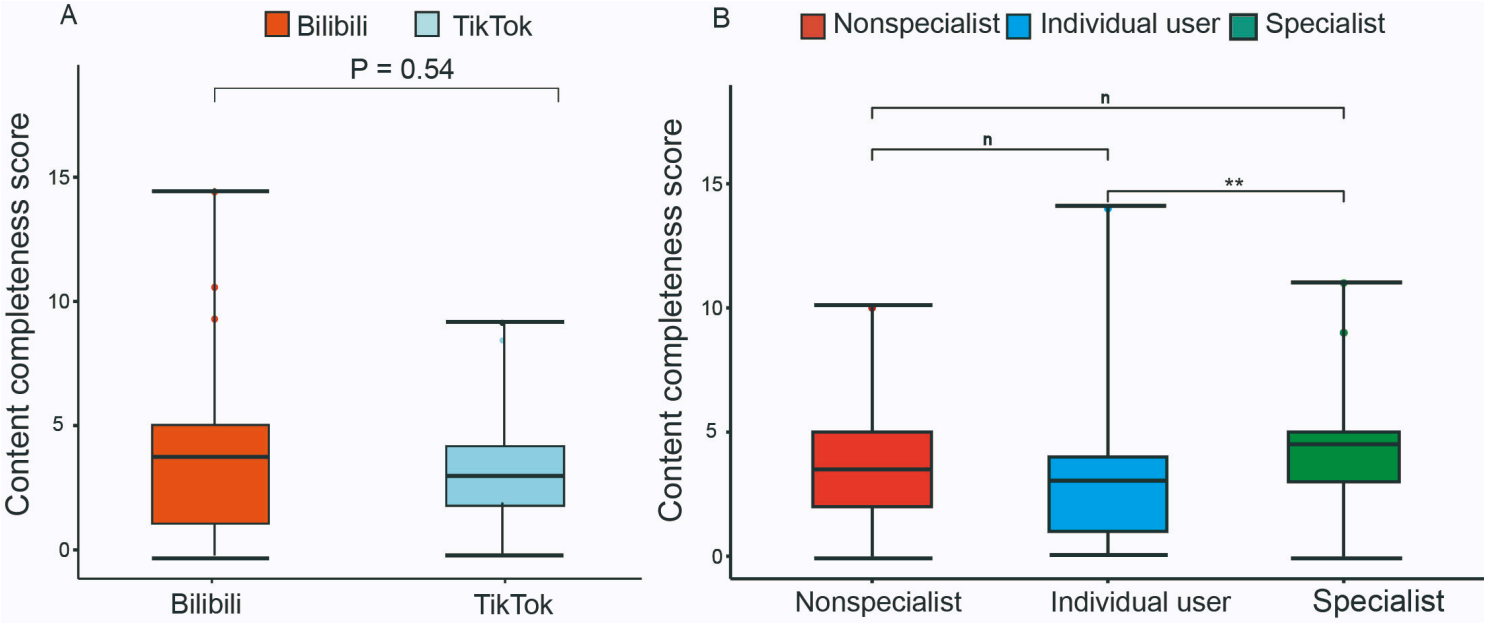


Figure 4

Distribution of GQS, mDISCERN, and JAMA scores between TikTok and Bilibili. **A** GQS score. **B** mDISCERN score. **C** JAMA score.

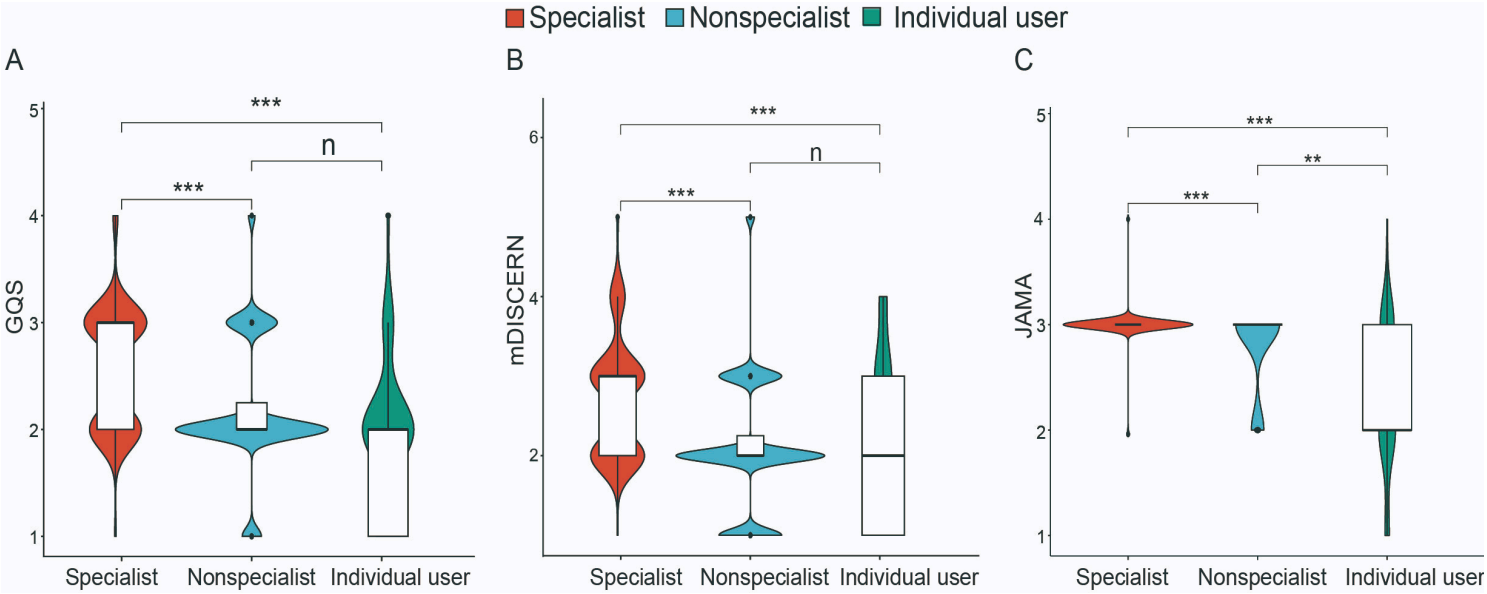


Figure 5

Comparison of video quality and reliability scores among uploader categories. **A** GQS score. **B**mDISCERN score. **C** JAMA score. n, not significant; *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

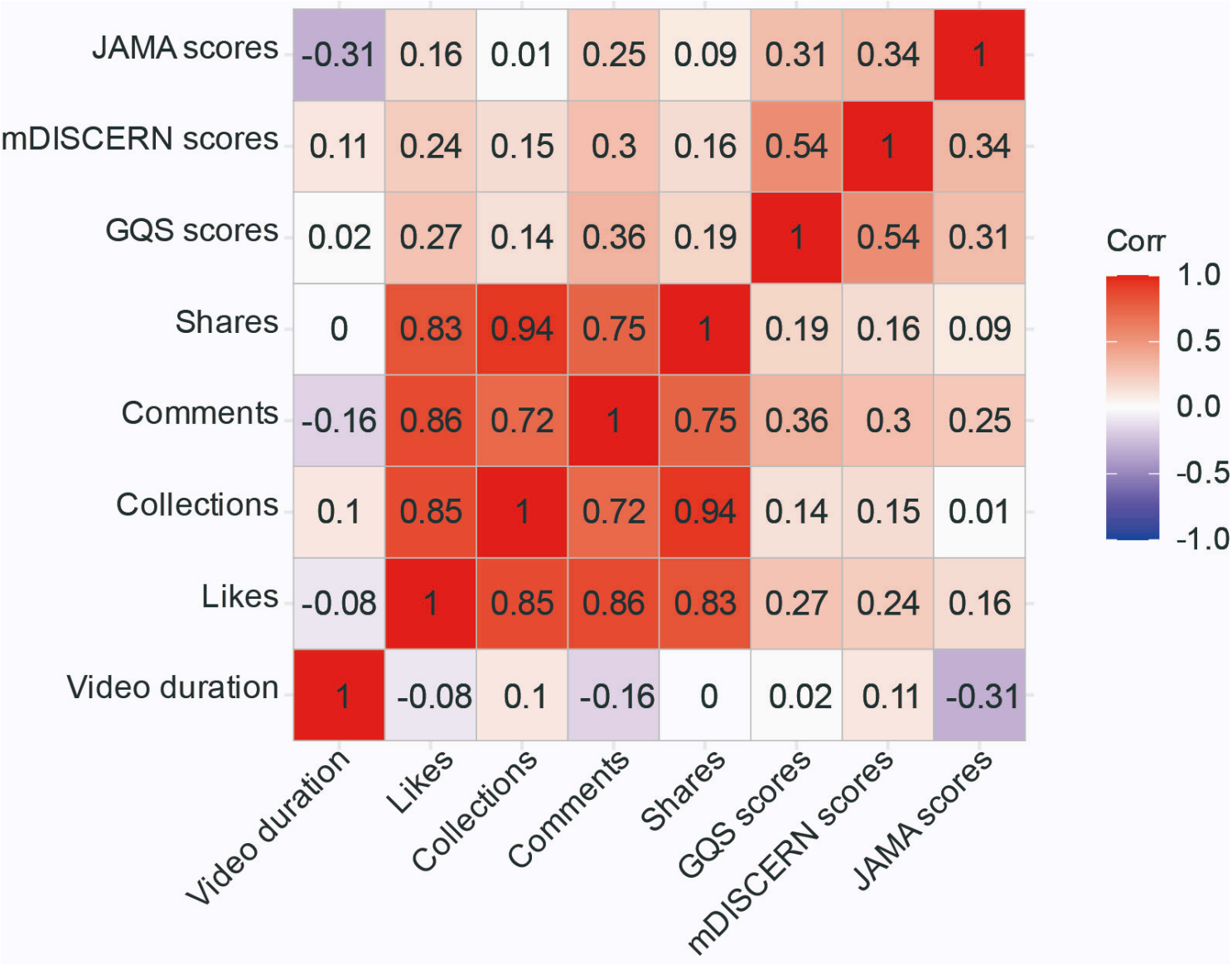


Figure 6

Correlation analysis between different parameters. Colors represent Spearman correlation coefficients.

Supplementary Files

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- AppendixA.docx
- AppendixB.pdf