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Quality and Reliability of Deep Venous Thrombosis-Related Videos on TikTok and Bilibili

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Background: Deep venous thrombosis (DVT) is a prevalent, life-threatening condition with inadequate public awareness. Social media platforms are significant sources of health information. However, they often suffer from variable content quality. This study systematically evaluated DVT-related videos on TikTok and Bilibili, which represent the dominant short-video and medium-to-long video platforms in China.

Methods: The top 150 DVT-related videos from each platform, TikTok and Bilibili, sorted by default, were retrieved and screened. The basic characteristics of the included videos, as well as the user engagement metrics, were recorded. The quality of the included videos was assessed using the Global Quality Scale (GQS), the modified DISCERN (mDISCERN) score, and the Journal of the American Medical Association (JAMA) benchmark criteria.

Results: TikTok videos had higher engagement (all $P < 0.001$) and shorter duration (median 88s vs 233.5s, $P < 0.001$). Quality-wise, except for a good GQS rating for Bilibili, quality scores across both platforms were generally moderate or poor. Specifically, Bilibili scored higher on GQS (median 4 vs 3, $P < 0.001$), while TikTok performed better on mDISCERN and JAMA (both $P < 0.001$). Furthermore, user engagement was negatively correlated with GQS scores but positively correlated with both mDISCERN and JAMA scores, revealing a potential mismatch between popularity and professional quality.

Conclusion: Despite high user engagement, DVT videos on both platforms demonstrate deficient informational quality and reliability, underscoring a significant gap in accessible public health education. Therefore, multi-stakeholder collaboration is imperative to enhance content standards and facilitate effective health dissemination.

Keywords: deep venous thrombosis, social media, public health education, quality, reliability

Introduction

Deep venous thrombosis (DVT), the formation of a thrombus within the deep venous system, remains a prevalent and life-threatening clinical condition. As a key component of venous thromboembolism (VTE), DVT stands as a significant driver of the global disease burden.[1] The global annual incidence of DVT ranges from 53.1 to 162 cases per 100,000 individuals, with a clear upward trend with age in both genders.[2,3] DVT can develop anywhere in the body, but it is most often located in the legs. Swelling, pain, warmth, and erythema of the affected limb are all typical clinical manifestations of DVT, though approximately 80% of patients could be asymptomatic in the early stage.[4–7] Recurrent thrombosis, post-thrombotic syndrome (PTS), and fatal pulmonary embolism (PE) are serious consequences of DVT.[8,9] It is reported that the 30-day mortality rates after DVT and PE diagnosis were estimated at 6% and 12%, respectively.[10] Alarmingly, public awareness regarding the potential danger of DVT remains severely inadequate. A lower level of global public awareness is observed for DVT (44%) in comparison to heart attack (80%) and stroke (85%).[3,11,12] The public awareness that blood

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clots are preventable was found to be minimal (45%). Furthermore, the awareness of symptoms of DVT and PE was found to be 28% and 19%, respectively.[12] This cognitive gap underscores the urgency of high-quality health education.

With the widespread adoption of wireless internet and smartphones, the public is increasingly looking to online platforms for health information.[13] Health videos on social platforms, which integrate visuals, audio, and animations, have been shown to lower the barriers to knowledge acquisition and simplify complex medical concepts.[14,15] Platforms such as YouTube, Bilibili, and TikTok facilitate the rapid dissemination of health-related content through algorithmic recommendations and high interactivity.[16] However, these advantages are overshadowed by severe content-quality risks. In contrast to traditional peer-reviewed medical literature, social media health science videos have an extremely low publication threshold. Anyone without professional qualifications can create and spread content, directly leading to a mix of high- and low-quality content on the platforms. Previous studies have confirmed that health videos on such platforms generally have low overall quality, with prevalent misleading or even incorrect medical information.[17,18] More importantly, most platform audiences lack medical expertise, struggle to distinguish the scientific validity and accuracy of information, and are easily misled by incorrect content.[19] This may ultimately hinder the public's understanding of disease and preventive behaviors.

Therefore, a systematic evaluation of DVT health science videos is crucial for screening high-quality resources and guiding effective health education.[20] However, to our knowledge, there is a scarcity of dedicated video evaluations specifically focusing on DVT. Moreover, few studies have concentrated on Bilibili and TikTok, the two most influential platforms among Chinese users. TikTok and Bilibili represent the dominant short-video and medium-to-long video platforms in China, respectively. TikTok boasts over 766 million daily active users and a penetration rate of 71% among Chinese internet users, serving as a primary information source for the general public, while Bilibili has reached 117 million daily active users and over 378 million monthly active users, specifically aggregating a younger demographic interested in educational content.[21,22] While previous studies have assessed the quality of health information on these specific platforms regarding conditions such as diabetic kidney disease and liver cancer, there is a notable absence of research addressing DVT.[23,24] This study aims to characterize the features of DVT-related videos on these two platforms and assess their content quality using a variety of validated video assessment scales. Crucially, beyond descriptive analysis, this study seeks to explicitly investigate the correlation between user engagement metrics and professional information quality. By analyzing the potential dissonance between popularity and reliability, a core contradiction in digital health communication, this work aims to provide evidence-based recommendations for optimizing health science content. It thereby fills critical gaps in current research. It also supports targeted improvements in public cognition and DVT prevention.

Methods

Search Strategy and Data Collection

In October 2025, a search was conducted for videos containing the keyword "deep venous thrombosis" on the social media platforms TikTok and Bilibili. Although previous literature indicates that the typical browsing limit for social media users is approximately 100 videos,[25,26] we adopted a conservative strategy by selecting the top 150 videos as the initial sample. This oversampling ensures that the final dataset fully covers the content most visible to users, even after the exclusion of irrelevant or duplicate videos. The default sorting method was chosen because it balances content relevance with popularity and integrates personalized user behavior, thereby mitigating the selection bias associated with single-dimensional metrics. To minimize the potential impact of biases in search results, newly created accounts with no prior browsing history were used for retrieval on each platform. All videos were browsed without downloading, liking, saving, commenting, or sharing. The inclusion criteria for the study were videos containing DVT content in either Chinese or English. The exclusion criteria included non-Chinese or non-English videos, duplicate videos (identical content uploaded by different users), and irrelevant videos.

To define the properties of each DVT-related video, basic descriptive characteristics were collected on the day of the search. The following information was recorded for each video: title, release time, duration, video theme, content, video

style, uploader information, and user engagement metrics (number of likes, saves, comments, and shares, at the time of retrieval to prevent post-hoc changes).

Quality Assessment of Videos

The quality of content in all eligible online videos was assessed using three standardized and validated instruments: the Global Quality Scale (GQS),[27] the modified DISCERN tool (mDISCERN),[28,29] and the Journal of the American Medical Association (JAMA) benchmark criteria.[30,31] These tools collectively evaluated distinct dimensions of content quality and reliability, which have been widely applied in previous studies.

The GQS is a 5-point Likert scale developed to evaluate the overall educational value of videos, a higher score indicates better information quality (1 = poor; 5 = excellent).

The mDISCERN tool, meanwhile, is a scoring scale made up of five yes/no questions, utilised to assess information integrity. The primary emphasis of this scale is on the principles of clarity, reliability of source material, equilibrium, the accessibility of supplementary resources, and the recognition of uncertainties, with a range of scores from 1 (indicating unreliability) to 5 (denoting reliability).

The JAMA score has proposed four dimensions for assessing the reliability of health information, with specific criteria as follows: authorship (author qualifications and affiliations), attribution (references/copyrights), currency (publication/update dates), and disclosure (conflict of interest statement). Each criterion is assigned 1 point, resulting in a maximum total score of 4 points. A higher score indicates greater reliability of the information.

Prior to implementation, two independent evaluators thoroughly reviewed the instructions for scoring using the GQS (Supplementary Table 1), mDISCERN (Supplementary Table 2), and JAMA benchmark criteria (Supplementary Table 3). To mitigate sequence bias, the order of the videos was randomized. All videos were evaluated independently by two reviewers who operated in a blinded manner, with no access to each other's evaluation results during the assessment. Any discrepancies in the evaluation outcomes were first discussed by the two reviewers to reach a mutual agreement. If consensus could not be achieved through discussion, a third senior reviewer with over 10 years of clinical and research experience was invited to participate. The final evaluation result of the disputed video was determined solely by the third reviewer's assessment. Inter-rater reliability was assessed using Cohen's kappa coefficient. The results demonstrated excellent agreement across all evaluation items, with coefficients of 0.881 for GQS, 0.918 for mDISCERN, and 0.936 for JAMA benchmark criteria.

Statistical Analyses

Statistical analysis was conducted by SPSS (version 27.0; IBM Corp). Because the data were not normally distributed, non-parametric methods were used for statistical analysis. Categorical variables were presented as frequencies and percentages. Continuous variables are presented as median and interquartile range (IQR), and range [minimum-maximum] to fully capture the data distribution. Continuous variables are presented as median and interquartile range (IQR). The Mann–Whitney test was used for comparisons between two groups, while the Kruskal–Wallis tests were used for comparisons between more than two groups. The Spearman rank correlation test was conducted for correlation analysis. Results with $P < 0.05$ are considered statistically significant.

Results

Video Characteristics

A total of 268 videos (146 from TikTok and 122 from Bilibili) were included in the final analysis, with the search and selection process detailed in Figure 1. Table 1 presents user engagement and video duration for DVT-related videos, along with the detailed GQS, mDISCERN, and JAMA scores for the two platforms. TikTok videos were associated with markedly greater user engagement (all $P < 0.001$), while Bilibili videos were characterized by a considerably longer median duration (233.50 seconds vs 88.00 seconds, $P < 0.001$). In terms of quality assessment, Bilibili videos achieved a significantly higher median GQS score than those on TikTok (4 vs 3, $P < 0.001$). This difference was further highlighted by the proportion of videos rated as good or excellent (GQS scores of 4 or 5). On Bilibili, this proportion

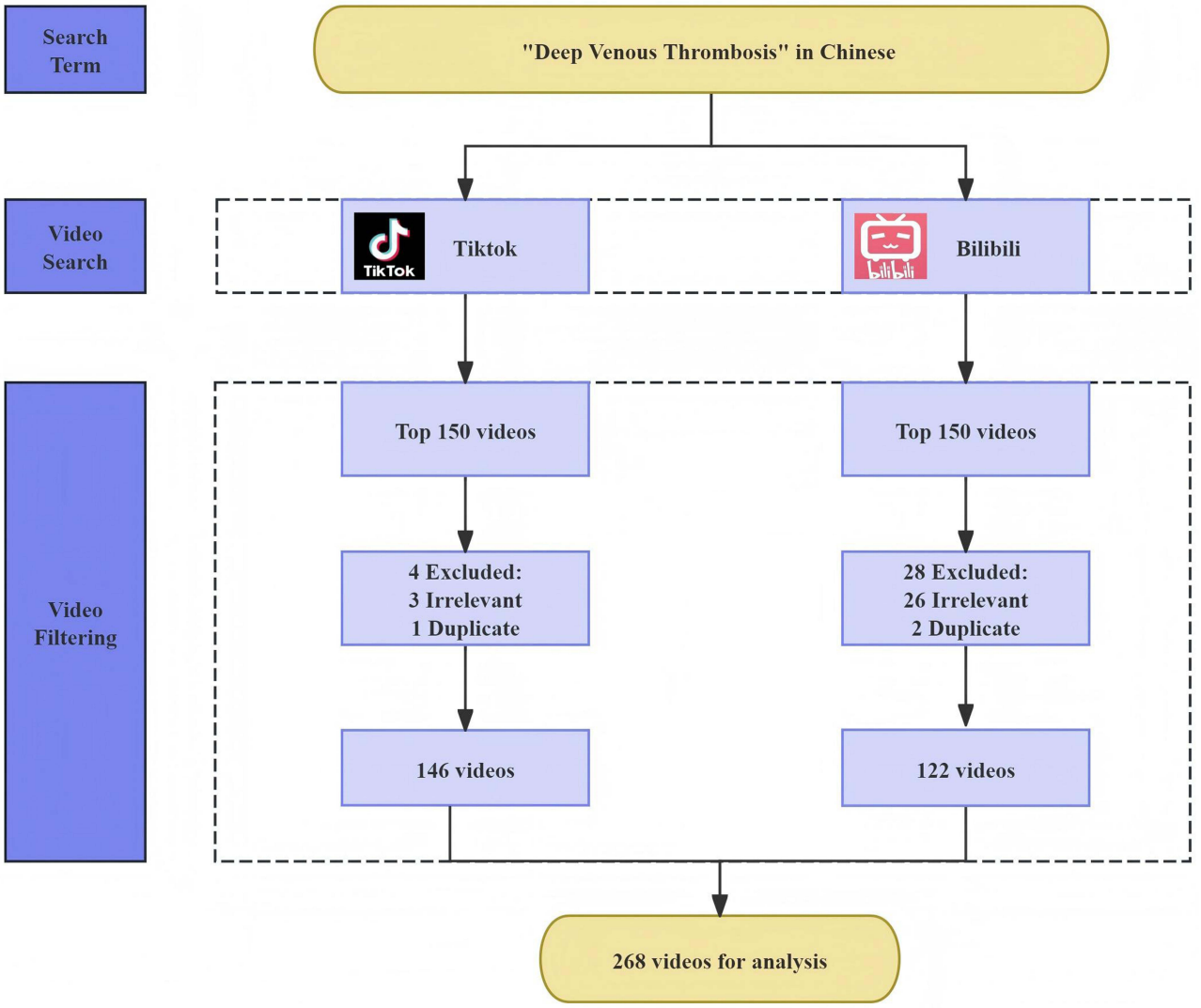

Figure 1 Search strategy for videos on deep venous thrombosis.

exceeded 50%, whereas on TikTok, it was less than 20%. In contrast, TikTok recordings achieved significantly higher mDISCERN and JAMA scores (both $P < 0.001$), with more than 90% meeting the threshold scores of ≥2 for each metric, compared to 59.84% and 46.72% on Bilibili, respectively. Notably, however, the absolute scores remained low despite

Table 1 Detailed Characteristics of Deep Venous Thrombosis-Related Videos on TikTok and Bilibili

Variable	Total (N = 268), Median(IQR), [Min-Max]; *n* (%)	TikTok (n = 146), Median (IQR), [Min-Max]; *n* (%)	Bilibili (n = 122), Median (IQR), [Min-Max]; *n* (%)	*P* value
General information				
Likes	94.50 (20.25, 435.75) [0–138,169]	322.00 (91.75, 1103.75) [14–138,169]	19.00 (3.75, 67.50) [0–17,667]	**<0.001**
Saves	62.50 (13.00, 222.50) [0–53,528]	88.50 (23.00, 388.50) [2–53,528]	30.50 (7.00, 125.25) [0–7020]	**<0.001**
Comments	6.00 (1.00, 30.75) [0–20,421]	16.00 (6.00, 77.75) [0–20,421]	1.00 (0.00, 5.00) [0–665]	**<0.001**
Shares	34.50 (8.00, 174.50) [0–269,569]	63.50 (15.00, 335.00) [0–269,569]	17.50 (3.75, 74.75) [0–3000]	**<0.001**
Duration(s)	114.50 (70.00, 240.25) [12–3226]	88.00 (57.00, 131.00) [12–701]	233.50 (96.25, 558.00) [37–3226]	**<0.001**

(*Continued*)

Table 1 (Continued).

Variable	Total (N = 268), Median(IQR), [Min-Max]; *n* (%)	TikTok (n = 146), Median (IQR), [Min-Max]; *n* (%)	Bilibili (n = 122), Median (IQR), [Min-Max]; *n* (%)	*P* value
Video quality				
GQS score	3.00 (3.00, 4.00) [1–5]	3.00 (3.00, 3.00) [1–5]	4.00 (3.00, 4.00) [1–5]	**<0.001**
1	2 (0.75%)	1 (0.68%)	1 (0.82%)	
2	18 (6.72%)	9 (6.16%)	9 (7.38%)	
3	155 (57.84%)	112 (76.71%)	43 (35.25%)	
4	75 (27.99%)	20 (13.70%)	55 (45.08%)	
5	18 (6.72%)	4 (2.74%)	14 (11.48%)	
mDISCERN score	2.00 (2.00, 2.00) [0–4]	2.00 (2.00, 2.00) [0–3]	2.00 (1.00, 2.00) [0–4]	**<0.001**
0	3 (1.12%)	1 (0.68%)	2 (1.64%)	
1	54 (20.15%)	7 (4.79%)	47 (38.52%)	
2	190 (79.90%)	124 (84.93%)	66 (54.10%)	
3	20 (7.46%)	14 (9.59%)	6 (4.92%)	
4	1 (0.37%)	0 (0.00%)	1 (0.82%)	
JAMA score	2.00 (2.00, 2.00) [1–3]	2.00 (2.00, 2.00) [1–3]	1.00 (1.00, 2.00) [1–3]	**<0.001**
0	0 (0.00%)	0 (0.00%)	0 (0.00%)	
1	66 (24.63%)	1 (0.68%)	65 (53.28%)	
2	188 (70.15%)	134 (91.78%)	54 (44.26%)	
3	14 (5.22%)	11 (7.53%)	3 (2.46%)	
4	0 (0.00%)	0 (0.00%)	0 (0.00%)	

Note: values in bold indicate statistical significance ($P < 0.05$).
Abbreviations: IQR, Interquartile Range; GQS, Global Quality Scale; mDISCERN, Modified DISCERN; JAMA, Journal of American Medical Association.

the higher median. The median mDISCERN score on TikTok was 2, indicating less reliable quality, and similarly, the median JAMA score was 2 out of 4.

Video Uploaders

Significant differences were observed in the distribution of uploader between the two platforms (Figure 2A and B). Professional individuals accounted for the vast majority of videos on TikTok (91.8%, 134/146), compared to only 8.2% (12/146) by nonprofessionals. Conversely, on Bilibili, 72.1% (88/122) of videos were uploaded by nonprofessional individuals.

Video Styles

Notable differences were observed in the primary video styles between the two platforms (Figure 2C and D). On TikTok, personal narratives constituted the largest category at 58.2% (85/146), followed by medical scenarios at 31.5% (46/146). In contrast, the videos on Bilibili were predominantly characterized by animations, which accounted for 41.8% (51/122), followed by personal narratives (23.8%, 29/122) and instructional content (21.3%, 26/122).

Video Main Themes

A comparative analysis revealed distinct distributions of main themes between the two platforms (Figure 2E and F). Treatment emerged as the predominant theme on TikTok, accounting for 41.1% (60/146) of videos, followed by prophylaxis (18.5%, 27/146) and complications and prognosis (15.1%, 22/146). In contrast, prophylaxis was the most frequent theme on Bilibili (28.7%, 35/122). The second and third most frequent themes on Bilibili were definition/epidemiology/etiology/risk factors (20.5%, 25/122) and treatment (17.2%, 21/122), respectively. Notably, nursing and rehabilitation guidance was exclusively identified on Bilibili, comprising 6.6% (8/122) of its content, whereas it was absent from TikTok. Despite these differences, the combined proportion of prophylaxis and treatment themes was substantial on both platforms, accounting for over 50% of the content on TikTok and over 40% on Bilibili.

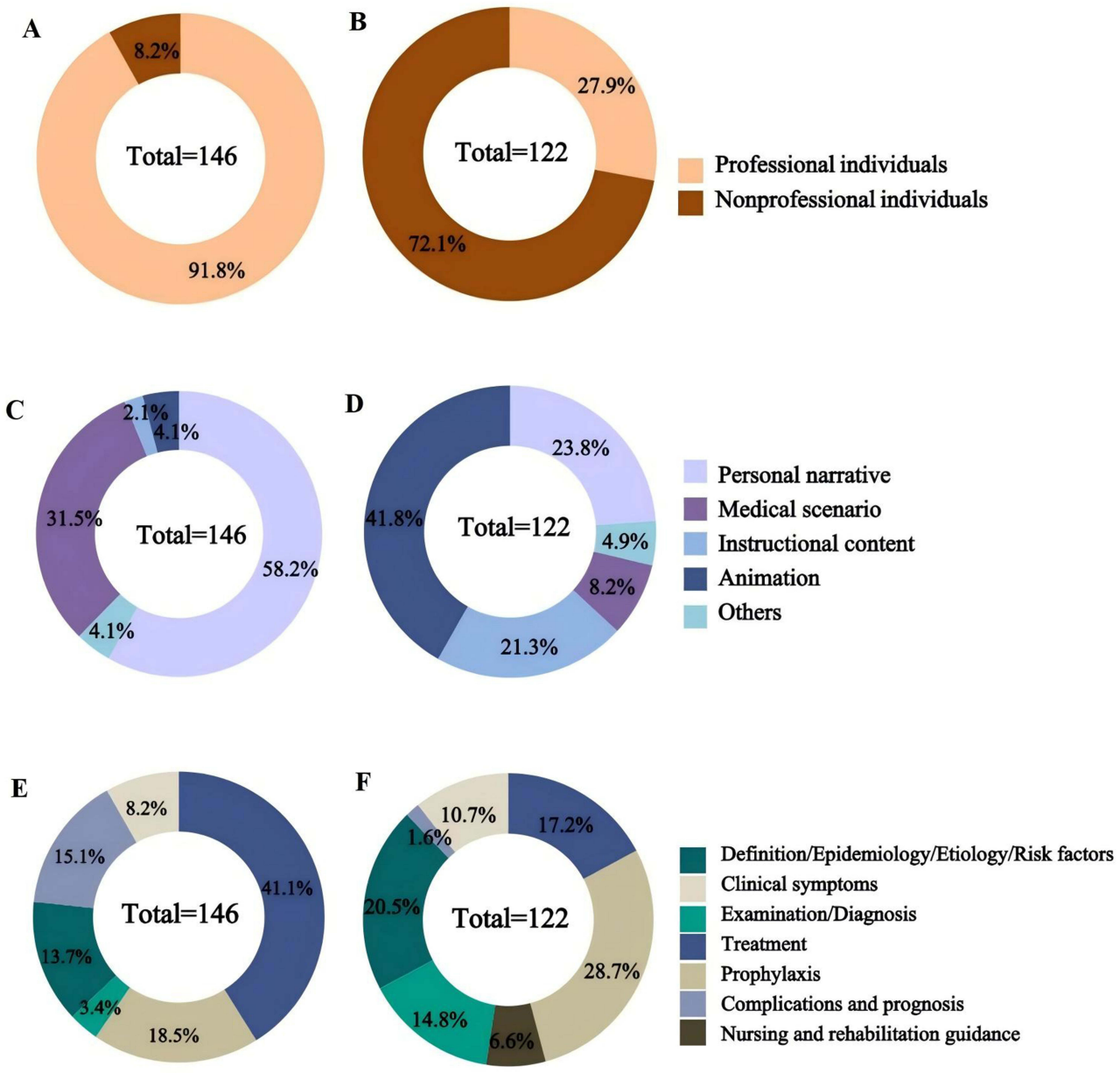

Figure 2 Percentage of deep venous thrombosis-related videos from different uploaders, with different video styles and different video main themes in TikTok and Bilibili. (**A**) Uploaders of TikTok videos. (**B**) Uploaders of Bilibili videos. (**C**) Video styles of TikTok videos. (**D**) Video styles of Bilibili videos. (**E**) Main themes of TikTok videos. (**F**) Main themes of Bilibili videos.

Content Coverage Depth

Regarding the depth of content coverage, notable differences were observed between the two platforms (Figure 3A and B). TikTok videos demonstrated a greater emphasis on treatment-related topics, as evidenced by both a higher overall percentage (61.64%, 90/146, including brief mentions and detailed explanations) and a higher proportion of videos dedicated exclusively to detailed explanations (45.21%, 66/146). Conversely, Bilibili featured more content covering definition/epidemiology/etiology/risk factors (51.64%, 63/122), while maintaining higher descriptive depth in its prophylaxis-related content (30.33%, 37/122). Notably, nursing and rehabilitation guidance represented the least prevalent content category on both platforms.

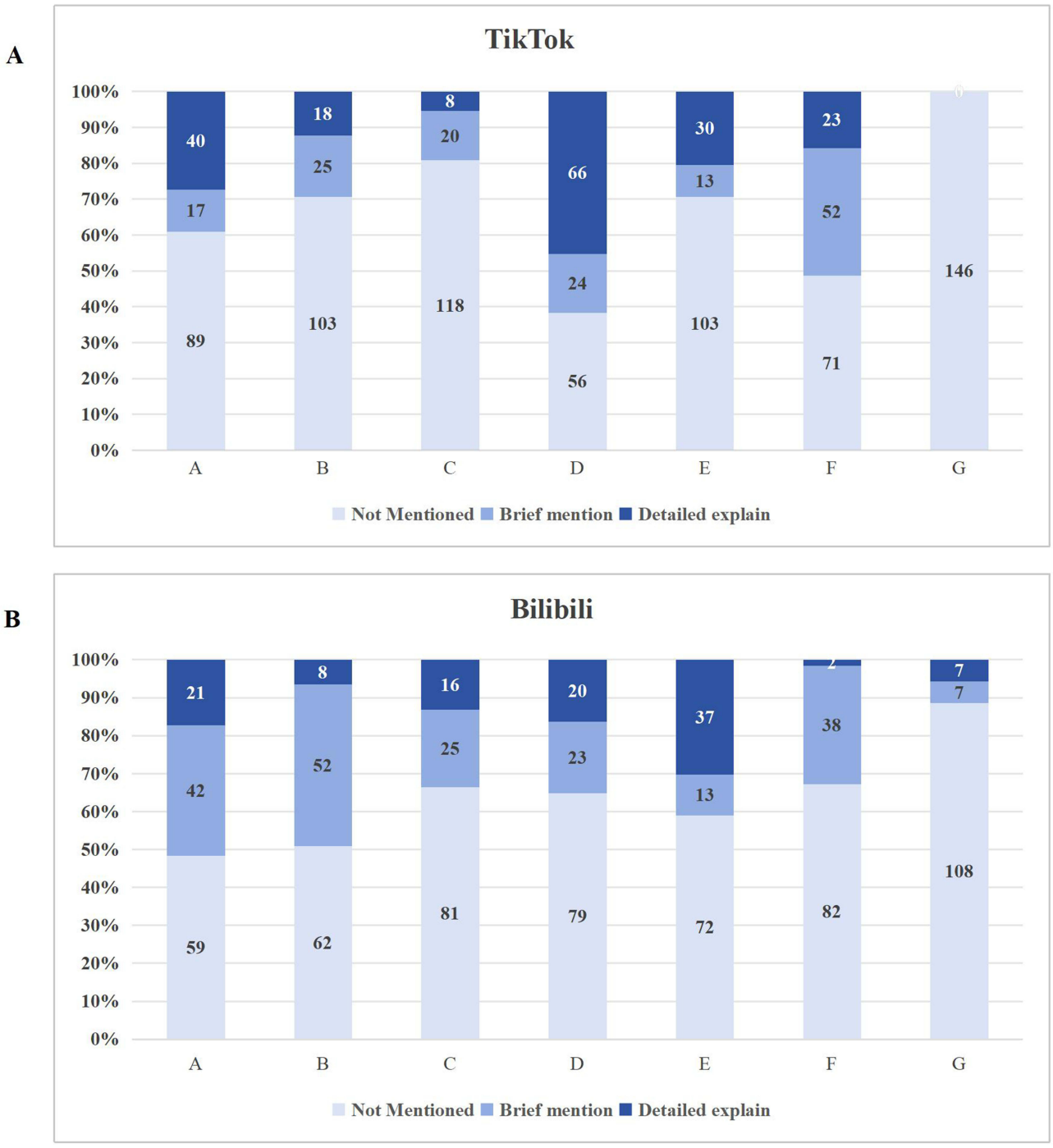

Figure 3 Content coverage depth on TikTok and Bilibili. (**A**) TikTok videos. (**B**) Bilibili videos. A: Definition/Epidemiology/Etiology/Risk factors; B: Clinical symptoms; C: Examination/Diagnosis; D: Treatment; E: Prophylaxis; F: Complications and prognosis; G: Nursing and rehabilitation guidance.

Video Quality and Reliability Assessments

The impact of uploader category on video metrics and quality was presented in Table 2. The professional uploader was associated with higher median user engagement metrics (likes: 175.50; saves: 66.00; comments: 10.00; shares: 41.00). A statistically significant advantage was observed for professional individuals in the median counts of likes and saves compared to nonprofessional individuals ($P < 0.001$). Furthermore, videos from professional individuals were substantially shorter (median 91.50 seconds) compared with videos from nonprofessional individuals (median > 11 minutes). In terms of quality, professional

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Table 2 Detailed Characteristics of Deep Venous Thrombosis-Related Videos by Different Uploaders

Variables	Likes	Saves	Comments	Shares	Duration (s)	GQS Score	mDISCERN Score	JAMA Score
Professional individuals (n = 168), median (IQR), [Min-Max]	175.50 (51.25, 624.00) [0–138,169]	66.00 (17.00, 233.75) [0–53,528]	10.00 (3.25, 48.50) [0–8932]	41.00 (9.25, 182.25) [0–205,412]	91.50 (60.25, 132.75) [16–606]	3.00 3.00, 3.00) [2–5]	2.00 (2.00, 2.00) [1–3]	2.00 (2.00, 2.00) [1–3]
Nonprofessional individuals (n = 100), median (IQR), [Min-Max]	21.50 (4.25, 125.75) [0–43,667]	55.50 (9.25, 205.50) [0–7020]	1.00 (0.00, 13.50) [0–20,421]	26.50 (7.00, 174.50) [0–269,569]	689.25 (107.00, 689.25) [12–3226]	4.00 (3.00, 4.00) [1–5]	2.00 (1.00, 2.00) [0–4]	1.00 (1.00, 2.00) [1–3]
***P* value**	**<0.001**	0.138	**<0.001**	0.308	**<0.001**	**<0.001**	**<0.001**	**<0.001**

Note: values in bold indicate statistical significance ($P < 0.05$).

Abbreviations: IQR, Interquartile Range; GQS, Global Quality Scale; mDISCERN, Modified DISCERN; JAMA, Journal of American Medical Association.

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uploaders achieved significantly higher mDISCERN and JAMA scores ($P < 0.001$). However, GQS scores were higher for nonprofessional videos: the median GQS for professional videos was 3, compared with 4 for nonprofessional videos ($P < 0.001$).

Video style influenced metrics and quality measures (Table 3). Animated videos exhibited a characteristic pattern: a long median duration (564 seconds), lower median user engagement (measured by likes, comments, and shares), and lower mDISCERN and JAMA scores, yet they achieved a relatively higher GQS ($P < 0.05$).

Table 4 reports the impact of the main theme on video characteristics. Videos focusing on complications and prognosis elicited greater user engagement, with statistically higher numbers of likes and comments ($P < 0.05$).

Correlation Analysis

Spearman correlation analysis revealed a distinct "quality paradox". Videos with higher GQS scores were associated with significantly lower user engagement, showing negative correlations with likes ($r = -0.224$, $P < 0.001$) and comments ($r = -0.226$, $P < 0.001$). Additionally, GQS was positively correlated with video duration ($r = 0.488$, $P < 0.001$), indicating that longer videos tended to be more comprehensive but less engaging.

In contrast to GQS, the reliability metrics (mDISCERN and JAMA) exhibited an opposite trend. Both scores were positively associated with user engagement and negatively associated with duration. Specifically, mDISCERN scores showed positive correlations with likes ($r = 0.259$, $P < 0.001$), saves ($r = 0.162$, $P = 0.008$), comments ($r = 0.240$, $P < 0.001$), and shares ($r = 0.169$, $P = 0.005$), but a negative correlation with duration ($r = -0.143$, $P = 0.019$). Similarly, JAMA scores were positively correlated with likes ($r = 0.455$, $P < 0.001$), saves ($r = 0.281$, $P < 0.001$), comments ($r = 0.422$, $P < 0.001$), and shares ($r = 0.211$, $P = 0.001$), while negatively correlated with duration ($r = -0.233$, $P < 0.001$) (Table 5).

Finally, regarding the relationships among engagement metrics themselves, strong positive correlations were consistently observed (Table 6). Likes were strongly correlated with saves ($r = 0.846$, $P < 0.001$), comments ($r = 0.918$, $P < 0.001$), and shares ($r = 0.788$, $P < 0.001$). Saves also showed strong correlations with comments ($r = 0.737$, $P < 0.001$) and shares ($r = 0.927$, $P < 0.001$). However, general video duration showed negative correlations with likes, comments, and shares ($P < 0.05$).

Discussion

Principal Findings

This study evaluated the quality and reliability of DVT-related videos on TikTok and Bilibili using the GQS, mDISCERN, and JAMA assessment tools. The analysis revealed a divergent relationship where video popularity was positively correlated with reliability metrics (mDISCERN and JAMA) yet, paradoxically, negatively associated with overall content quality (GQS).

However, the most critical failure identified across both platforms was the abysmal performance in information sourcing. Despite TikTok showing better adherence to mDISCERN and JAMA criteria compared to Bilibili, both platforms exhibited severe deficiencies in sourcing verifiable information. This result was consistent with the reported studies by Liang et al.[32] Short video lengths on TikTok may prompt creators to condense content into concise takeaway statements, often at the expense of thorough argumentation and explicit source citations. Conversely, although Bilibili's allowance for longer videos should, in principle, facilitate detailed presentation of sources and supporting evidence, many creators appear not to exploit this opportunity, producing extended opinion pieces rather than rigorously referenced information.

The widespread lack of sourcing information on both platforms represents a critical public health failure. For a condition like DVT that involves complex anticoagulation management and life-threatening risks such as pulmonary embolism, unsourced advice poses severe dangers. As highlighted by a recent qualitative study, the lack of verifiable referencing on digital platforms exacerbates this risk by trapping users in "echo chambers" where they prioritize readily available but scientifically unsupported anecdotes over professional guidelines.[19] Without verifiable references, users cannot distinguish between evidence-based guidelines and harmful home remedies, for example vigorous massage for leg swelling which can cause a clot to break loose. This general absence of citations undermines the safety of health information, rendering even highly engaging videos potentially hazardous.

Table 3 Detailed Characteristics of Deep Venous Thrombosis-Related Videos by Different Video Styles

Variables	Likes	Saves	Comments	Shares	Duration (s)	GQS Score	mDISCERN Score	JAMA Score
Personal narrative (n = 114), median (IQR), [Min-Max]	212.00 (52.25, 751.25) [0–138,169]	77.00 (20.00, 389.50) [0–53,528]	16.00 (4.00, 59.25) [0–8932]	59.50 (13.00, 326.50) [0–205,412]	105.00 (68.00, 160.00) [30–606]	3.00 (3.00, 4.00) [1–5]	2.00 (2.00, 2.00) [0–3]	2.00 (2.00, 2.00) [1–3]
Medical scenario (n = 56), median (IQR), [Min-Max]	142.50 (40.50, 404.25) [1–49,350]	39.00 (11.50, 126.25) [1–23,899]	8.00 (3.00, 22.50) [0–3251]	20.50 (5.75, 81.00) [0–25,298]	72.00 (44.75, 103.00) [16–222]	3.00 (3.00, 3.00) [2–4]	2.00 (2.00, 2.00) [1–3]	2.00 (2.00, 2.00) [1–2]
Instructional content (n = 29), median (IQR), [Min-Max]	22.00 (5.00, 125.00) [1–17,667]	29.00 (13.00, 185.00) [0–7020]	2.00 (0.00, 17.00) [0–665]	48.00 (19.00, 263.00) [1–3000]	105.00 (85.00, 253.00) [53–654]	3.00 (3.00, 4.00) [2–5]	2.00 (1.00, 2.00) [0–3]	1.00 (1.00, 2.00) [1–2]
Animation (n = 57), median (IQR), [Min-Max]	20.00 (3.00, 54.00) [0–6356]	39.00 (7.00, 140.00) [0–2148]	0.00 (0.00, 2.00) [0–190]	18.00 (3.00, 84.00) [0–862]	564.00 (247.00, 1317.00) [46–3226]	4.00 (3.00, 4.00) [2–5]	1.00 (1.00, 2.00) [0–4]	1.00 (1.00, 2.00) [1–2]
Others (n = 12), median (IQR), [Min-Max]	381.00 (236.00, 7624.75) [6–43,667]	203.50 (73.00, 2134.75) [5–5872]	45.50 (6.25, 192.25) [0–20,421]	154.00 (16.75, 2944.50) [1–269,569]	117.00 (67.25, 179.75) [12–437]	3.00 (2.00, 4.00) [1–5]	2.00 (1.00, 2.25) [1–3]	2.00 (1.75, 2.25) [1–3]
***P* value**	**<0.001**	**0.002**	**<0.001**	**0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**

Note: Values in bold indicate statistical significance ($P < 0.05$).

Abbreviations: IQR, Interquartile Range; GQS, Global Quality Scale; mDISCERN, Modified DISCERN; JAMA, Journal of American Medical Association.

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Table 4 Detailed Characteristics of Deep Venous Thrombosis-Related Videos by Different Video Main Themes

	Likes	Saves	Comments	Shares	Duration (s)	GQS Score	mDISCERN Score	JAMA Score
Definition/Epidemiology/ Etiology/Risk factors (n = 45), median (IQR), [Min-Max]	56.00 (14.00, 271.00) [0–17,667]	29.00 (12.00, 148.00) [1–7020]	4.00 (0.00, 17.00) [0–665]	27.00 (7.00, 78.00) [0–6479]	112.00 (72.00, 296.00) [35–1546]	3.00 (3.00, 4.00) [2–5]	2.00 (2.00, 2.00) [1–4]	2.00 (1.00, 2.00) [1–3]
Clinical symptoms (n = 25), median (IQR), [Min-Max]	47.00 (27.00, 467.00) [1–9978]	40.00 (13.00, 192.00) [1–3649]	5.00 (1.00, 21.00) [0–648]	16.00 (2.00, 325.00) [0–3316]	73.00 (65.00, 165.00) [37–1829]	3.00 (3.00, 4.00) [1–5]	2.00 (2.00, 2.00) [1–3]	2.00 (2.00, 2.00) [1–2]
Examination/Diagnosis (n = 23), median (IQR), [Min-Max]	43.00 (13.50, 119.00) [0–2660]	87.00 (15.00, 152.50) [0–2079]	2.00 (0.00, 7.00) [0–154]	18.00 (5.50, 73.00) [0–899]	386.00 (109.00, 1184.00) [44–3226]	3.00 (3.00, 3.50) [2–4]	2.00 (1.00, 2.00) [1–2]	2.00 (1.00, 2.00) [1–2]
Treatment (n = 81), median (IQR), [Min-Max]	194.00 (52.00, 575.00) [0–49,350]	69.00 (17.00, 210.00) [1–23,899]	11.00 (4.00, 30.00) [0–3251]	42.00 (10.00, 126.00) [0–25,298]	97.00 (68.00, 148.00) [26–3042]	3.00 (3.00, 3.00) [2–5]	2.00 (2.00, 2.00) [0–3]	2.00 (2.00, 2.00) [1–3]
Prophylaxis (n = 62), median (IQR), [Min-Max]	74.00 (10.25, 593.25) [0–109,739]	64.50 (9.75, 348.50) [0–53,528]	2.50 (0.25, 57.00) [0–20,421]	69.00 (10.75, 436.50) [0–269,569]	144.50 (87.25, 245.50) [12–1725]	3.00 (3.00, 4.00) [2–5]	2.00 (2.00, 2.00) [0–3]	2.00 (1.00, 2.00) [1–3]
Complications and prognosis (n = 24), median (IQR), [Min-Max]	344.50 (82.00, 1439.25) [1–138,169]	111.50 (29.50, 235.50) [0–24,973]	17.50 (6.50, 111.25) [0–3172]	58.50 (12.75, 304.25) [1–22,873]	98.50 (63.00, 158.50) [16–267]	3.00 (3.00, 4.00) [1–5]	2.00 (2.00, 2.00) [0–3]	2.00 (2.00, 2.00) [1–3]
Nursing and rehabilitation guidance (n = 8), median (IQR), [Min-Max]	19.50 (3.50, 25.75) [2–66]	42.50 (12.75, 68.50) [6–140]	0.50 (0.00, 1.00) [0–3]	30.50 (9.50, 56.25) [3–273]	212.50 (97.50, 400.00) [68–627]	3.50 (3.00, 4.00) [2–4]	2.00 (1.00, 2.00) [1–2]	1.50 (1.00, 2.00) [1–3]
***P* value**	**<0.001**	0.647	**<0.001**	0.200	**0.003**	0.250	**0.024**	**0.002**

Note: values in bold indicate statistical significance ($P < 0.05$).

Abbreviations: IQR, Interquartile Range; GQS, Global Quality Scale; mDISCERN, Modified DISCERN; JAMA, Journal of American Medical Association.

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Table 5 Spearman Correlation Analysis Between Video Variables and the GQS Scores, mDISCERN Scores, and JAMA Scores

Variables	GQS Score	mDISCERN Score	JAMA SCORE
Likes			
r	−0.224	0.259	0.455
P value	**<0.001**	**<0.001**	**<0.001**
Saves			
r	−0.014	0.162	0.281
P value	0.821	**0.008**	**<0.001**
Comments			
r	−0.226	0.240	0.422
P value	**<0.001**	**<0.001**	**<0.001**
Shares			
r	−0.031	0.169	0.211
P value	0.613	**0.005**	**0.001**
Duration			
r	0.488	−0.143	−0.233
P value	**<0.001**	**0.019**	**<0.001**

Note: values in bold indicate statistical significance ($P < 0.05$).
Abbreviations: GQS, Global Quality Scale; mDISCERN, Modified DISCERN; JAMA, Journal of American Medical Association.

Table 6 Spearman Correlation Analysis Between the Video Variables

Variables	Likes	Saves	Comments	Shares	Duration
Likes					
r	1	_[a]	_	_	_
P value	_	_	_	_	_
Saves					
r	0.846	1	_	_	_
P value	**<0.001**	_	_	_	_
Comments					
r	0.918	0.737	1	_	_
P value	**<0.001**	**<0.001**	_	_	_
Shares					
r	0.788	0.927	0.710	1	_
P value	**<0.001**	**<0.001**	**<0.001**	_	_
Duration					
r	−0.334	−0.092	−0.320	−0.127	1
P value	**<0.001**	0.132	**<0.001**	**0.038**	_

Notes: [a]Not available; values in bold indicate statistical significance ($P < 0.05$).

To enhance the quality of online health videos, platforms and creators should prioritize the use of verifiable sources. Practical strategies may involve mandating visible on-screen citations (eg, references, clinical guideline names, or official health agency links) or incorporating standardized production guidelines that require citation of authoritative sources (eg, peer-reviewed journals, WHO guidelines). Such measures would help ensure that both short-form and medium-to-long health content are not only engaging but also scientifically reliable and transparent.

Quality of Videos on DVT

The median GQS for TikTok videos was 3, corresponding to a moderate overall quality level, whereas Bilibili videos had a median GQS of 4, indicating a good overall quality level. A likely explanation is that Bilibili is known for its more in-

depth, community-driven content, which tends to be more comprehensive, educational, and user-friendly. TikTok, on the other hand, with its short-form, fast-paced format, prioritizes immediate appeal and often sacrifices depth and coherent structure, as reflected in its moderate GQS.

However, Bilibili videos scored lower on mDISCERN and JAMA assessments. For mDISCERN, one key evaluation criterion is whether the video content is concise and easy to understand. Bilibili videos had a median duration exceeding 11 minutes, classified as long videos. Compared to videos on the short-video platform TikTok, a greater proportion of Bilibili videos failed to meet the criterion of conciseness, resulting in lower mDISCERN scores.[33] Regarding the JAMA score, one crucial item is whether the uploader's institutional affiliation is specified. Approximately 30% of Bilibili videos had unidentified uploader identities, whereas TikTok uploads were almost entirely certified for identity. Thus, Bilibili videos also obtained lower JAMA scores. These findings are consistent with previous studies demonstrating that TikTok's higher mDISCERN scores are associated with stricter physician verification policies, whereas Bilibili's more permissive onboarding processes enable increased participation of non-specialists.[34–36]

Influence of Uploader Identity

Previous studies have consistently emphasized the influence of uploader identity on the quality of health videos, typically concluding that content produced by professionals is of higher quality.[24,37] The results of this study partially support this view: videos uploaded by professional individuals scored significantly higher on both the mDISCERN scale and the JAMA benchmark, indicating that professional affiliation contributes to improved information reliability and scientific rigor.

However, this study identified a critical phenomenon distinct from prior studies. On the GQS, videos uploaded by professionals received lower scores than those uploaded by nonprofessionals. This discrepancy likely stems from two key factors.

Primarily, this discrepancy reflects a divergence in dissemination strategies. To adapt to algorithmic preferences and minimize cognitive load, healthcare professionals often employ a micro-learning approach.[38] They deliberately fragment complex medical concepts into concise, single-topic videos. While this strategy enhances user retention, it structurally limits the video's breadth, resulting in lower GQS scores.[39] Conversely, nonprofessionals typically share holistic personal narratives. These lived experiences naturally encompass the full patient journey from symptoms to treatment, thereby meeting the GQS criteria for comprehensiveness without necessarily offering medical precision.

Second, the unique ecosystem of the Bilibili platform may act as a confounding variable. Previous literature indicates that the originality rate on Bilibili is relatively low at approximately 69.7%,[25] with a prevalence of nonprofessional accounts reposting professional content. While our study did not quantify reposting behaviors, it is possible that high-quality, full-length videos are being reposted by nonprofessional accounts, inadvertently inflating the quality scores of this group. Future studies should explicitly differentiate between "uploader identity" and "creator identity" to verify this hypothesis.

Correlation Between Video Quality and Video Characteristics

Highly positive correlations were observed among user engagement metrics (likes, saves, comments, shares), indicating that these metrics collectively form a valid dimension for measuring video popularity on video platforms. This finding is consistent with previous reports.[25,40] More importantly, these popularity metrics exhibit significantly differentiated correlations with different quality assessment criteria. Likes and comments were positively correlated with both mDISCERN and JAMA scores, which is encouraging because it suggests that videos with greater reliability and scientific rigor tend to receive higher user recognition and engagement. In contrast, engagement metrics were negatively associated with GQS scores. One potential reason is that videos with high GQS scores fail to convert comprehensive and in-depth information into sufficiently engaging formats, resulting in reduced watchability. Prior work has also shown that content that elicits strong engagement often relies on emotional appeal and novelty, suggesting that engagement does not necessarily reflect the intrinsic quality of the content.[41] Moreover, Sun et al reported that platform recommendation algorithms (eg, TikTok's) preferentially promote videos with high like counts, which can amplify the popularity of low-quality viral content and widen the gap between perceived popularity and actual quality.[42]

We further found that video duration is negatively correlated with all user-engagement measures, consistent with a general platform dynamic whereby shorter content is more likely to be watched in full and shared, reflecting the attention-economy effect. The positive correlation between video duration and GQS suggests that longer videos enable creators to present more comprehensive and in-depth information, thereby improving the overall quality of information. However, the negative correlations between duration and both mDISCERN and JAMA scores point to a deeper issue: simply increasing video length does not automatically enhance its scientific validity.[32] Indeed, overly long videos that lack rigorous citation practices and clear informational structure may dilute their core scientific value and receive lower reliability scores.

Taken together, the results of the present study suggest that the most effective strategy for dissemination may be to embed reliability and scientific rigour within an engaging and concise format. Consequently, creators are confronted with a dual imperative: to meet the criteria of platform algorithms and to satisfy user preferences for concise, captivating content, while upholding scientific standards. The development of production strategies that strike an optimal balance between brevity, appeal, and methodological rigor is crucial for enhancing the reach and credibility of health education videos.

Content Focus

This study further revealed differences in the main content of videos between TikTok and Bilibili. TikTok's content ecosystem is centred on treatment, which aligns with its positioning as an information hub for users seeking quick solutions, highlighting its characteristics of immediacy and practical orientation. In contrast, Bilibili was dominated by rudimentary disease knowledge, such as prevention and definitions, reflecting its identity as a knowledge-based community where users demand systematic and forward-looking health information. Despite their differing concerns, both platforms exhibited the same content defect: a paucity of content related to nursing and rehabilitation guidance. This suggests that current science popularization content has overlooked the importance of long-term health management, which is crucial for patients. It suggests that future health science popularization needs to address this key link in rehabilitation guidance to build a comprehensive, closed-loop content ecosystem, spanning from prevention to long-term management, and providing the public with full-cycle health support.

Implications and Recommendations

Improving the quality of DVT videos suggests a need for collaborative actions among the medical community, content creators, platforms, and social media users. Medical professionals and institutions are encouraged to enhance their dominant role on these platforms by disseminating standardized content aligned with guidelines. They can actively engage in popularizing evidence-based knowledge, debunking misinformation, and guiding users to reliable information. Additionally, medical institutions might develop incentive mechanisms for high-quality science popularization content, for example, by considering such contributions in personnel appointment or promotion decisions.

For content creators and uploaders, a core task is mastering storytelling techniques to convey information efficiently. To strike a balance between professionalism and completeness, professionals can utilize playlist or collection features to overcome the limitations of short videos. Grouping videos allows individual clips to remain concise and engaging, while the full series ensures the topic is covered comprehensively.

Furthermore, creators need to strategically incorporate verifiable information sources, such as dynamically displaying key references via an on-screen sidebar or labeling sources in the video description section, to provide the public with reliable, science-based health information.

Platform operators are advised to recognize that video platforms are vital vehicles for practical health information. To ensure content credibility, platforms could strengthen review mechanisms, implement professional certification badges, and utilize advanced AI models to assist content screening. Specifically, given the positive correlation between engagement and reliability scores, platforms might design algorithm boosts for videos that display their citations visibly within the first 3 seconds. This strategy would align algorithmic recommendations with content quality. Platforms could also add built-in functions to guide uploaders in citing references standardizedly, thereby enhancing the visibility of high-quality content.

Additionally, platforms can collaborate with medical experts to develop and refine health video quality assessment criteria, integrating these criteria into their algorithms. Users should recognize that high popularity does not equate to high quality. General social media users are encouraged to be more selective and prudent when sharing health information, remain vigilant against misleading content from nonprofessional sources, and prioritize popular science content published by certified doctors or reputable institutions.

Strengths and Limitations

Against the backdrop of the rapid expansion of video-sharing platforms, our study addresses key gaps by adopting a multi-platform, multi-perspective approach and utilizing a validated, multidimensional quality assessment framework. Beyond objective content evaluation, we conducted correlation analyses to explore the associations between key variables that affect video quality and educational impact. This methodological approach enables more robust conclusions regarding the reliability and educational value of DVT-related videos across contemporary social media ecosystems.

Our study is subject to several limitations. First, despite the utilisation of field-validated assessment tools (GQS, mDISCERN, JAMA), subjective bias during scoring remained unavoidable. Second, given the cross-sectional design, the findings represent a snapshot in time, which precludes the inference of causal relationships between video characteristics and the quality or reliability of the information. Third, while analyzing the top 150 videos allowed us to focus on high-exposure content that users are most likely to encounter, this sampling strategy may not fully represent the entire DVT video ecosystem. Moreover, since the sample size was determined by search rankings rather than a formal power analysis, statistical power may be limited for certain subgroup analyses. Therefore, results from these subgroups should be interpreted with caution. Finally, the retrieval results excluded textual content such as user comments and bullet comments, which might have led to missing some negative feedback. These limitations underscore the necessity for subsequent studies to adopt multi-platform longitudinal monitoring, expand data dimensions, and develop a more comprehensive and generalisable health information quality assessment model.

Conclusion

Despite serving as a primary source of health information for the public, DVT-related content on major social media platforms like TikTok and Bilibili is largely unreliable and of inconsistent quality. This study identifies a striking "quality paradox": user engagement is often inversely associated with the comprehensiveness of medical content. This misalignment poses a substantial public health risk, as unvalidated or misleading advice may not only delay timely medical intervention but also foster the adoption of ineffective or even harmful treatment practices. Addressing this challenge necessitates proactive, cross-stakeholder interventions rather than passive surveillance alone. Social media platforms must refine algorithms to prioritize evidence-based content, while medical professionals and professional bodies must adapt their communication strategies to create engaging, high-quality short-form videos that can effectively compete with misinformation.

Abbreviations

DVT, deep venous thrombosis; PTS, post-thrombotic syndrome; PE, pulmonary embolism; GQS, Global Quality Scale; mDISCERN, modified DISCERN; JAMA, Journal of the American Medical Association.

Data Sharing Statement

The datasets used and/or analysed during the current study are available from either of the two corresponding author on reasonable request.

Ethics Approval and Consent to Participate

This study is a social media research. It did not involve clinical data, human specimens, or laboratory animals. All research materials were obtained from publicly available videos on the TikTok and Bilibili platforms. Throughout data

collection and storage, strict privacy safeguards were maintained, and all procedures for data acquisition and analysis adhered to the terms and conditions of the respective platforms. As the study did not entail direct interaction with users, nor did it involve human-related experiments or interventions, it did not require approval from an ethics committee or trial registration.

Author Contributions

All authors made a significant contribution to the reported work, whether in the conception, study design, execution, data acquisition, analysis, and interpretation, or in all these areas. They took part in drafting, revising, or critically reviewing the article, gave final approval of the version to be published, agreed on the journal to which the article was submitted, and agreed to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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