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Evaluating the reliability and quality of Acute cholecystitis educational contenton TikTok and Bilibili: A cross-sectionalcontent analysis

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Research Article

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Abstract

Background: TikTok and Bilibili are rapidly becoming important channels for the public to obtain health information. This study aimed to evaluate the content, quality, and reliability of videos related to acute cholecystitis (AC) on the TikTok and Bilibili platforms.

Methods:

Using “acute cholecystitis” as the keyword, videos were retrieved and evaluated with the Global Quality Score (GQS) and modified DISCERN (mDISCERN) as well as content completeness score. The Mann–Whitney U test was used to compare differences between platforms, the Kruskal–Wallis test was applied to analyze differences among uploader groups, and Spearman rank correlation analysis was performed to explore correlations.

Results: A total of 172 AC-related videos were included in this study. Among the videos, clinical manifestations (65.7%) and treatment (61.05%) were the most frequently covered topics, whereas prevention-related content appeared in only 18.6%. The overall median GQS score was 3.00 (IQR: 2.00-3.00), the median mDISCERN score was 3.00 (IQR: 2.00-3.00), and the median content completeness score was 2.00 (IQR: 2.00-4.00). Videos from specialist physicians and institutions scored significantly higher in quality, reliability, and content completeness than those from non-specialist physicians (*p* < 0.05). Engagement metrics showed no correlation with video quality or reliability (*p* > 0.05).

Conclusions: The overall quality and reliability of AC-related videos on TikTok and Bilibili are suboptimal. In the future, supervision and regulation of AC-related content on these two platforms should be strengthened to promote the effective dissemination of high-quality health information.

Introduction

Acute cholecystitis (AC) is an acute inflammatory condition of the gallbladder that typically presents with right upper abdominal pain, fever, and elevated white blood cell count, and is one of the most common causes of acute abdominal emergencies[1–2]. AC can significantly impair patients’ quality of life and may progress to severe complications such as gallbladder gangrene, perforation, abscess formation or systemic inflammatory responses, thereby increasing both clinical and economic burdens[3]. AC may also induce inflammatory activation, hypercoagulability or heightened stress responses, resulting in downstream complications including thrombosis, stroke or renal injury. Individuals with recurrent symptom episodes are at elevated risk of developing biliary colic, biliary obstruction or pancreatitis[4–6]. Access to accurate, timely, and reliable health information is therefore critical—not only for promoting prevention and early recognition, but also for guiding appropriate healthcare-seeking and informed decision-making.

Short-video platforms have rapidly transformed how the public accesses medical information, offering visually engaging content and broad reach—particularly among younger audiences[7–9]. Platforms such

as TikTok and Bilibili offer rapid dissemination, visually engaging formats, and strong interactivity, enabling large audiences, particularly younger users, to access abundant health-related information within a short period[10–11]. However, the low threshold for content creation and the lack of rigorous medical review contribute to substantial variability in information quality, including inaccurate or misleading content[12]. Previous studies have identified unverified or unreliable health information in videos addressing conditions such as idiopathic pulmonary fibrosis, COVID-19, helicobacter pylori, gallstone disease, and liver cancer[13–17]. Given the relatively high incidence of AC, its potential for serious complications, and the harmful consequences of delayed diagnosis, exposure to low-quality online video content may impede timely disease recognition and appropriate healthcare-seeking behavior. These concerns underscore the importance of systematically evaluating the quality and reliability of AC-related videos on these platforms.In this study, we assess the quality and reliability of AC-related videos on TikTok and Bilibili, comparing content across platforms and uploader types. Our findings are intended to highlight current gaps in digital health communication and offer evidence to guide improvements in content governance and patient education.

Methods

Data Retrieval

Searches were conducted on TikTok and Bilibili on October 14, 2025, using the Chinese keyword “□□□□□” (“acute cholecystitis”). To minimize the influence of personalized recommendation algorithms, browser history was cleared and newly registered accounts were used for the searches. In the initial screening phase, the top 100 videos and the top 100 video sranked under TikTok and Bilibili platform’s comprehensive sorting criteria were retrieved for further evaluation.

Inclusion and Exclusion Criteria

The inclusion criteria were: (1) videos related to acute cholecystitis (AC); and (2) videos presented in Chinese. The exclusion criteria were: (1) videos unrelated to AC; (2) advertisements or promotional content; (3) duplicate or re uploaded videos; (4) videos with poor audiovisual quality that impeded comprehension; and (5) videos uploaded within one week prior to data collection. A total of 172 videos met the inclusion criteria and were included in the final analysis, and the detailed screening process is presented in Fig. 1.

Data Extraction and Classification

For each video, the following data were collected: platform source, video duration (seconds), number of likes, number of comments, number of favorites, number of shares, uploader type, and video content. Uploaders were categorized as Specialist physicians, non-specialist physicians, or institutions. Specialist physicians included hepatobiliary surgeons, general surgeons, and related specialists, whereas non-

specialist physicians included traditional Chinese medicine physicians, radiologists, and emergency surgeons. Institutional uploaders comprised medical colleges and universities, educational organizations, and official accounts. Video content was classified into six categories: epidemiology, etiology, clinical manifestations, diagnosis, treatment, and prevention.

Quality and Reliability Assessment

The GQS quantifies online video quality using a five-tier grading system, with scores ranging from 1 (poor) to 5 (excellent)[18]. The mDISCERN instrument, originally developed for evaluating written health materials, has been adapted to assess the reliability of video content[19–21]. This modified tool employs a five-item questionnaire with a scoring scale of 1–5, where elevated scores correspond to enhanced content reliability. The detailed scoring criteria for these two instruments are presented in Tables 1 and 2. The completeness of video content is scored based on whether it covers the key aspects of AC (such as epidemiology, etiology, clinical manifestations, diagnosis, treatment, and prevention). Each item of the video content score ranges from 0 to 2 points (0 point: not covered, 1 point: partially covered, 2 points: complete coverage), the total score of the collected video content completeness is the sum of the scores of the above five items. The above GQS, mDISCERN and Content Completeness Score[22] were independently completed by two evaluators with clinical backgrounds in hepatobiliary surgery or related specialties (including 1 hepatobiliary surgery clinician and 1 hepatobiliary surgery clinical pharmacist). In case of disagreement, the third professional in the relevant field (a hepatobiliary surgery clinical pharmacist) made the ruling.

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?

Statistical Analysis

Descriptive statistical methods were used to summarize the continuous variables. Data with normal distribution were expressed as mean ± standard deviation (SD), while data with non-normal distribution were expressed as median and interquartile range (IQR). Categorical variables were expressed as frequency and percentage. When comparing groups, variables with normal distribution were analyzed using the independent sample t-test, and variables with non-normal distribution were analyzed using the Mann–Whitney U test. Comparisons of three or more groups were performed using the Kruskal–Wallis H test, and when the differences were statistically significant, pairwise comparisons were further conducted using Dunn's test. Spearman rank correlation coefficient was used to evaluate the correlation between video quality scores (GQS and mDISCERN) and interaction indicators (likes, comments, shares, and favorites). A two-sided *P* value < 0.05 was considered statistically significant. All statistical analyses and graphical visualizations were performed using R software (version 4.3.2).

Results

General feature description of the video

After applying the inclusion and exclusion criteria, 172 videos were included in the final analysis—81 (47.1%) from Bilibili and 91 (52.9%) from TikTok. Of these, 81 (47.1%) were from Bilibili and 91 (52.9%) from TikTok. Analysis of the overall video features showed that the median video length is 97.00s (IQR: 61.00-204.25). The median number of likes was 81.50 (IQR: 21.75–426.00), the median number of Collections is 35.50 (IQR: 10.00-171.50), the median number of comments is 9.50 (IQR: 1.00–35.00), and the median number of shares is 18.50 (IQR: 3.00-109.00), as shown in Table 3.

Table 3
General Characteristics, Quality, and Reliability of the Acute cholecystitis Videos.

Variables	Total (n = 172)
General information	
Video length(s),M (Q1,Q3)	97.00 (61.00, 204.25)
Likes,M (Q1,Q3)	81.50 (21.75, 426.00)
Collections,M (Q1,Q3)	35.50 (10.00, 171.50)
Comments,M (Q1,Q3)	9.50 (1.00, 35.00)
Shares,M (Q1,Q3)	18.50 (3.00, 109.00)
Video content	
epidemiology	9(5.23%)
Etiology	54(31.4%)
Clinical manifestation	113(65.7%)
Diagnosis	61(35.47%)
Treatment	105(61.05)
Prevention	32(18.6%)
Video quality	
GQS score,M (Q1,Q3)	3.00 (2.00, 3.00)
mDISCERN score,M (Q1,Q3)	3.00 (2.00, 3.00)
content completeness score, M (Q_1, Q_3)	2.00 (2.00, 4.00)

Compared with Bilibili, videos on TikTok were shorter in duration ($p < 0.05$) but received higher numbers of likes, comments, and shares ($p < 0.05$). On TikTok, the median video length was 71.00 (IQR: 47.50–106.00), the median number of likes was 208.00 (IQR: 63.00-764.00), the median number of collections is 53.00 (IQR: 12.00-267.50), the median number of comments was 19.00 (IQR: 8.00-72.50), and the median number of shares was 35.00 (IQR: 11.00-173.00) (Table 4).

Table 4
General Information, Quality, and Reliability Scores of Acute cholecystitis Videos on TikTok and Bilibili.

Variables	Bilibili (n = 81)	TikTok (n = 91)	*P*
General information			
Video length(s),M (Q1,Q3)	223.00 (93.00, 620.00)	71.00 (47.50, 106.00)	**< .001**
Likes,M (Q1,Q3)	22.00 (6.00, 101.00)	208.00 (63.00, 764.00)	**< .001**
Collections,M (Q1,Q3)	29.00 (5.00, 143.00)	53.00 (12.00, 267.50)	0.077
Comments,M (Q1,Q3)	2.00 (0.00, 13.00)	19.00 (8.00, 72.50)	**< .001**
Shares,M (Q1,Q3)	8.00 (2.00, 36.00)	35.00 (11.00, 173.00)	**< .001**
Video content			
Epidemiology	6(7.14%)	3(3.30%)	-
Etiology	27(33.33%)	27(29.67%)	-
Clinical manifestation	50(61.73%)	63(69.23%)	-
Diagnosis	31(38.27%)	30(32.97%)	-
Treatment	43(53.09%)	62(68.13%)	-
Prevention	10(12.35%)	22(24.18%)	-
Video quality			
GQS score,M (Q1,Q3)	3.00 (2.00, 3.00)	3.00 (3.00, 3.00)	0.112
mDISCERN score,M (Q1,Q3)	3.00 (2.00, 3.00)	3.00 (2.00, 3.00)	0.968
content completeness score, M (Q_1, Q_3)	2.00 (1.00, 4.00)	3.00 (2.00, 4.00)	0.147

The median duration of videos uploaded by Specialist physicians was 84.00 (IQR: 53.00-121.00), with a median number of likes of 108.00 (IQR: 40.00-613.00), Collections is 38.00 (IQR: 10.00-179.00), comments of 13.00 (IQR: 2.00–55.00), and shares of 27.00 (IQR: 6.00-120.00). The baseline characteristics of videos uploaded by other uploader groups are presented in Table 5.

Table 5
Characteristics, Quality, and Reliability of Acute cholecystitis Videos by Different Uploaders on TikTok and Bilibili.

Variables	Non-specialist physicians (n = 21, 12.21%)	Institutions (n = 26, 15.12%)	Specialist physicians (n = 125, 72.67%)	*P*
Video length(s),M (Q1,Q3)	132.00 (72.00,348.00)	610.00 (274.25,1076.00)	84.00 (53.00,121.00)	**< .001**
Likes,M (Q1,Q3)	17.00 (6.00,235.00)	23.00 (11.00,124.50)	108.00 (40.00,613.00)	**< .001**
Collections,M (Q1,Q3)	23.00 (5.00,224.00)	40.50 (15.50,144.50)	38.00 (10.00,179.00)	0.672
Comments,M (Q1,Q3)	2.00 (0.00,14.00)	1.50 (0.00,16.50)	13.00 (2.00,55.00)	**0.002**
Shares,M (Q1,Q3)	3.00 (0.00,27.00)	8.50 (3.00,50.50)	27.00 (6.00,120.00)	**0.026**
GQS score,M (Q1,Q3)	2.00 (2.00,2.00)	3.00 (3.00,4.00)	3.00 (3.00,3.00)	**< 0.001**
mDISCERN score,M (Q1,Q3)	2.00 (2.00,3.00)	3.00 (2.00,3.00)	3.00 (2.00,3.00)	**< 0.001**
Content completeness score, M (Q_1, Q_3)	1.00 (1.00,2.00)	3.00 (2.00,6.75)	2.00 (2.00,4.00)	**< .001**

Uploader characteristics

Specialist physicians uploaded 72.67% of the videos, while Non-Specialist physicians contributed 12.21% and Institutions 15.12% (Fig. 2A). On TikTok, 98% of acute cholecystitis–related videos were uploaded by Specialist physicians, with Institutions accounting for only 2%. On Bilibili, Specialist physicians remained the predominant uploader group, contributing 44% of the videos, followed by Institutions at 30% and Non-Specialist physicians at 26% (Fig. 2B).

Video Content

In terms of video content, Table 3 showed an analysis of 172 videos on Acute cholecystitis revealed that the mention rate of clinical manifestations was the highest, with 113 videos (65.7%), followed by treatment-related content, with 105 videos (61.05%). The mention rate of diagnostic content was 35.47% (61 videos), and that of etiology was 31.4% (54 videos). The coverage of prevention-related content was relatively low, at only 18.6% (32 videos). Epidemiological content appeared least frequently in only 9 videos(5.23%). The distribution of video content on different platforms was aslo illustrated in Fig. 3.

Video Quality, Reliability, and Content Completeness Score

Overall, the median GQS score for all videos was 3.00 (IQR: 2.00–3.00), and the median mDISCERN score was likewise 3.00 (IQR: 2.00–3.00). The median score for content completeness was 2.00 (IQR: 2.00–4.00), as shown in Table 3. GQS, mDISCERN and content completeness scores did not differ significantly between the two platforms.. On TikTok, the median GQS score was 3.00 (IQR: 3.00–3.00), the median mDISCERN score was 3.00 (IQR: 2.00–3.00), and the median content completeness score was 3.00 (IQR: 2.00–4.00) (Table 4). Compared with non-specialist physicians, videos uploaded by specialist physicians and institutions had higher GQS scores ($p < 0.05$, Fig. 4A), higher mDISCERN scores ($p < 0.05$, Fig. 4B), and higher content completeness score ($p < 0.05$, Fig. 4C). With respect to content completeness, videos uploaded by institutions achieved the highest scores ($p < 0.05$, Fig. 4C). For videos uploaded by specialist physicians, the median GQS score was 3.00 (IQR: 3.00–3.00), the median mDISCERN score was 3.00 (IQR: 2.00–3.00), and the median content completeness score was 2.00 (IQR: 2.00–4.00). The corresponding scores for other uploader groups are summarized in Table 5.

Correlation analysis

Figure 5 shows the correlation between video duration, interaction metrics, and video quality and reliability. A weak positive correlation was observed between video duration and GQS score ($\rho = 0.17$, $p < 0.05$), mDISCERN score ($\rho = 0.16$, $p < 0.05$), and content completeness score ($\rho = 0.28$, $p < 0.05$). Additionally, likes were positively correlated with comments ($\rho = 0.84$, $p < 0.05$), shares ($\rho = 0.93$, $p < 0.05$), and collections ($\rho = 0.84$, $p < 0.05$). Comments also showed positive correlations with shares ($\rho = 0.96$, $p < 0.05$) and collections ($\rho = 0.90$, $p < 0.05$). Similarly, shares were positively correlated with collections ($\rho = 0.94$, $p < 0.05$). GQS scores and mDISCERN scores also demonstrated a weak positive correlation ($\rho = 0.55$, $p < 0.05$). No correlation was found between interaction metrics and video quality, reliability, and content completeness scores ($p > 0.05$).

Discussion

Our findings reveal that AC-related videos on TikTok and Bilibili predominantly focus on clinical manifestations and treatment, yet their overall quality and reliability remain suboptimal. The findings showed that the video content was mainly focused on clinical manifestations and treatment, while overall video quality and reliability were suboptimal. Compared with Bilibili, TikTok had higher levels of user engagement in terms of likes, comments, and shares; however, there were no significant differences between the two platforms in video quality, reliability, or content completeness score. Videos uploaded by specialist physicians and institutional accounts achieved higher scores in quality, reliability, and content completeness than those uploaded by non-specialist physicians, with institutional accounts demonstrating the highest content completeness score. Finally, no correlation was observed between user engagement indicators and video quality or reliability. These results underscore the need to strengthen platform oversight of health-related video content, encourage greater participation of

specialist physicians and medical institutions in the production of AC-related videos, and optimize health communication strategies to promote the dissemination of high-quality videos.

Video content analysis

Among the short videos analyzed, clinical manifestations and treatment emerged as the most commonly covered topics. Because timely recognition and intervention are critical in acute cholecystitis, disseminating this type of information may help raise public awareness and encourage earlier healthcare-seeking. However, content related to epidemiological characteristics, etiological factors, and preventive measures was comparatively scarce. The paucity of epidemiological and preventive messaging may limit the capacity of short-form video platforms to promote preventive health behaviors and thus constrain efforts to reduce disease burden[23–25]. Future short-form videos should continue to address clinical recognition and management, but also systematically include information on risk factors, susceptible populations, and prevention strategies. Doing so would strengthen public awareness and support more comprehensive health education.

Overall Video Quality, Reliability, and Content Completeness Score

The suboptimal quality and reliability observed here align with previous reports on health-related short videos. A study on gonorrhea-related videos indicated that content on TikTok had low quality and reliability[26], and Qi et al. reported that videos related to bipolar disorder on TikTok and Bilibili were also of inadequate quality and reliability[27]. Potential reasons for these deficiencies include low barriers for content upload, recommendation algorithms favoring highly engaging but not necessarily evidence-based content, and limited medical oversight on the platforms. It is therefore recommended that platforms strengthen the review and supervision of health-related videos, implement mechanisms for medical expert review or source verification, and promote the dissemination of trustworthy health information to protect public health.

Different uploaders Video Quality, Reliability, and Content Completeness Score

On TikTok, specialist physicians uploaded 98% of AC-related videos, suggesting relatively strict identity verification and concentrated content production. In contrast, Bilibili showed greater uploader diversity-26% from non-specialist physicians and 30% from institutions-which may reflect less stringent verification mechanisms. Specialist physicians also achieved higher GQS, mDISCERN[28], and content completeness scores than non-specialist physicians, indicating that professional background significantly influences content quality and reliability. This is consistent with prior studies showing that professional content tends to be more scientific and standardized[29–30]. Institutional uploaders had the highest content completeness scores, likely due to their access to diverse professional expertise, greater

clinical experience, and stricter internal review processes that ensure accuracy and comprehensiveness[31].

Correlation analysis

Engagement metrics (likes, comments, favorites, shares) were positively correlated with each other, suggesting that videos with high interaction tend to perform consistently across multiple engagement dimensions. No association was found between engagement metrics and GQS or mDISCERN scores, indicating that user interaction likely reflects popularity rather than content quality. This is congruent with previous findings [22, 29].

The correlation analysis demonstrated a small positive correlation between video length and GQS, mDISCERN and video content completeness score indicating that longer videos provide greater completeness and more high-quality information than shorter videos possibly due to the longer time frame providing additional opportunities to elaborate on the medical content. This finding is consistent with some previous studies, including Lei et al. (2025)[22]. The weak correlation seen in the current study may have been attributable to the fact that video creators used the additional time to create videos differently based on the specific characteristics of their content thus while use of video length may aid in the improvement of the quality of information provided, it may not have any definitive impact on reliability or educational value of the video presentation therefore it is essential to use multiple indicators in order to fully evaluate the various dimensions of video quality.

Limitations

This study has several limitations. First, the data were derived exclusively from domestic short-video platforms (TikTok and Bilibili), without including international platforms such as YouTube. Therefore, the findings may not be readily generalizable to platforms operating under different cultural or regulatory contexts. Second, the relatively small sample size limits the robustness of the statistical findings and representativeness. In addition, although validated instruments such as GQS and mDISCERN were used, the scoring process inevitably involved a degree of subjectivity. Finally, as a cross-sectional study, this work cannot capture temporal or longitudinal changes in the quality and reliability of videos related to acute cholecystitis.

Conclusion

This cross-sectional study evaluated the quality, reliability, and content completeness of short videos related to AC on TikTok and Bilibili. The video content was mainly focused on clinical manifestations and treatment, while overall scores for video quality, reliability, and content completeness were suboptimal. There were no significant differences in video quality or reliability between the two platforms. Compared with videos uploaded by non-specialist physicians, those uploaded by specialist physicians achieved higher scores in quality, reliability, and content completeness, and videos uploaded by institutional accounts had the highest content completeness score. Notably, user engagement indicators were not

correlated with video quality, reliability, or content completeness. These findings highlight the need to strengthen platform regulation, encourage greater involvement of healthcare Specialist physicians in health-related content creation, and enhance public health literacy to promote the dissemination of high-quality videos.

Declarations

Author contributions

Conceptualization: Hong-yan Ma , Tie-song Wu, Hao Song, Rong Bai

Methodology: Hao Song; Formal Analysis: Hao Song; Data Curation: Rong Bai; Investigation: Tie-song Wu; Writing – Original Draft: Hong-yan Ma; Writing – Review & Editing: Rong Bai; Supervision: Hong-yan Ma; Project Administration: Tie-song Wu; All authors have read and approved the final manuscript.

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Conflicting interests

The authors declare no competing interests.

Patient and public involvement

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

Patient consent for publication

Not applicable.

Ethics approval

Clinical datasets, human samples, and laboratory animals were not employed in the present research. All relevant information was obtained from openly accessible TikTok and Bilibili video resources, with the collected data posing no threats to individual privacy. Furthermore, since this study involved no direct engagement with platform users, formal ethical approval was deemed unnecessary.

Guarantor

Hong-yan Ma and Rong Bai.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Figures

Figure1

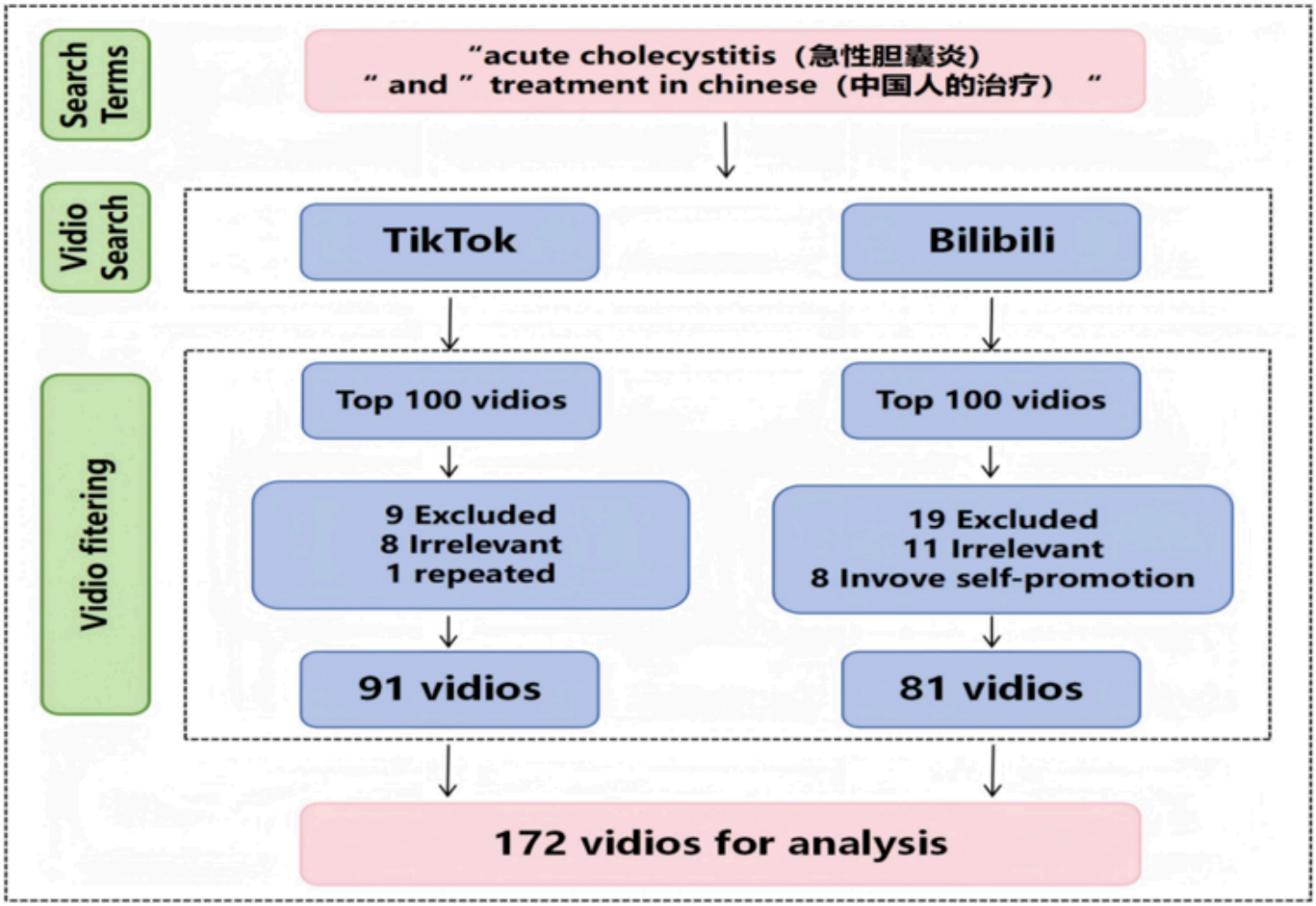


Figure 1

Search strategy and video filtering program.

Figure2

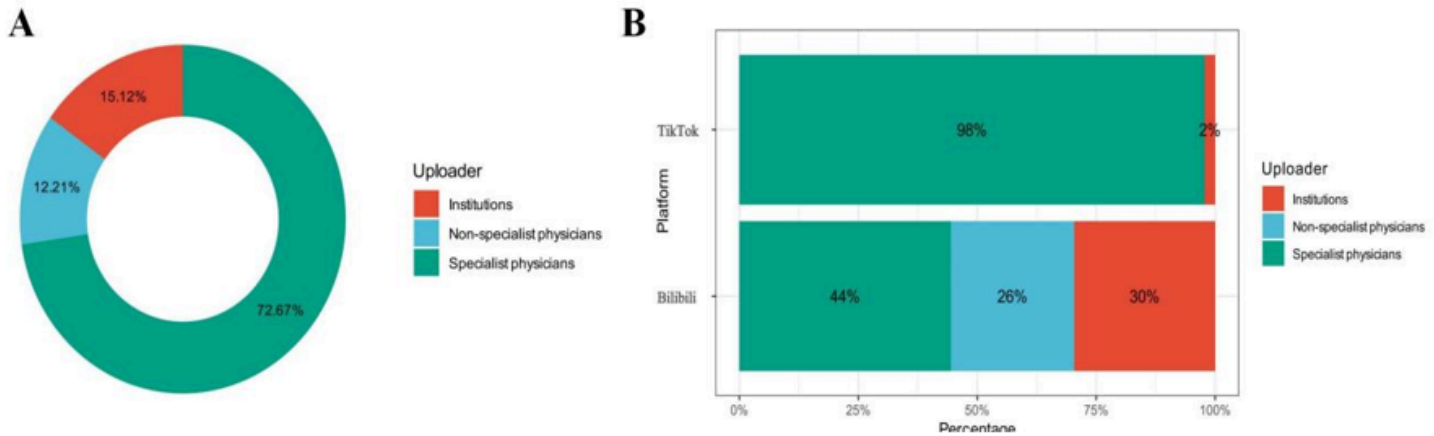


Figure 2

Uploader types information on AC-related videos from TikTok and Bilibili. (a) Circular Pie chart showing the percentage of uploader types on all platforms (b), percentage stacked bar chart showing the percentage of uploader types on different platforms (TikTok and Bilibili). AC: acute cholecystitis.

Figure3

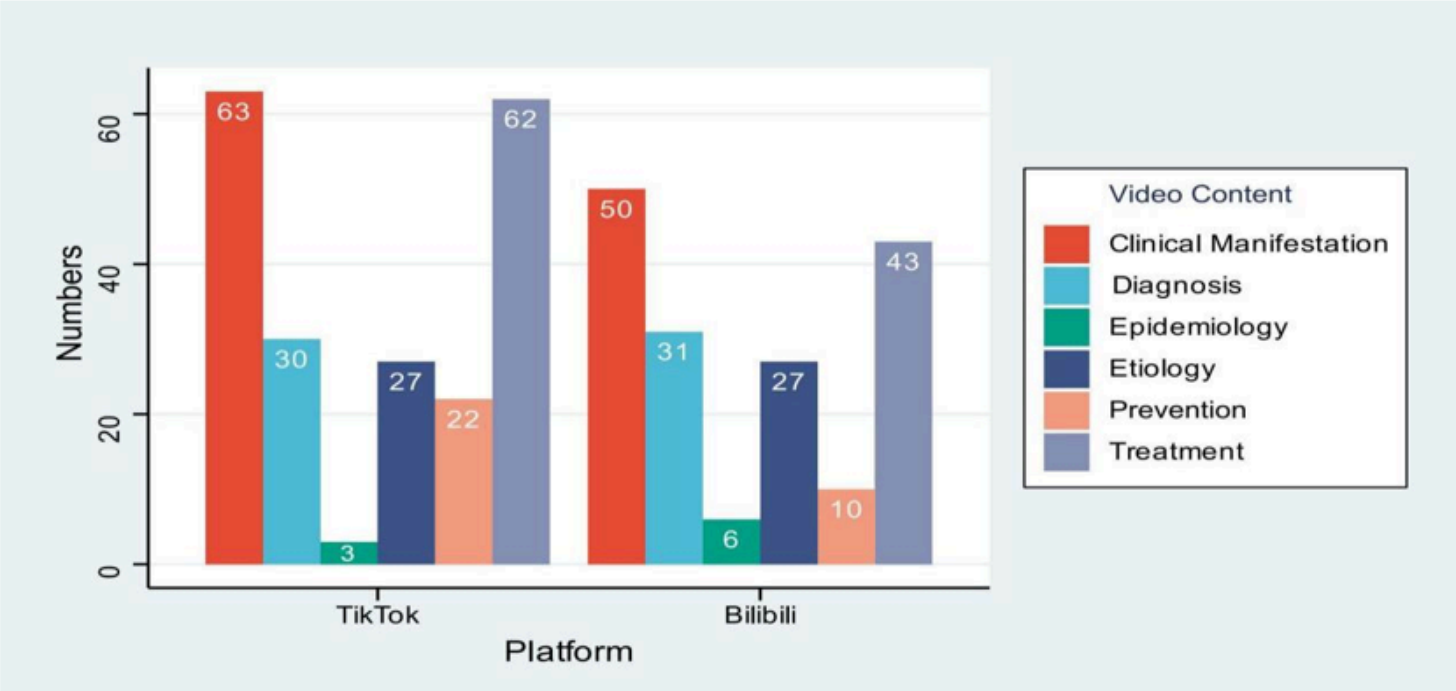


Figure 3

The distribution of video content between TikTok and Bilibili.

Figure4

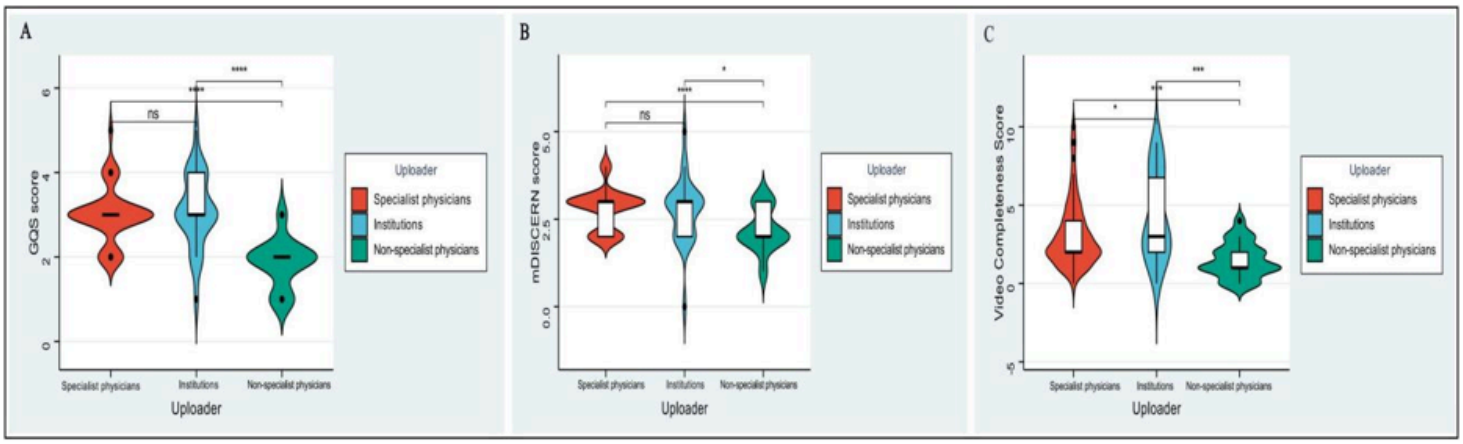


Figure 4

Distribution of quality and reliability scores across different types of uploader groups. (a) GQS score. (b) mDISCERN score. (c) content completeness score.

Figure5

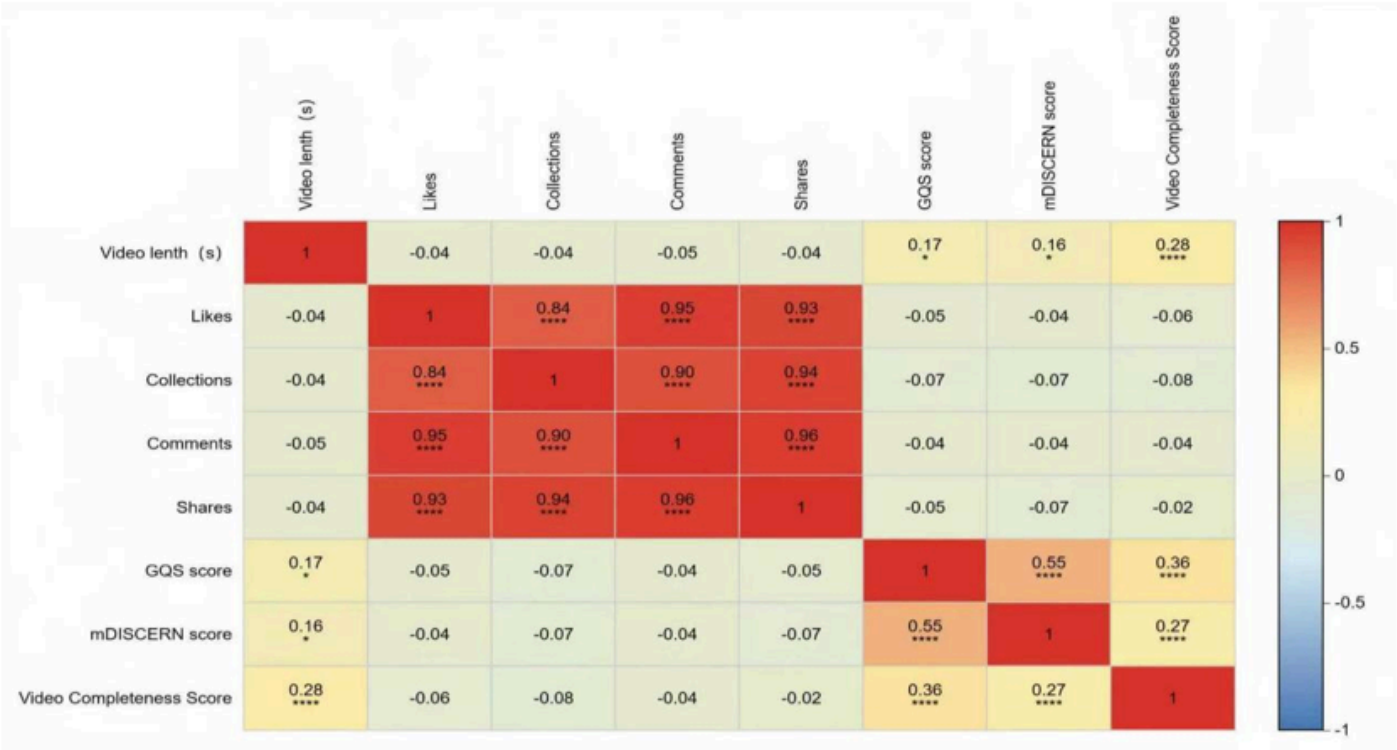


Figure 5

Correlation matrix of Spearman’s correlation analysis between video metrics and quality scores.