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Research Article

Assessment Of Informational Quality And Credibility Of Youtube® Content On Osteosarcoma

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ABSTRACT

Objective: YouTube is increasingly used as a source of health information; however, the accuracy and reliability of its medical content remain questionable. This study aimed to assess the quality and reliability of YouTube videos related to osteosarcoma.

Methods: In March 2025, the first 50 YouTube videos for the search terms "osteosarcoma" and "osteosarcoma surgery" were screened. After removing duplicates and applying exclusion criteria, 61 videos were included. Two orthopedic surgeons independently evaluated the videos for uploader type, views, duration, likes, and dislikes. Popularity was measured using the Video Power Index (VPI) and view ratio. Scientific quality was assessed using DISCERN and JAMA scores. Statistical analyses included the Shapiro-Wilk, Spearman correlation, and Kruskal-Wallis tests ($p < 0.05$).

Results: Only 8.1% of videos were rated as good or excellent based on DISCERN scores, while 70.4% were categorized as poor or very poor. Physician-uploaded videos (52.5%) had significantly higher DISCERN and JAMA scores ($p < 0.01$), yet lower popularity metrics compared to patient and commercial uploads ($p < 0.05$). A strong positive correlation was found between DISCERN and JAMA scores (rho = 0.605, $p < 0.001$), but no significant relationship existed between content quality and popularity indicators.

Conclusion: Although videos uploaded by physicians demonstrated higher quality, overall informational standards were low. The preference for popular but less reliable content highlights the need for accurate, accessible, and engaging medical videos on online platforms to support patient education and informed decision-making.

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Introduction

Anterior With the rapid advancement and widespread accessibility of digital technologies, individuals increasingly prefer audiovisual content over written materials when seeking information. This trend is particularly evident in healthcare, where online videos have become a major source of medical information for patients and their relatives. Previous studies have reported that nearly 80% of patients search for information about their medical conditions through online video platforms before or after clinical consultations (Koller et al.,2016). Among these platforms, YouTube stands out as one of the most frequently accessed and influential sources due to its free availability, ease of use, and vast volume of content (2. Cisco Systems, 2015).

Despite its popularity, the reliability and informational value of health-related content on YouTube remain controversial. Video uploaders are not required to possess medical qualifications, and the content is not subjected to peer review or quality control. As a result, videos may vary considerably in terms of informational richness, accuracy, and educational value. Several studies have evaluated health-related YouTube videos across different medical fields and have demonstrated that a substantial proportion contain incomplete, misleading, or scientifically unsupported information (Erdem & Sisik, 2018). Such deficiencies primarily reflect limitations in informational content rather than technical aspects such as video resolution or production quality. Given the widespread use of YouTube as a health information source, physicians should be aware that many patients rely on these videos to understand their conditions and treatment options. Videos with limited informational depth or inaccurate content may lead to misconceptions, increased anxiety, and unrealistic expectations, potentially affecting clinical decision-making and the physician–patient relationship.

Osteosarcoma is a rare primary malignant bone tumor, with an overall incidence of approximately 2–3 per 1,000,000 individuals. Its incidence is notably higher in adolescents and young adults, peaking at 8–11 per 1,000,000 in the 15–19-year age group. Common clinical manifestations include localized pain, followed by swelling and restricted joint movement (Biazzo & De Paolis,2016). Due to its rarity and limited public awareness, individuals diagnosed with osteosarcoma and their families frequently seek supplementary information outside clinical settings, particularly through online platforms such as YouTube.

YouTube videos related to osteosarcoma encompass a broad range of content, including patient experiences, educational explanations, physician-led discussions, and promotional or institutional materials. However, compared with other orthopedic and oncologic conditions, there is a lack of research examining the popularity, informational richness, and credibility of YouTube videos specifically addressing osteosarcoma.

Methods

This study was designed as a cross-sectional observational analysis of publicly available YouTube video content related to osteosarcoma. In March 2025, a systematic search was performed on YouTube using the keywords "osteosarcoma" and "osteosarcoma surgery." For each search term, the first 50 videos listed according to YouTube's default relevance-based ranking were screened. Duplicate videos appearing in both searches were removed.

Videos were excluded if they met any of the following criteria: fewer than 1,000 views (n = 25), non-English language content (n = 7), or duration shorter than one minute (n = 6). After applying these exclusion criteria, a total of 61 videos were included in the final analysis. The upload dates of the included videos ranged from 2008 to 2024.

For each video, the following data were recorded: uploader identity, video URL, upload date, video duration, number of views, likes, and dislikes. Videos were not categorized based on uploader intent (e.g., healthcare professional–oriented vs. general audience–oriented); instead, all eligible videos were analyzed collectively to assess overall informational quality and popularity.

All videos were independently evaluated by two orthopedic surgeons experienced in musculoskeletal oncology. The primary focus of the evaluation was the informational quality and credibility of the video content rather than its technical or visual characteristics.

Scientific quality and reliability were assessed using the DISCERN and JAMA scoring systems. According to the DISCERN instrument, videos were categorized as excellent, good, fair, poor, or very poor based on their informational quality (Charnock et al., 1999). The JAMA benchmark criteria evaluate content credibility using four components: authorship, attribution, disclosure, and currency (Silberg et al., 1997).

Video popularity was assessed using the view ratio and Video Power Index (VPI). The view ratio was calculated by dividing the total number of views by the number of days since upload. The VPI was calculated by multiplying the like ratio by the view ratio and dividing the result by 100, as described previously in the literature (Erdem & Karaca, 2018).

Inter-rater reliability between the two evaluators was assessed using Cohen's kappa coefficient. Substantial agreement was observed, with kappa values of 0.66 for the JAMA score and 0.73 for the DISCERN score, indicating a high level of consistency between evaluators.

Ethics committee approval was not obtained because the study exclusively analyzed publicly accessible, anonymized data available on YouTube, without involving human participants, patient identifiers, or private information.

Statistical analyses were conducted using SPSS version 27 (SPSS Inc., Chicago, IL, USA). Data distribution was assessed using the Shapiro–Wilk test. As the data were not normally distributed, Spearman's correlation analysis was used to evaluate associations between quantitative variables. Comparisons between groups were performed using the Kruskal–Wallis test. A p-value < 0.05 was considered statistically significant.

Results

A total of 61 YouTube videos related to osteosarcoma were included in the analysis. Descriptive characteristics of the evaluated videos, including upload source, duration, engagement metrics, and quality scores, are summarized in Table 1.

Table 1. Descriptives of videos

	Mean	SD	Minimum	Maximum
DISCERN	32.20	12.456	16.000	72.00
JAMA	1.54	0.647	0.000	3.00
VPI	22.50	62.478	0.400	359.40
Upload Time	2001.05	1382.787	218.000	6140.00
Duration	8.26	11.827	1.000	76.00
Like	483.13	1494.822	5.000	9900.00
View	40133.84	115833.838	1016.000	660583.00
View Ratio	22.55	62.481	0.440	359.48

JAMA: The Journal of the American Medical Association SD: Standart Deviation VPI: Video power index

Based on the DISCERN classification, only 1.6% of the videos were rated as excellent and 6.5% as good in terms of informational quality. A further 23.0% were classified as fair, while the majority of videos were rated as poor (29.5%) or very poor (39.3%), indicating an overall low level of informational richness across the analyzed content.

Analysis of video upload sources demonstrated that 52.5% of the videos were uploaded by physicians, followed by patients (23.0%), allied health personnel (18.0%), and commercial sources (6.5%) (Figure 1).

Figure 1. Pie chart of video source

Videos uploaded by physicians achieved significantly higher DISCERN and JAMA scores compared with those uploaded by patients, allied health personnel, and commercial sources ($p < 0.01$), reflecting superior informational quality and credibility. In contrast, videos uploaded by patients and commercial sources demonstrated significantly higher engagement metrics, including like count, view count, and Video Power Index (VPI) values ($p < 0.05$). These findings are detailed in Table 2.

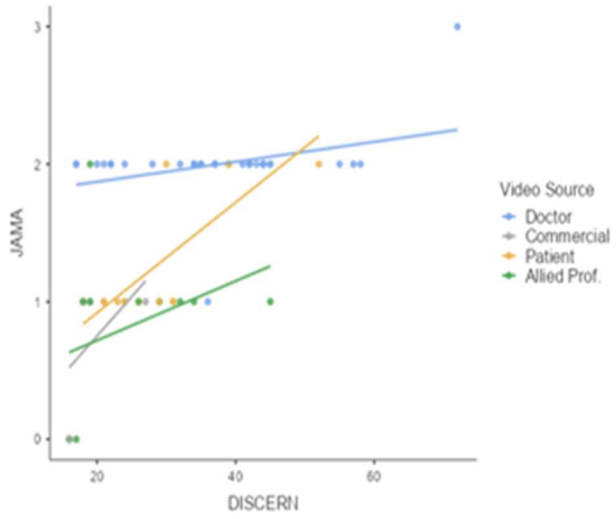
Correlation analysis revealed a moderate-to-strong positive correlation between DISCERN and JAMA scores (Spearman's rho = 0.605, $p < 0.001$), indicating consistency between the two instruments in assessing informational quality and credibility (Figure 2).

Table 2. Comparison of video source and scores

	Physician (n:32)	Patient (n:14)	Allied Prof. (n:11)	Commercial (n:4)	Shapiro Wilk Test p	Statistical Test	p
DISCERN	37.7±12.6	29.1±9.1	24.6±9.4	20.0±4.8	0.119	**ANOVA**	<.001
JAMA	2.0±0.2	1.2±0.5	0.8±0.6	0.7±0.4	<.001	**Kruskal-Wallis**	<.001
Like	115±127	507±1420	1667±2949	88±69	<.001	**Kruskal-Wallis**	0.032
View	10750	46089	130478	5913	<.001	**Kruskal-Wallis**	0.037
VPI	8.1±9.1	15.5±38.6	79.0±130.0	6.8±11.1	<.001	**Kruskal-Wallis**	0.041

JAMA: The Journal of the American Medical Association VPI: Video power index

Figure 2. Scatter plot chart of DISCERN and JAMA scores



No significant correlations were identified between engagement-related parameters—such as like count, video duration, view ratio, or VPI—and either DISCERN or JAMA scores (all $p > 0.05$). Corresponding correlation coefficients are presented in Table 3, demonstrating that higher popularity metrics were not associated with improved informational quality or credibility.

Table 3. Correlation between variables

	Statistical Test	p	rho
DISCERN - JAMA	**Spearman's**	<.001	0.605
DISCERN - Duration	**Spearman's**	0.295	0.136
JAMA - Duration	**Spearman's**	0.075	0.230
DISCERN - Like	**Spearman's**	0.149	- 0.187
JAMA - Like	**Spearman's**	0.344	- 0.123
DISCERN - VPI	**Spearman's**	0.274	- 0.142
JAMA - VPI	**Spearman's**	0.629	- 0.063

JAMA: The Journal of the American Medical Association VPI: Video power index

Discussion

The present study demonstrated that YouTube videos related to osteosarcoma generally provide insufficient informational quality and credibility. According to the DISCERN classification, more than two-thirds of the analyzed videos were categorized as poor or very poor, and the overall JAMA scores were low, indicating substantial limitations in content reliability. These findings suggest that the majority of osteosarcoma-related videos on YouTube lack adequate informational richness rather than merely technical or visual quality.

The results of the current study are consistent with those reported in previous investigations evaluating health-related YouTube content across various orthopedic and musculoskeletal conditions. For example, Gökçen et al. evaluated the most viewed YouTube videos related to lumbar disc herniation and reported similarly low average DISCERN and JAMA scores, indicating limited educational value [9]. Likewise, Karagöz et al. found suboptimal informational quality in videos addressing lateral epicondylitis [10]. In addition to general quality assessments, some studies have performed content-based evaluations. Goyal et al. reported that 78% of videos concerning carpal tunnel syndrome contained at least one misleading or incorrect statement [11]. MacLeod et al. observed that none of the evaluated videos on femoroacetabular impingement achieved an "excellent" rating based on a structured checklist [12]. Cassidy et al. assessed anterior cruciate ligament injury treatment videos using predefined content criteria and similarly concluded that the overall informational quality was low [13]. In these studies, the classification of "low quality" was primarily based on deficiencies in completeness, accuracy, and guideline concordance rather than technical presentation, supporting the interpretation of our findings.

Although the overall informational quality was limited, stratification by video source revealed notable differences. In line with previous research, videos uploaded by physicians demonstrated significantly higher DISCERN and JAMA scores compared with those uploaded by patients, allied health personnel, or commercial sources [2, 14]. Nevertheless, even physician-uploaded videos frequently failed to provide comprehensive or structured information, highlighting an overall need for improvement in professionally produced online educational content.

An important observation of this study is that video popularity did not parallel informational quality. Despite physicians uploading more than half of the evaluated videos, videos uploaded by patients and commercial sources achieved higher view counts, like counts, and Video Power Index values. These findings indicate that YouTube users tend to prioritize factors such as presentation style, emotional appeal, narrative format, and accessibility over scientific rigor. The Video Power Index and view ratio, which reflect audience engagement rather than educational value, therefore should not be interpreted as indicators of informational quality.

Given that YouTube content is primarily consumed by a general audience, the concept of "video success" requires careful consideration. High view counts may reflect user engagement or entertainment value rather than informational accuracy or educational benefit. From a clinical and public health perspective, informational richness and credibility should be regarded as the primary criteria for evaluating health-related videos, whereas popularity metrics should be interpreted cautiously and contextually.

Interestingly, unlike some previous studies that reported a negative association between popularity metrics and informational quality [14–16], the present study did not identify a statistically significant correlation between these parameters. This finding suggests that low informational quality is prevalent across videos regardless of their popularity and underscores the need for standardized, content-focused evaluation frameworks.

Several limitations of this study should be acknowledged. First, only the most viewed videos exceeding 1,000 views were included, potentially excluding newly uploaded high-quality content. However, prior evidence indicates that most users rarely explore beyond the first two pages of search results, partially supporting this selection strategy [17]. Second, the search strategy was limited to the clinical term "osteosarcoma," excluding more colloquial terms that may be used by the general public. Finally, YouTube is a dynamic platform with continuously evolving content; therefore, results may vary over time, limiting generalizability.

Conclusion

This study demonstrated that YouTube videos related to osteosarcoma generally exhibit low informational quality and limited credibility. Although videos uploaded by physicians achieved higher DISCERN and JAMA scores, indicating superior informational content, these videos attracted lower levels of viewer engagement compared with patient-generated and commercially produced content.

The findings suggest that video popularity metrics do not reliably reflect informational quality and should therefore be interpreted with caution in the context of health education. From a clinical and public health perspective, informational richness, accuracy, and credibility should be prioritized over view counts or engagement indices when evaluating health-related online content.

These results highlight the need for healthcare professionals to adopt more accessible, audience-oriented communication strategies when producing online educational videos, without compromising scientific accuracy. Improving the balance between clarity, engagement, and reliability may enhance the effectiveness of YouTube as a supplementary source of health information for patients and their families.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Ethical approval

This study analyzed publicly available data obtained from the YouTube platform. No human participants were involved, and no identifiable personal or patient-related information was collected. Therefore, ethics committee approval was not required in accordance with institutional and national research guidelines.

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