Quality Assessment of Radiotherapy Health Information on Short-Form Video Platforms: A Comparative Analysis of TikTok and Bilibili

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Abstract

Background: Radiotherapy is a crucial modality in cancer treatment. In recent years, the rise of short-form video platforms has transformed how the public accesses medical information. TikTok and Bilibili, as leading short-video platforms, have emerged as significant channels for disseminating health information. However, there is an urgent need to evaluate the quality and reliability of the information related to radiotherapy available on these platforms.

Objective: This study aims to systematically assess the information quality and reliability of radiotherapy-related short-form videos on TikTok and Bilibili platforms using the Global Quality Score (GQS) and a modified DISCERN evaluation tool, thereby elucidating the current landscape and challenges of digital health communication.

Methods: This study systematically retrieved the top 100 radiotherapy-related videos on TikTok and Bilibili as of February 25, 2025. The quality of the videos was assessed using the Global Quality Score (GQS, 1-5 points) and a modified DISCERN scoring system (1-5 points). Statistical analyses were conducted using the Mann-Whitney U test, as well as Spearman and Pearson correlation analyses, to ensure the reliability and validity of the results.

Results: A total of 200 short-form videos related to radiotherapy were analyzed, revealing that the overall quality of videos on TikTok and Bilibili is unsatisfactory. Specifically, the median Global Quality Score (GQS) for TikTok was 4 (interquartile range [IQR] 3-4), while for Bilibili it was 3 (IQR 3-4). The median modified DISCERN scores for both platforms were 3 (IQR 2-4 and IQR 3-4, respectively).On TikTok, 53% (53/100) of the videos were rated as "good" or higher, whereas 45% (45/100) of the videos on Bilibili were considered "relatively reliable." Videos produced by professionals, institutions, and non-professional organizations had significantly higher DISCERN scores compared to those produced by non-professional individuals, with statistical significance (P<.0001, P<.0001, and P<.01, respectively).Furthermore, the correlations between the number of bookmarks and video duration with DISCERN scores were 0.172 (p = 0.015) and 0.192 (p = 0.007), respectively. However, no video variables were found to effectively predict the overall quality and reliability of the videos.

Conclusions: This study revealed that the overall quality of radiotherapy-related videos on TikTok and Bilibili is generally low. However, videos uploaded by professionals demonstrate higher information quality and reliability, providing valuable support for patients seeking guidance on healthcare management and treatment options for tumors. Therefore, improving the quality and reliability of video content, particularly those produced by non-professionals, is crucial for ensuring the public has access to accurate medical information.

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Keywords: Radiotherapy; RT**;**Short-form Videos; Information Quality; Social Media; Global Quality Score; DISCERN Score; TikTok; Bilibili

Introduction

In recent years, the incidence of tumors in younger patients has increased due to irregular lifestyles and heightened stress levels1. As tumor subtypes continue to be explored, treatment modalities have become increasingly diversified2. Radiotherapy, as a core method for tumor treatment, has seen significant advancements globally3. With ongoing innovations in the precision and personalization of radiotherapy techniques, public awareness of this treatment has also grown4,5.China, as a major center for global cancer research, has experienced rapid developments in the research and application of radiotherapy. The integration of technological innovations with clinical practice has continuously enhanced the precision and effectiveness of tumor treatments6. The dissemination, promotion, and popularization of radiotherapy techniques are crucial for the diagnosis and treatment of various tumors7.

The rapid development of the internet and mobile technology, particularly the diversification of short video platforms, has led to a near-total replacement of traditional paper-based information with electronic formats8. People increasingly acquire medical knowledge through online channels, including short video platforms, search engines, and artificial intelligence. Platforms such as TikTok, Bilibili, WeChat, and Weibo have become significant channels for disseminating healthcare information in China9,10. Their rapid, convenient, intuitive, and easily understandable formats provide new possibilities for sharing complex medical knowledge.Short video platforms have not only transformed traditional medical information dissemination models but also offered the public more engaging and accessible health education avenues. As a leading global short video hosting platform, TikTok boasts a substantial user base across over 150 countries, with more than 1.026 billion monthly active users in the Chinese market alone. Meanwhile, Bilibili has also seen significant user growth due to its unique interactive features and rich content11-1213. Since the advent of 5G technology, the development of social media platforms has accelerated, establishing them as emerging channels for health information dissemination14.Research indicates that over 10 million users engage with health and wellness content on short video platforms, covering various medical fields including Liver, Thyroid, gastric cancer, Gallstone Disease, chronic obstructive pulmonary disease (COPD) as well as Myopia15-1617181920. However, discussions surrounding radiotherapy remain scarce in the general population, and the quality of information is often inconsistent. Inaccurate information about radiotherapy increases the risk of tumor patients making misleading decisions based on unreliable sources, making it essential to assess the quality of radiotherapy-related videos on social media.

To systematically evaluate the quality and reliability of radiotherapy-related short videos, this study recorded and organized the top 100 radiotherapy-related videos on TikTok and Bilibili. We will employ the Global Quality Score (GQS) for quality assessment and the modified DISCERN tool for reliability evaluation. Additionally, we will analyze the relationships between video quality and various factors, including video source, content, the number of followers of the uploader, video duration, and interaction metrics (likes, comments, shares, and bookmarks). Our research aims to assess the information quality and reliability of radiotherapy short videos on Bilibili and TikTok.

Methods

Ethical Considerations

This study did not utilize clinical data, human specimens, or laboratory animals. All information was obtained from publicly available TikTok and Bilibili videos, with no data involving personal privacy concerns. Furthermore, this research did not involve any interaction with users; therefore, ethical review was not required.

Search Strategy and Data Collection

In this cross-sectional study, we conducted a comprehensive search for videos related to radiotherapy on two prominent Chinese short-form video platforms, TikTok (https://www.douyin.com) and Bilibili (https://www.bilibili.com/), using "radiotherapy" as the primary keyword. The search was performed on February 25, 2025, and the top 100 videos from each platform were selected based on a composite ranking score13,21. This score was derived from a combination of video completion rate (proportion of viewers who watched beyond 5 seconds), like rate (proportion of viewers who liked the video), comment rate (proportion of viewers who commented on the video), follow rate (proportion of viewers who followed the uploader), and upload time. Default settings were applied, including no restrictions on upload duration, video length, or search scope, to minimize selection bias.

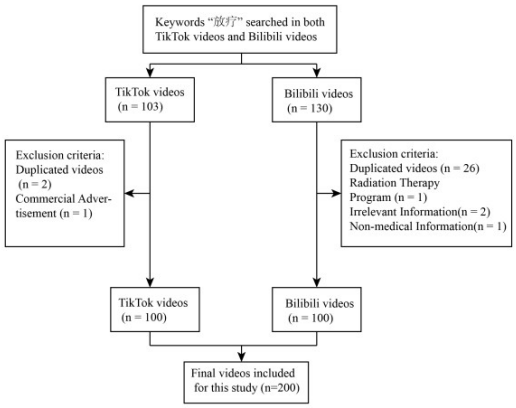
To mitigate the influence of personalized recommendation algorithms, two independent viewers uninstalled and reinstalled the applications on their devices, utilizing a clone app to create isolated environments. New accounts were

registered and logged in for each platform, ensuring a fresh start for video recommendations. Non-medical videos, duplicates (videos with identical content but different uploaders), videos unrelated to radiotherapy, professional radiotherapy course videos, and commercial advertisements were systematically excluded until the top 100 videos were identified (Fig 1). The decision to limit the analysis to the top 100 videos was based on prior research indicating that videos beyond this threshold do not significantly impact the analysis20-21.

The study recorded essential video metadata, including the uploader's username, identity verification status, follower count, and video metrics such as likes, comments, saves,shares and duration. Additionally, video content, source, days since upload, presence of background music (BGM), and subtitles were documented.

Each video was independently reviewed and assessed by the two viewers(F-HG,Y-ZZ). In cases of disagreement, a third viewer was consulted to reach a consensus(X-RL).

Figure 1.



Search strategy and video screening procedure on RT.

Classification and Assessments of Videos

This study collected and analyzed 100 videos each from Bilibili and TikTok. Each video was meticulously categorized based on its source and content, resulting in four distinct groups for each classification. The source categories included: (1) professionals, (2) professional institutions, (3) non-professionals, and (4) non-professional institutions. The content categories were: (1) personal experiences with radiotherapy, (2) educational content on radiotherapy, (3) discussions of special cases, and (4) information on radiotherapy equipment. Videos from professionals were further classified into: (1) radiation oncologists and (2) oncologists. Non-professional institutions included: (1) science communicators (popular science) and (2) non-profit or entertainment organizations. Professional institutions referred to official hospital sources or physicians not specializing in oncology or radiotherapy, while non-professionals were defined as cancer patients.

Before evaluating the videos, two independent researchers reviewed relevant radiotherapy guidelines, the Global Quality Score (GQS), and the modified DISCERN tool. The GQS is a widely recognized instrument consisting of five criteria, with scores ranging from 1 to 5, where higher scores indicate better quality of health information videos. Given the medical context of the videos, a modified version of the DISCERN tool was employed to assess the reliability of the content. During the review process, researchers evaluated whether each video met the following criteria: clarity, reliable information sources, robustness and fairness, additional references, and statements of uncertainty. Responses to these criteria were recorded as either yes (1 point) or no (0 points), and a cumulative score (0-5 points) was calculated, with higher scores indicating greater reliability of the health information presented(Table 1).

Table 1.Description of the Global Quality Score (5-Point Scale) and the Modified DISCERN for Evaluating the Quality and Reliability of Videos with Radiotherapy Information.

(Cumulative) Scale	Level	Interpretative Descriptor
Global Quality Score		
1	**Poor Quality**	Specifically, the content is illogical, the mobility is poor, most of the information is missing and it is useless for patients.
2	**Generally Poor Quality**	the content logic is poor, although some information is listed, more important information is still missing, and the use of patients is very limited.
3	**Moderate Quality**	some important information is adequately discussed
4	**Good Quality and Flow**	Specifically, the video logic is clear and smooth, covering most of the relevant information, which is useful for patients.
5	**Excellent Quality and Flow**	Specifically, the video logic is clear, and the content is very smooth, which is very useful for patients.
Modified DISCERN		
1	Unreliable	Is the video clear, concise, and understandable?
2	Less Reliable	Are valid sources cited?
3	Fairly Reliable	the content presented balanced and unbiased?
4	Relatively Reliable	Are additional sources of content listed for patient reference?
5	Reliable	Are areas of uncertainty mentioned?

Statistical Analyses

After conducting a normality test on the data, we determined that it followed a non-parametric distribution. Therefore, descriptive statistics are presented as median (interquartile range, IQR). The Mann-Whitney U test was employed to assess differences between groups, while Dunn's multiple comparison test was used for pairwise comparisons. The Kappa coefficient was calculated to quantify the agreement between the two raters. Spearman and Pearson correlation analyses were performed to evaluate the relationships between quantitative variables. A Poisson regression model was utilized to assess the impact of video variables on the prediction of video quality and reliability. Statistical significance was defined as a p-value of < 0.05. Data analysis and visualization were conducted using R version 4.4.1 and the Hiplot platform.

Results

Video Characteristics

Based on our keyword search, we identified 200 videos for data extraction and analysis: 100 from TikTok and 100 from

Bilibili. The general characteristics of the videos are illustrated in Table 2. This study employed the Mann-Whitney U test to compare the video characteristics and associated ratings between the Bilibili and TikTok platforms. The results indicated that TikTok significantly outperformed Bilibili in terms of likes median(1129.50 vs. 184.00, Z = -5.09, p < .001), comments (190.00 vs. 23.50, Z = -5.21, p < .001), saves (281.00 vs. 60.50, Z = -4.27, p < .001), and shares (139.00 vs. 28.50, Z = -4.66, p < .001). Additionally, TikTok had a significantly higher follower count (26,500 vs. 6,645, Z = -3.93, p < .001) compared to Bilibili.

Although Bilibili demonstrated greater activity in terms of days since video upload (604 vs. 70.50, Z = -9.89, p < .001) and video duration (173.50 vs. 71.50, Z = -6.79, p < .001), no significant differences were observed between the two platforms regarding the Global Quality Score (GQS) (Z = -1.57, p = .116) and mDiscern score(Z = -1.66, p = .097).

Table 2.Characteristics of the videos in TikTok and Bilibili.

Variable	Bilibili (n=100)	TikTok (n=100)	Mann-Whitney TEST
Likes	184.00 (43.00, 697.50)	1129.50 (300.25, 3320.25)	Z = -5.09, P < .001
Comments	23.50 (2.75, 107.00)	190.00 (38.00, 528.50)	Z = -5.21, P < .001
Saves	60.50 (13.50, 229.75)	281.00 (62.00, 936.50)	Z = -4.27, P < .001
Shares	28.50 (5.00, 92.75)	139.00 (21.75, 628.25)	Z = -4.66, P < .001
Fans	6,645.00 (307.50, 32,250.00)	26,500.00 (7,450.75, 117,000.00)	Z = -3.93, P < .001
Days since upload	604.00 (247.75, 1,030.00)	70.50 (23.50, 126.25)	Z = -9.89, P < .001
Duration	173.50 (95.75, 303.25)	71.50 (39.75, 129.25)	Z = -6.79, P < .001
Global quality score	3.00 (3.00, 4.00)	4.00 (3.00, 4.00)	Z = -1.57, P = .116
M DISCERN score	3.00 (3.00, 4.00)	3.00 (2.00, 4.00)	Z = -1.66, P = .097

Tables 3 and 4, along with Figure 2 illustrate the sources and content types of videos on TikTok and Bilibili.On TikTok, cancer patients were the most prolific uploaders, contributing 43% (43/100) of the videos, followed by radiation oncologists (24/100, 24%) and medical oncologists (17/100, 17%). Science communicators exhibited the highest levels of user engagement, with a median of 5,048 likes (IQR: 3,157-79,500), 393 comments (IQR: 160.5-5,005.5), and 1,028 saves (IQR: 621-17,500). In terms of content, the majority of TikTok videos focused on sharing personal experiences with radiotherapy (51/100, 51%), followed by educational content on radiotherapy (33/100, 33%), discussions of special cases (11/100, 11%), and information on radiotherapy equipment (5/100, 5%).On Bilibili, cancer patients also represented the largest group of uploaders, accounting for 27% (27/100) of the videos, followed by other medical professionals or official hospital accounts (22/100, 22%). Science communicators again demonstrated the highest user engagement levels. Regarding content, educational videos on radiotherapy were the most prevalent, comprising 48% (48/100) of the total.

Table 3. Characteristics of the Videos Across Sources and Content in TikTok.

Variable	Likes	Comments	Saves	Shares	Days since upload	Duration	Fans
Video sources(n=100),median (IQR)							
Radiation Oncologist (n = 24)	644.50 (158.00, 1425.75)	45.50 (12.50, 178.00)	206.00 (35.25, 637.25)	131.00 (24.75, 420.00)	80.50 (57.75, 122.75)	84.00 (46.75, 116.25)	24000.00 (5459.50, 70750.00)
Oncologist(n = 17)	399.00 (284.00, 1755.00)	38.00 (9.00, 115.00)	123.00 (65.00, 569.00)	127.00 (10.00, 566.00)	84.00 (24.00, 105.00)	64.00 (52.00, 97.00)	45000.00 (15000.00, 103000.00)
Other Specialists OR Hospital Official(n = 6)	2906.00 (1580.75, 4436.75)	249.50 (207.00, 540.25)	851.00 (605.50, 1257.00)	512.50 (212.25, 1309.25)	242.50 (59.75, 264.75)	110.00 (48.00, 165.25)	134500.00 (43000.00, 189250.00)
Cancer Patient(n = 43)	1249.00 (320.50, 3555.00)	286.00 (147.50, 601.00)	180.00 (63.00, 672.50)	87.00 (18.00, 579.00)	66.00 (24.50, 138.00)	59.00 (28.50, 173.50)	11000.00 (3436.50, 46000.00)
Science Communicator(n = 7)	5048.00 (3157.00, 79500.00)	393.00 (160.50, 5005.50)	1028.00 (621.00, 17500.00)	670.00 (540.00, 20500.00)	64.00 (33.00, 76.50)	107.00 (76.00, 150.00)	622000.00 (409500.00, 1097000.00)
Nonprofit Organization(n = 3)	3520.00 (3350.50, 17260.00)	707.00 (382.00, 3305.00)	1664.00 (1017.50, 2365.50)	752.00 (452.00, 49876.00)	5.00 (3.00, 20.50)	18.00 (12.50, 30.00)	1536000.00 (768000.50, 4020000.00)
Video content(n=100),median (IQR)							
Radiation Therapy	1288.00 (334.50, 3569.50)	276.00 (97.00, 616.00)	261.00 (89.50, 906.50)	151.00 (21.50	67.00 (28.50, 138.00)	71.00 (41.00, 159.00	13000.00 (3436.50,48000.00)

Variable	Likes	Comments	Saves	Shares	Days since upload	Duration	Fans
Patient Experience Sharing(n = 51)				, 690.50)		)	
Radiation Treatment Knowledge Popularization(n = 33)	791.00 (161.00, 2057.00)	40.00 (11.00, 144.00)	323.00 (37.00, 936.00)	160.00 (31.00, 542.00)	84.00 (57.00, 122.00)	90.00 (56.00, 125.00)	60000.00 (7517.00, 158000.00)
Rare Case Discussion(n = 11)	1174.00 (234.00, 3653.00)	147.00 (12.00, 392.00)	170.00 (44.00, 526.50)	97.00 (10.00, 174.00)	22.00 (11.00, 101.50)	37.00 (21.50, 43.00)	45000.00 (31500.00, 103000.00)
Radiation Therapy Equipment Accessibility(n = 5)	4176.00 (3405.00, 52000.00)	1055.00 (233.00, 3681.00)	3397.00 (708.00, 15000.00)	2720.00 (670.00, 14000.00)	33.00 (4.00, 79.00)	76.00 (10.00, 147.00)	412000.00 (70000.00, 1097000.00)

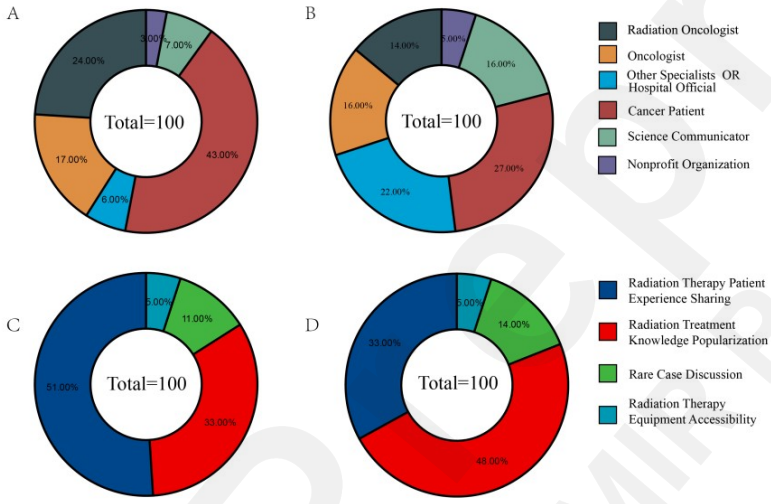
Table 4. Characteristics of the Videos Across Sources and Content in Bilibili

Variable	Likes	Comments	Saves	Shares	Days since upload	Duration	Fans
Video sources(n=100),median (IQR)							
Radiation Oncologist (n = 24)	50.00 (4.25, 95.75)	1.50 (0.00, 16.50)	55.00 (3.50, 118.75)	24.00 (1.25, 59.25)	247.50 (185.75, 1184.50)	160.00 (91.25, 492.75	149.00 (114.50, 2309.50

Variable	Likes	Comments	Saves	Shares	Days since upload	Duration	Fans
						)	)
Oncologist(n = 17)	34.00 (12.75, 167.00)	3.00 (0.75, 49.50)	13.00 (3.00, 69.50)	11.50 (2.75, 55.50)	583.50 (376.25, 892.00)	108.50 (88.50, 148.00)	12,113.50 (179.50, 68,000.00)
Other Specialists OR Hospital Official(n = 6)	428.00 (118.50, 771.25)	64.00 (8.25, 160.50)	88.50 (19.00, 278.00)	46.00 (7.50, 146.25)	695.00 (253.75, 1,163.50)	205.00 (101.50, 321.50)	74,500.00 (28,000.00, 156,750.00)
Cancer Patient(n = 43)	262.00 (145.00, 701.00)	37.00 (22.00, 72.50)	48.00 (18.00, 112.50)	12.00 (5.00, 54.00)	602.00 (485.50, 822.50)	204.00 (143.50, 288.00)	2,132.00 (1,529.00, 13,000.00)
Science Communicator(n = 7)	673.00 (50.75, 4,995.25)	66.50 (2.75, 404.25)	241.50 (100.50, 568.00)	79.50 (37.00, 435.00)	622.00 (132.50, 1,123.00)	145.50 (81.75, 230.25)	2,225.00 (202.00, 20,500.00)
Nonprofit Organization(n = 3)	70.00 (7.00, 2,811.00)	3.00 (0.00, 858.00)	110.00 (10.00, 4,641.00)	85.00 (9.00, 422.00)	1,092.00 (248.00, 1,236.00)	844.00 (218.00, 1,094.00)	14,000.00 (104.00, 465,000.00)
Video content(n=100),median (IQR)							
Radiation Therapy Patient Experience Sharing(n = 51)	210.00 (59.00, 589.00)	25.00 (12.00, 66.00)	46.00 (15.00, 113.00)	11.00 (5.00, 60.00)	606.00 (484.00, 868.00)	184.00 (114.00, 276.00)	1,898.00 (702.00, 7,847.00)
Radiation Treatment Knowledge Popularization(n = 33)	108.00 (15.75, 787.50)	8.50 (1.75, 122.00)	85.50 (11.75, 260.50)	46.00 (8.25, 144.75)	677.00 (280.50, 1,209.75)	159.50 (81.75, 363.00)	8,693.50 (149.00, 57,250.00)
Rare Case	474.00	81.50	35.00	17.00	369.00	203.50	68,000.

Variable	Likes	Comments	Saves	Shares	Days since upload	Duration	Fans
Discussion(n = 11)	(167.00, 772.25)	(24.25, 136.50)	(19.00, 198.75)	(7.00, 133.00)	(74.25, 638.00)	(108.75, 325.25)	00 (24,500.00, 126,000.00)
Radiation Therapy Equipment Accessibility(n = 5)	146.00 (6.00, 16,000.00)	26.00 (0.00, 837.00)	122.00 (5.00, 4,130.00)	55.00 (2.00, 422.00)	64.00 (59.00, 248.00)	158.00 (137.00, 193.00)	19,000.00 (14,000.00, 25,000.00)

Figure 2.



Percentage of videos on RT from different sources and with different contents in TikTok and Bilibili. (A)Sources of TikTok videos.(B)Sources of Bilibili videos. (C)Content types of TikTok videos. (D)Content types of Bilibili videos.

Video Quality and Reliability Assessments

In this study, we evaluated the consistency between the Global Quality Score (GQS) and the modified DISCERN score using Cohen's Kappa coefficient for analysis. According to the standards proposed by Landis and Koch, a Kappa value greater than 0.8 indicates excellent agreement, values between 0.6 and 0.8 are considered substantial, values between 0.4 and 0.6 indicate moderate agreement, and values less than 0.4 are regarded as poor.

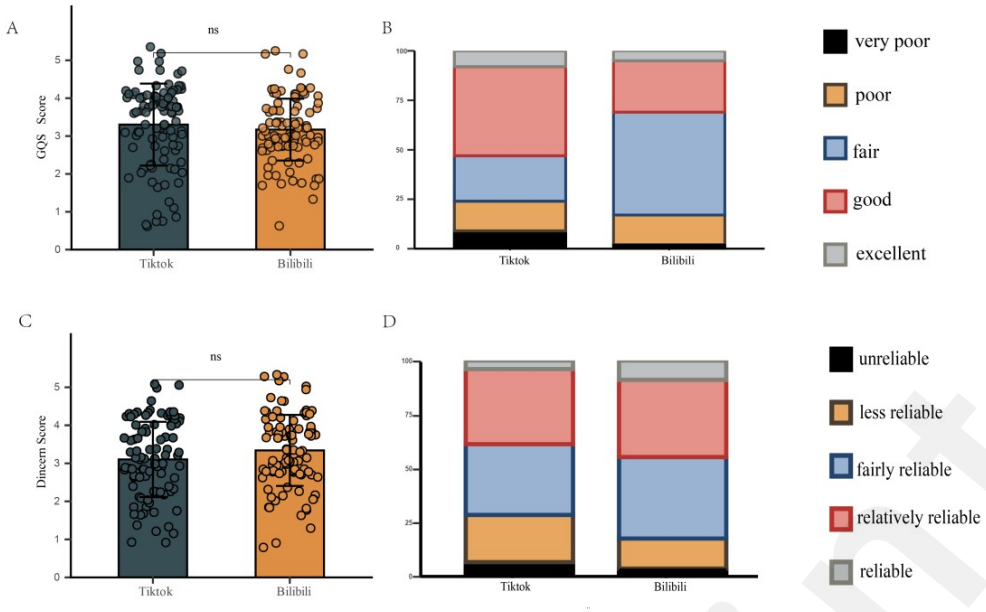
The results showed that the Kappa coefficient for GQS was 0.64 and the Kappa coefficient for the modified DISCERN score was 0.68, demonstrating substantial agreement. We conducted a comparative analysis of the GQS and DISCERN scores for videos on the Bilibili and TikTok platforms. Table 5 and Figure 3 revealed that on the Bilibili platform, 31% (31/100) of users rated videos as "good" (4 points) or higher, compared to 53% (53/100) on TikTok. In terms of DISCERN scores, 45% (45/100) of videos on Bilibili received ratings of "relatively reliable" or higher (4 and 5 points), while TikTok had a score of 39% (39/100). Although there were differences, no significant differences were observed

between the GQS and modified DISCERN scores of TikTok and Bilibili videos (P = .116 and P = .097, respectively).

Table 5.GQS and DISCERN scores for TikTok and Bilibili videos related to RT.

Scale, score	Bilibili (n=100)	TikTok (n=100)	Comparative Trend
Global quality score			
1 (Poor Quality)	2	9	TikTok
2 (Generally Poor Quality)	15	15	Stable
3 (Moderate Quality)	52	23	Bilibili
4 (Good Quality and Flow)	26	45	TikTok
5 (Excellent Quality and Flow)	5	8	Close
M DISCERN			
1 (Unreliable)	3	6	TikTok
2 (Less Reliable)	14	22	TikTok
3 (Fairly Reliable)	38	33	Close
4 (Relatively Reliable)	36	35	Stable
5 (Reliable)	9	4	Bilibili

Figure 3.

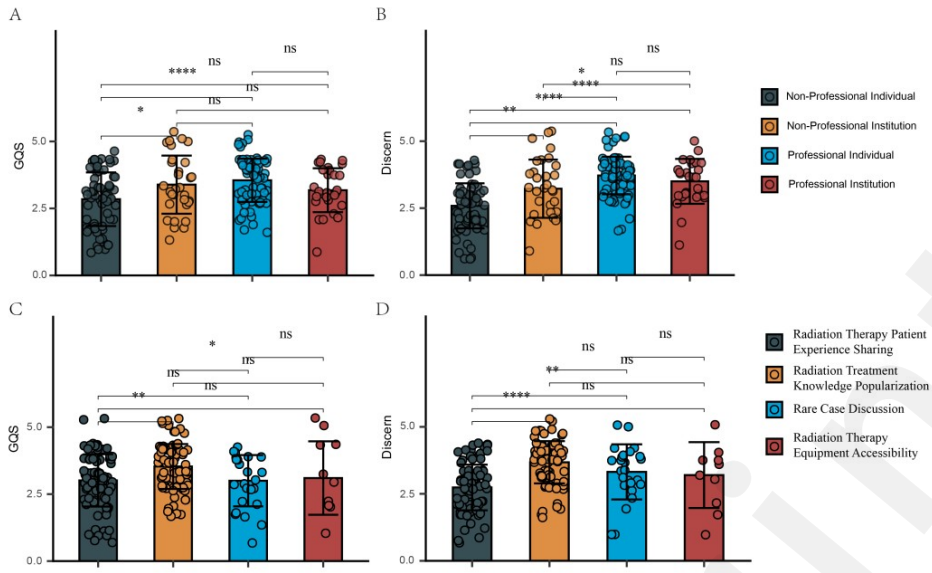


Global quality scores, DISCERN scores, and quality/reliability distributions of short videos related to RT on TikTok and Bilibili.(A)Comparison of global quality scores between TikTok and Bilibili videos.(B)Proportions of different levels of video quality.(C)Comparison of DISCERN scores between TikTok and Bilibili videos.(D)Proportions of different levels of video reliability. ns:not significant at P<.05.

We compared the Global Quality Score (GQS) and DISCERN scores of videos from different sources and with varying content in Figure 4. The GQS for professionals and non-professional organizations was higher than that for non-professional individuals ($P < .0001$ and $P < .05$, respectively). Additionally, the GQS for videos focused on radiation therapy experience sharing and special case discussions was lower than that for radiation treatment knowledge popularization ($P < .01$ and $P < .05$, respectively).

Similarly, the DISCERN scores for videos from professionals, organizations, and non-professional organizations were higher than those for non-professionals ($P < .0001$, $P < .0001$, and $P < .01$, respectively), with professionals scoring higher than non-professional organizations ($P < .05$). Furthermore, the DISCERN scores for radiation treatment knowledge popularization and special case discussions were higher than those for radiation therapy experience sharing ($P < .0001$ and $P < .01$, respectively).

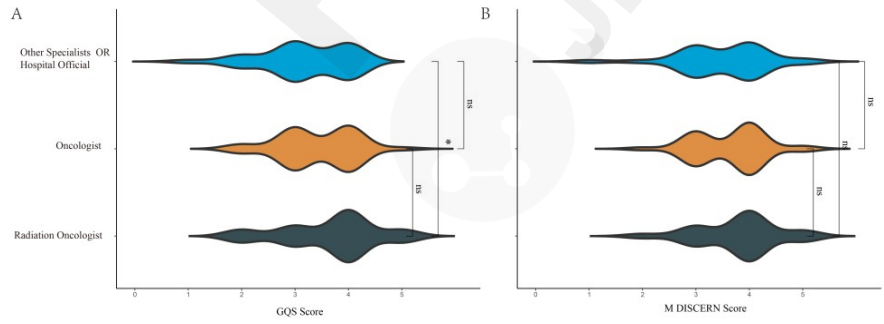
Figure 4.



Global quality scores from different sources（A） and with different contents（C）AND DISCERN scores from different sources （ B ） and with different contents （ D ） of videos related to RT.*P<.05,**P<.01, ***P<.001,****P<.0001.

To further explore whether different types of professionals and institutions affect the quality and reliability of videos, we further categorized the sources into three groups: radiation oncologists, medical oncologists, and other physicians or official hospital sources. The GQS scores for videos from radiation oncologists were higher than those from other physicians or official hospital sources (P < .05). However, no significant differences were found among the other source groups(Fig 5).

Figure 5



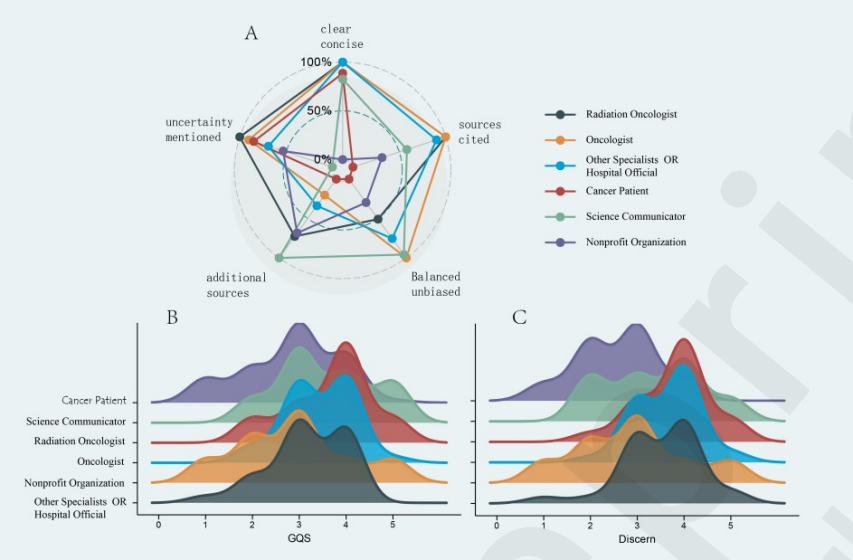
Global quality scores and M DISCERN scores of short videos related to RT uploaded by different professional individuals. *P<.05.

Next, we compared the content comprehensiveness of different video sources using Global Quality Score (GQS) and

Modified DISCERN (mDISCERN) scores. As shown in the Figure 6, we evaluated the performance of various video sources across multiple dimensions of content comprehensiveness.Key findings include:All video sources consistently scored low on the uncertainty explanation dimension.Radiation oncologists generally achieved higher scores than other sources, particularly in terms of video quality and reliability.Cancer patients and non-profit organizations exhibited lower scores compared to other sources.Other physicians or official hospital sources displayed moderate performance.

The GQS and DISCERN ridge plots indicate that none of the video sources achieved perfect scores, highlighting significant shortcomings in the quality and reliability of radiation therapy videos on short-form platforms. This underscores the need for greater attention from professional doctors and experts to improve the quality and reliability of radiation therapy short videos.

Figure 6.



(A) Relative Strength and Balance of Modified DISCERN Scores Across Different Dimensions.(B) Overall Distribution of Global Quality Scores Across Different Sources.(C) Overall Distribution of DISCERN Scores Across Different Sources.

Correlation Analysis and Poisson Regression Analysis

Due to the non-normal distribution of the data, Spearman correlation analysis was conducted to explore the relationships between different video variables. Table 6 and Figure 7 indicated a very strong positive correlation between Likes and Comments ($r = 0.899$, $p < 0.01$). Additionally, Likes showed significant positive correlations with Saves ($r = 0.880$, $p < 0.01$) and Shares ($r = 0.763$, $p < 0.01$). Comments also had a strong positive correlation with Saves ($r = 0.793$, $p < 0.01$) and Shares ($r = 0.702$, $p < 0.01$). Notably, Days since upload was negatively correlated with Likes ($r = -0.161$, $p = 0.023$) and Comments ($r = -0.203$, $p < 0.01$). There was a positive correlation between Duration and Days since upload ($r = 0.433$, $p < 0.01$).

Furthermore, Fans showed significant positive correlations with all interaction metrics: Likes ($r = 0.615$, $p < 0.01$), Comments ($r = 0.508$, $p < 0.01$), Saves ($r = 0.495$, $p < 0.01$), and Shares ($r = 0.442$, $p < 0.01$).

Using Pearson correlation analysis, the relationships between video features and GQS and DISCERN scores were examined. The results showed that Saves and Duration had correlations with DISCERN scores of 0.172 ($p = 0.015$) and 0.192 ($p = 0.007$), respectively. However, none of the indicators reached significant levels with GQS scores(Table 7). Additionally, Table 8 revealed that no significant video variables could predict GQS and DISCERN scores (all $P > .05$).

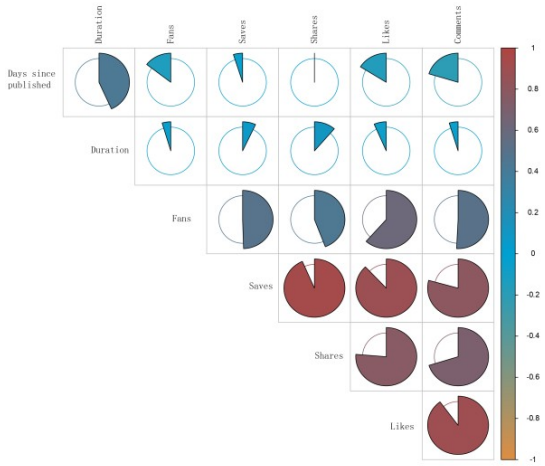
Table 6.Spearman correlation analysis between the video variables.

Variable	Likes	Comments	Saves	Shares	Days since	Duration	Fans

					upload			
Likes								
	r	1.000	-[a]	-	-	-	-	-
	P value	(NA)	-	-	-	-	-	-
Comments								
	r	0.899	1.000	-	-	-	-	-
	P value	<0.01	(NA)	-	-	-	-	-
Saves								
	r	0.880	0.793	1.000	-	-	-	-
	P value	<0.01	<0.01	(NA)	-	-	-	-
Shares								
	r	0.763	0.702	0.935	1.000	-	-	-
	P value	<0.01	<0.01	<0.01	(NA)	-	-	-
Days since upload								
	r	-0.161	-0.203	-0.049	-0.008	1.000	-	-
	P value	(0.023)	<0.01	(0.489)	(0.907)	(NA)	-	-
Duration								
	r	-0.065	-0.047	0.070	0.113	0.433	1.000	-
	P value	(0.357)	(0.507)	(0.324)	(0.110)	<0.01	(NA)	-
Fans								
	r	0.615	0.508	0.495	0.442	-0.145	-0.046	1.000
	P value	<0.01	<0.01	<0.01	<0.01	(0.041)	(0.518)	(NA)

[a]Not applicable.

Figure 7.



The correlation analysis of relationships between different video variables.

Table 7.Pearson correlation analysis between video variables and the global quality scores and DISCERN scores.

Variable	GQS		M DISCERN	
Likes	R	P value	R	P value
	0.003	0.212	0.137	0.054
Comments				
	0.199	0.091	0.055	0.442
Saves				
	0.001	0.237	0.172	0.015[a]
Shares				
	0.141	0.105	0.045	0.525
Days since upload				
	-0.014	0.842	0.074	0.296
Duration				
	0.001	0.241	0.192	0.007[a]
Fans				
	0.227	0.086	0.101	0.157

[a]Significant at P<.05.

Table 8.Association between video variables and global quality score and DISCERN score.

Scale, video variable	Relative risk	(95% CI)	P Value
Global quality score			
Likes	1.000002	(0.999989-1.000012)	0.79
Comments	0.999995	(0.999940-1.000047)	0.87
Saves	1.000004	(0.999974-1.000035)	0.81
Shares	1.000003	(0.999989-1.000017)	0.67
Days since upload	0.999964	(0.999778-1.000143)	0.70
Duration	1.000139	(0.999959-1.000297)	0.10
Fans	1.000000	(1.000000-1.000000)	0.74
M DISCERN			
Likes	1.000000	(0.999986-1.000011)	0.93
Comments	1.000004	(0.999946-1.000058)	0.89
Saves	1.000006	(0.999974-1.000039)	0.73
Shares	1.000000	(0.999984-1.000013)	0.87
Days since upload	1.000032	(0.999850-1.000207)	0.73
Duration	1.000107	(0.999919-1.000270)	0.23
Fans	1.000000	(1.000000-1.000000)	0.74

Discussion

Principal Findings

This study systematically reviewed radiotherapy-related videos on two of the most popular short-form video platforms in China, TikTok and Bilibili, encompassing over 200 video samples. The analysis included various video sources

(professionals, professional institutions, non-professionals, and non-professional institutions) and content types (radiotherapy experience sharing, educational content, case discussions, and equipment promotion). Global Quality Score (GQS) and Modified DISCERN (mDISCERN) scores were utilized as core assessment tools, with detailed visualizations presenting the multidimensional analysis results.

Overall, the quality of short videos related to radiotherapy on both TikTok and Bilibili was found to be unsatisfactory. This may be attributed to relatively low standards for accessing and publishing videos, with a significant proportion of creators being cancer patients (43% on TikTok and 27% on Bilibili) rather than professional healthcare providers. Additionally, the lack of video review processes further contributed to this issue. Although no significant statistical differences in video quality were observed between the two platforms (GQS, Z = -1.57, P = .116; mDISCERN, Z = -1.66, P = .097), TikTok exhibited significantly higher interaction metrics (likes, comments, saves, and shares) compared to Bilibili (P < .001).Furthermore, we found that Bilibili primarily focused on educational content about radiotherapy, while TikTok featured more personal experiences shared by patients. In contrast, videos produced by professionals or institutions emphasized the dissemination of radiotherapy knowledge and techniques, demonstrating higher quality and reliability. Specifically, videos uploaded by professionals generally outperformed those by non-professionals, particularly those created by cancer patients, which failed to effectively meet audience demands for accurate radiotherapy information.

In the field of healthcare short video research, various methodologies, inclusion criteria, video variables, sources, and content types are crucial for a comprehensive understanding of the quality and reliability of medical information22-2324. Some studies share significant similarities with our work, utilizing GQS and mDISCERN tools to assess video quality and reliability, focusing on platforms such as Douyin and Bilibili, and categorizing video sources into professionals, professional institutions, non-professionals, and non-professional institutions25-26. This reflects methodological homogeneity. However, our study introduces methodological innovations by distinguishing between different types of professionals (e.g., radiation oncologists and medical oncologists), providing a more nuanced analytical perspective.We noted that some studies selected different social media platforms, primarily focusing on Douyin, Bilibili, YouTube, Kuaishou, Weibo, and WeChat27-282930. However, the inclusion of videos from other platforms was often insufficient, typically falling below 100 samples, and the video variable metrics did not capture sufficient dimensions to express statistical significance effectively31-32. Notably, most studies found that videos uploaded by professionals had significantly higher quality than those by non-professionals, a finding consistent in medical information dissemination research.

Additionally, our study employed Poisson regression analysis, indicating that video interaction metrics do not directly predict quality and reliability scores. Methodologically rigorous, our research ensured data purity through strict retrieval strategies and the removal of duplicate content.

Quality of the Short Videos on RT

Radiotherapy plays a crucial role in cancer treatment. It utilizes high-energy radiation to directly target tumor cells, causing DNA damage that inhibits tumor growth and spread. In recent years, advancements in technology have significantly improved the precision and effectiveness of radiotherapy, making it a vital treatment option for many cancer patients33. Modern radiotherapy techniques, such as Stereotactic Radiosurgery (SRS) and Intensity-Modulated Radiation Therapy (IMRT), allow for precise tumor localization while minimizing damage to surrounding healthy tissue. These techniques employ computer-assisted treatment planning to ensure optimal radiation dose distribution34-3536. Additionally, radiotherapy can activate the body's immune response, enhancing the immune system's ability to recognize and attack tumor cells. This not only improves treatment outcomes but also reduces side effects and enhances patients' quality of life37-383940.

However, the characteristics of short video formats limit the breadth and depth of content. The brief duration and singular presentation style often prevent viewers from gaining a comprehensive understanding, particularly in educational videos where complex topics like radiotherapy may not be adequately explained within a short timeframe. The target audience includes cancer patients and healthy individuals, who may struggle to grasp the various mechanisms and biological effects of radiotherapy in such a limited time. Although we have not directly proven this, we believe that video length may correlate with viewers' understanding of radiotherapy.Our analysis and research that has been published indicates that videos related to radiotherapy uploaded by professionals and institutions generally exhibit higher quality and

reliability compared to those by non-professionals41-4243. This underscores the critical role of radiotherapy professionals in disseminating medical information online. However, many qualified physicians do not receive as much engagement—such as likes, comments, shares, and saves—as videos uploaded by cancer patients or entertainment influencers. The prevalence of non-professionals sharing medical videos on radiotherapy may lead to a decline in content quality, resulting in partial and incomplete information. This can easily cause misdiagnosis, negative emotions, and skepticism towards professional doctors, ultimately leading to delays in treatment and indecision regarding treatment options, which poses serious risks for cancer patients.

The Progress of Radiotherapy Short Videos

Given the strict professional requirements in the field of radiotherapy, we advocate for more video uploaders to seek guidance from qualified radiotherapy professionals before disseminating information. In our collected videos, medical professionals certified by TikTok and Bilibili are marked with special indicators, and their credentials can be verified through their respective hospitals' official websites. This enhances the reliability of the videos and fosters greater trust in radiotherapy knowledge among viewers.Moreover, it is essential to communicate radiotherapy concepts in a simple, clear, and effective manner to non-professionals, including cancer patients, healthy individuals, and adolescents. This necessitates that physicians explain complex content in a more accessible way on short video platforms, requiring high levels of communication skills. Radiotherapy professionals must not only possess a solid medical foundation but also utilize clear visual metaphors to break down complex processes into coherent and understandable steps. This approach can reduce the monotony of radiotherapy short videos and employ relatable analogies that connect professional terminology with everyday understanding.Additionally, integrating interactive elements and evidence-based visual aids can significantly enhance viewers' comprehension and retention of medical knowledge, effectively disseminating information within a short timeframe.

Practical Significance

This study provides essential empirical evidence for assessing the quality and reliability of radiotherapy-related medical knowledge dissemination on short-form video platforms. By systematically analyzing the quality and reliability of radiotherapy videos on TikTok and Bilibili, we have highlighted significant disparities in how the public accesses medical information, despite not evaluating all available short-video platforms ,such as WeChat, Weibo, Kuaishou, and Xiaohongshu44-4546.

Our findings fill a critical gap in the existing literature and offer valuable insights for healthcare professionals and regulators of short-video content. The results indicate that while short-video platforms have considerable potential for disseminating medical knowledge, the quality and reliability of the content require significant enhancement47. Notably, China has introduced the world’s first health promotion guidelines for scientific communication on short-video platforms, marking a significant advancement in this field48-4950.

We recommend that relevant institutions strengthen oversight of short-video content and refine existing standards and guidelines to ensure the accuracy and scientific integrity of the information presented. Furthermore, encouraging medical professionals, particularly those specializing in radiotherapy, to actively engage in the creation, conceptualization, and publication of video content will enhance public understanding and trust in medical knowledge, ultimately contributing to the advancement of global radiotherapy practices.

Future research should explore the effectiveness of different types of radiotherapy content, develop more precise assessment tools for evaluating the quality of radiotherapy content, and investigate the long-term impacts of short-video platforms on public acquisition of medical knowledge and health behaviors. This study represents a crucial step toward improving the quality of medical information in the digital age, providing a comprehensive framework for addressing challenges in online health communication.

Strengths and Limitations

The study demonstrates unique strengths in several aspects. First, the research design systematically evaluated radiotherapy-related short videos on TikTok and Bilibili platforms. This approach not only ensures data comprehensiveness but also enhances the representativeness of the research findings. Second, the study conducted a comprehensive assessment of video quality and reliability using the Global Quality Score (GQS) and the Modified DISCERN tool18-19. This dual assessment approach increases the credibility of the results, allowing for a more accurate evaluation of video content quality.

In terms of data analysis strategies, this study utilized non-parametric statistical methods to accommodate the distribution characteristics of the data, ensuring the validity of the analytical results17. Additionally, Spearman and Pearson correlation analyses further elucidated the relationships between video features and quality scores, providing deeper insights into the factors influencing short video content13. The application of Poisson regression models offered predictive capabilities regarding the potential relationships between video variables and quality scores, thereby enhancing the depth of the research. Notably, this is the first study in China to analyze the quality of radiotherapy-related short videos across two social media platforms51.

However, our study has several limitations that affect the generalizability and external validity of the results. First, the inclusion criteria excluded videos from professional radiotherapy courses, meaning that the findings cannot be applied to the quality and reliability assessment of such educational content. Consequently, the omission of professional course videos may limit our comprehensive understanding of the overall quality of radiotherapy-related videos.

Second, the cross-sectional design of the study restricts the generalizability of the results. Cross-sectional studies provide data at a specific point in time and lack long-term observations of trends. Therefore, future research should employ longitudinal designs to validate our findings and ensure the stability and reliability of the results. Additionally, the primary focus of this study was on Chinese users, utilizing the Chinese versions of TikTok and Bilibili. Caution should be exercised when applying our findings to other countries and populations, as cultural and social background differences may influence the acceptance and dissemination of video content. Although we selected the top 100 videos from each platform, which represents a small proportion, we believe this sample is sufficiently representative, as videos beyond the top 100 did not significantly impact the analysis31,32,52. Furthermore, certain subgroup categories (e.g., non-profit organizations and radiotherapy equipment promotion) had small sample sizes, which may introduce inaccuracies.

Lastly, as an observational study, this research can only detect associations between variables and cannot establish causal relationships. Despite our efforts to adjust for potential biases, we were unable to control for unpredictable biases that may affect the interpretation of the results.

Conclusion

This study systematically evaluated the quality and reliability of radiotherapy-related short videos on two major short-video platforms in China, TikTok and Bilibili. By analyzing 200 video samples, we found that the quality and reliability of most videos were unsatisfactory, particularly for content uploaded by non-professionals. Although TikTok outperformed Bilibili in user engagement, there were no significant differences in video quality scores (GQS) and Modified DISCERN scores between the two platforms. Videos uploaded by professionals generally demonstrated better comprehensiveness and reliability, underscoring the importance of professional expertise in the dissemination of medical information.

Therefore, we conclude that while short-video platforms have the potential to disseminate medical knowledge, the quality of the content urgently needs improvement. We recommend that relevant platforms and institutions enhance oversight of short-video content to ensure the accuracy and scientific integrity of the information presented. Additionally, encouraging radiotherapy professionals to actively participate in the creation of short videos will help improve public understanding and trust in radiotherapy knowledge.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Abbreviations

GQS Global Quality Score
RT Radiotherapy

Footnotes

Authors' Contributions: All authors contributed to the study conception and design. F-HG, Y-ZZ, and X-RL were involved in the acquisition and interpretation of data. F-HG, Y-ZZ were involved in the analysis of data. F-HG and Y-ZZ drafted the manuscript. X-RL critically revised the manuscript. All authors read and approved the final version of the manuscript.

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Supplementary Files

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Untitled.
URL: http://asset.jmir.pub/assets/f6f492589273c9fe426004f519dfe9cd.xlsx

Multimedia Appendixes

Flowchart.
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Fig2.
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Fig3.
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Fig6.
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Fig7.
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