Research Square

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Assessment of Information Quality and Reliability of YouTube Videos on Chondrosarcoma

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Research Article

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Abstract

Background: YouTube is increasingly used by patients as a source of health information. However, the accuracy and reliability of shared medical content remains questionable. The aim of this study was to evaluate the information quality, reliability, and popularity of YouTube videos related to chondrosarcoma.

Methods: In March 2025, a systematic search was conducted on YouTube using the English keywords "chondrosarcoma" and "chondrosarcoma surgery". After applying exclusion criteria and removing duplicates, 65 videos were included. Videos were independently evaluated by two orthopaedic surgeons regarding uploader type, duration, view count, like count, and days since upload. Video popularity was assessed using the view ratio and Video Power Index (VPI). Information quality and reliability were evaluated using the DISCERN instrument and Journal of the American Medical Association (JAMA) benchmark criteria. Statistical analyses included the Shapiro–Wilk test, Kruskal–Wallis test, and Spearman correlation analysis ($p < 0.05$).

Results: The mean DISCERN score was 33.46±12.64 and the mean JAMA score was 1.45±0.73. The majority of videos were rated as moderate, poor, or very poor quality. Physician-uploaded videos had significantly higher DISCERN and JAMA scores ($p = 0.001$ and $p = 0.021$, respectively). No significant association was found between video popularity and information quality. A strong positive correlation was identified between DISCERN and JAMA scores ($rho = 0.702$, $p < 0.001$).

Conclusions: YouTube videos on chondrosarcoma are predominantly of low quality and reliability. Academic institutions and professional societies should prioritise evidence-based video content production to improve patient education on this rare malignancy.

INTRODUCTION

The rapid expansion of internet access and digital technologies has fundamentally changed how patients seek health-related information. Rather than relying exclusively on healthcare professionals, an increasing number of patients use online platforms to gather information before and after diagnosis or treatment [1]. Among these platforms, video-based content has gained particular popularity due to its accessibility and ease of comprehension compared to written sources.

YouTube is one of the most widely used video-sharing platforms worldwide and has emerged as an important health information resource for patients [2]. However, a large proportion of medical content on YouTube is uploaded without any scientific peer-review process, raising substantial concerns about accuracy and reliability [3]. Low-quality or misleading content may generate unnecessary anxiety, create unrealistic treatment

expectations, and negatively affect the physician–patient relationship [4]. These risks are amplified in rare or complex diseases, where misinformation can disproportionately influence patient decision-making [5].

Chondrosarcoma is the second most common primary malignant bone tumour, predominantly affecting middle-aged and older adults. Its clinical course varies according to histological subtype and tumour grade, and management requires a multidisciplinary approach [6]. Given its rarity and limited public awareness, patients may be particularly vulnerable to misinformation encountered on digital platforms [7].

Several studies have evaluated the quality of YouTube videos on orthopaedic and oncological conditions, consistently demonstrating that a substantial proportion of content is of low quality and limited scientific value [8,9]. However, systematic evaluations of YouTube content specifically focused on rare primary bone tumours such as chondrosarcoma remain scarce. The aim of this study was to evaluate the information quality, reliability, and popularity of YouTube videos on chondrosarcoma.

METHODS

Search strategy and video selection

A systematic search was conducted on YouTube in March 2025 using the English keywords "chondrosarcoma" and "chondrosarcoma surgery". The first 50 videos returned for each search term were assessed for eligibility [19]. Videos were excluded if they were: (1) duplicates; (2) non-English; (3) shorter than one minute; or (4) had fewer than 1,000 views. After applying these criteria, 65 videos were included. The search was performed without logging into a user account to ensure unbiased retrieval.

Data extraction

Each video was independently evaluated by two orthopaedic surgeons (N.V. and A.D.). The following variables were recorded: video duration, days since upload, total view count, like count, and uploader type. Uploaders were categorised as: (1) physicians, (2) patients, (3) allied health professionals, or (4) commercial sources.

Popularity metrics

The view ratio was computed by dividing total views by days since upload. The Video Power Index (VPI) was calculated as the product of the like ratio and view ratio, divided by 100 [10].

Quality and reliability assessment

Information quality was assessed using the DISCERN instrument, a validated 16-item questionnaire with scores ranging from 16 to 80 [10]. Video reliability was evaluated using the JAMA benchmark criteria, a four-item tool assessing authorship, attribution, disclosure, and currency, with scores from 0 to 4 [10].

Statistical analysis

All analyses were performed using SPSS version 25.0 (SPSS Inc., Chicago, IL, USA). The Shapiro–Wilk test was used to assess normality. Group comparisons were performed using the Kruskal–Wallis test, and associations between continuous variables were examined using Spearman correlation analysis. Statistical significance was set at $p < 0.05$.

Ethics

This study used only publicly available YouTube data. No patients, personal identifiers, or clinical interventions were involved. Ethics committee approval was therefore not required.

RESULTS

A total of 65 YouTube videos were included. Descriptive statistics are presented in Table 1.

The mean DISCERN score was 33.46 ± 12.64 (median: 31; range: 16–72) and the mean JAMA score was 1.45 ± 0.73 (median: 1; range: 0–3). The mean VPI was 7.17 ± 37.39. The mean view count was $16{,}585.62 \pm 88{,}193.35$, the mean like count $216.05 \pm 1{,}325.38$, and the mean upload duration $2{,}451.62 \pm 1{,}407.81$ days.

Regarding uploader type, 25 videos (38.5%) were uploaded by physicians, 5 (7.7%) by patients, 19 (29.2%) by allied health professionals, and 16 (24.6%) by commercial sources (Fig. 1).

Table 1
Descriptive statistics of included YouTube videos

DISCERN	Mean	Median	SD	Minimum	Maximum
	33.46	**31**	**12.644**	**16**	**72**
JAMA	1.45	1	0.730	0	3
VPI	7.17	0.77	37.386	0.15	303
Upload Time (days)	2451.62	1911	1407.814	182	6581
Like	216.05	17	1325.378	0	10712
View	16585.62	1720	88193.355	10	712680
View Ratio	7.17	0.77	37.386	0.15	303

SD: Standard Deviation; VPI: Video Power Index; JAMA: Journal of the American Medical Association

Comparison of quality and popularity metrics by uploader type is presented in Table 2. Physician-uploaded videos had significantly higher DISCERN scores (41.7 ± 15.0) compared to all other groups ($p = 0.001$), and significantly higher JAMA scores ($p = 0.021$). Despite numerically higher engagement metrics for patient- and commercially-uploaded videos, these differences did not reach statistical significance.

Table 2
Comparison of video quality and popularity metrics by uploader type

DISCERN	Physician (n = 25)	Patient (n = 5)	Allied Prof. (n = 19)	Commercial (n = 16)	p
	41.7 ± 15.0	**26.8 ± 7.6**	**30.6 ± 7.3**	**20.0 ± 4.8**	**0.001***
JAMA	1.8 ± 0.7	1.2 ± 0.4	1.2 ± 0.5	1.1 ± 0.8	0.021*
Like	71 ± 135	51 ± 43	35 ± 45	708 ± 2668	0.823
View	3476	8593	3476	50861	0.772
VPI	8.1 ± 9.1	5.2 ± 6.6	1.5 ± 1.6	21.6 ± 75.1	0.377

**: Statistically significant (Kruskal–Wallis test); VPI: Video Power Index; JAMA: Journal of the American Medical Association*

Correlation analyses are presented in Table 3. A strong positive correlation was identified between DISCERN and JAMA scores ($rho = 0.702$; $p < 0.001$). No significant correlations were found between quality scores and video duration, like count, or VPI (Fig. 2).

Table 3
Spearman correlation analysis between quality scores and video characteristics

DISCERN – JAMA	**p**	**rho**
	< 0.001*	**0.702**
DISCERN – Duration	0.868	—
JAMA – Duration	0.806	—
DISCERN – Like	0.706	—
JAMA – Like	0.566	—
DISCERN – VPI	0.940	—
JAMA – VPI	0.658	—

**: Statistically significant (Spearman's correlation test); VPI: Video Power Index; JAMA: Journal of the American Medical Association*

DISCUSSION

This study demonstrates that YouTube videos related to chondrosarcoma are generally of low information quality and limited reliability. The majority of videos were classified as poor or very poor according to DISCERN criteria, and JAMA scores were similarly low, indicating significant deficiencies in content accuracy and scientific credibility. These findings suggest that the shortcomings of chondrosarcoma-related content on YouTube reflect problems with information completeness and adherence to evidence-based standards rather than technical production quality.

Our findings are consistent with previous YouTube quality analyses in orthopaedics and musculoskeletal oncology. Gokcen and Gumussuyu reported low mean DISCERN and JAMA scores in disc herniation videos [11]. Karagoz et al. observed poor educational quality in lateral epicondylitis videos [12]. Goyal et al. found that 78% of carpal tunnel syndrome videos contained at least one misleading statement [13], and MacLeod et al. reported that no femoroacetabular impingement video achieved an "excellent" rating [14]. Cassidy et al. also found low overall quality in anterior cruciate ligament injury videos [15]. A notable parallel is the analysis by Dünki and Öztürk evaluating YouTube content on osteosarcoma using identical methodology, which reported similar findings [9]. The present study extends this evidence base to chondrosarcoma, highlighting that rare primary bone tumours are particularly underserved by high-quality online content.

Physician-uploaded videos demonstrated significantly higher DISCERN and JAMA scores compared to videos from other uploader categories, aligning with prior research confirming that professionally created content is more scientifically accurate [16].

However, even physician-uploaded videos frequently lacked comprehensive, structured content adequate for patient education, indicating that professional credentials alone do not guarantee patient-centred quality.

A notable finding was the absence of a significant association between video popularity and information quality. Despite higher quality scores, physician-uploaded videos attracted fewer views, likes, and lower VPI values than patient- and commercially-uploaded videos. This pattern, also reported in studies on bariatric surgery [16] and rheumatoid arthritis [17], suggests that user engagement is driven by presentation style, emotional resonance, and accessibility rather than scientific accuracy. Consequently, popularity metrics should not be used as proxies for educational value [18].

This study has several limitations. First, the 1,000-view inclusion threshold may have excluded recently uploaded high-quality content. However, this approach is consistent with established methodology, as users typically engage with already-popular content [19]. Second, only English-language videos were evaluated, limiting generalisability. Third, the dynamic nature of YouTube means that content may change over time.

CONCLUSIONS

YouTube videos on chondrosarcoma are predominantly of low information quality and limited reliability. Physician-uploaded content demonstrates higher quality scores but lower public engagement compared to patient- and commercially-uploaded videos, exposing patients to a disproportionate volume of inaccurate content. In rare and complex diseases such as chondrosarcoma, erroneous online information may adversely influence treatment decisions. Academic institutions and professional orthopaedic and oncological societies should prioritise the production of evidence-based, patient-friendly video content to improve the quality of digital health information available to this vulnerable patient population.

Declarations

Ethics approval and consent to participate: This study was conducted in accordance with the Declaration of Helsinki. Only publicly available YouTube video data were used. No patients, personal data, or clinical interventions were involved. Ethics committee approval was therefore not required. Human Ethics and Consent to Participate declarations: not applicable.

Consent for publication: Not applicable.

Availability of data and materials: The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: N.V. and A.D. designed the study, conducted video evaluation, performed statistical analysis, and drafted the manuscript. Both authors read and approved the final manuscript.

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Figures

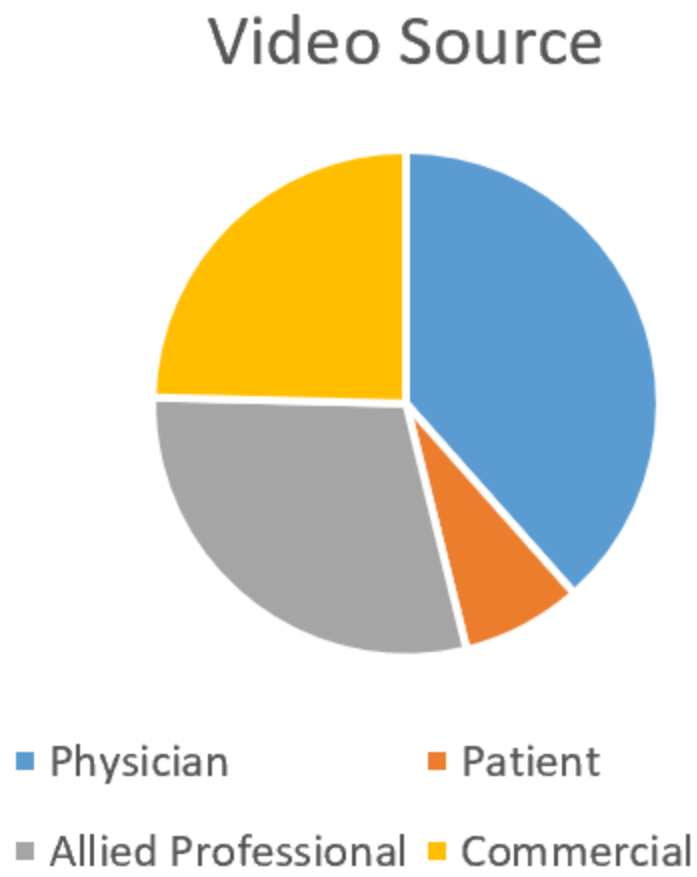


Figure 1

Distribution of included YouTube videos by uploader type.

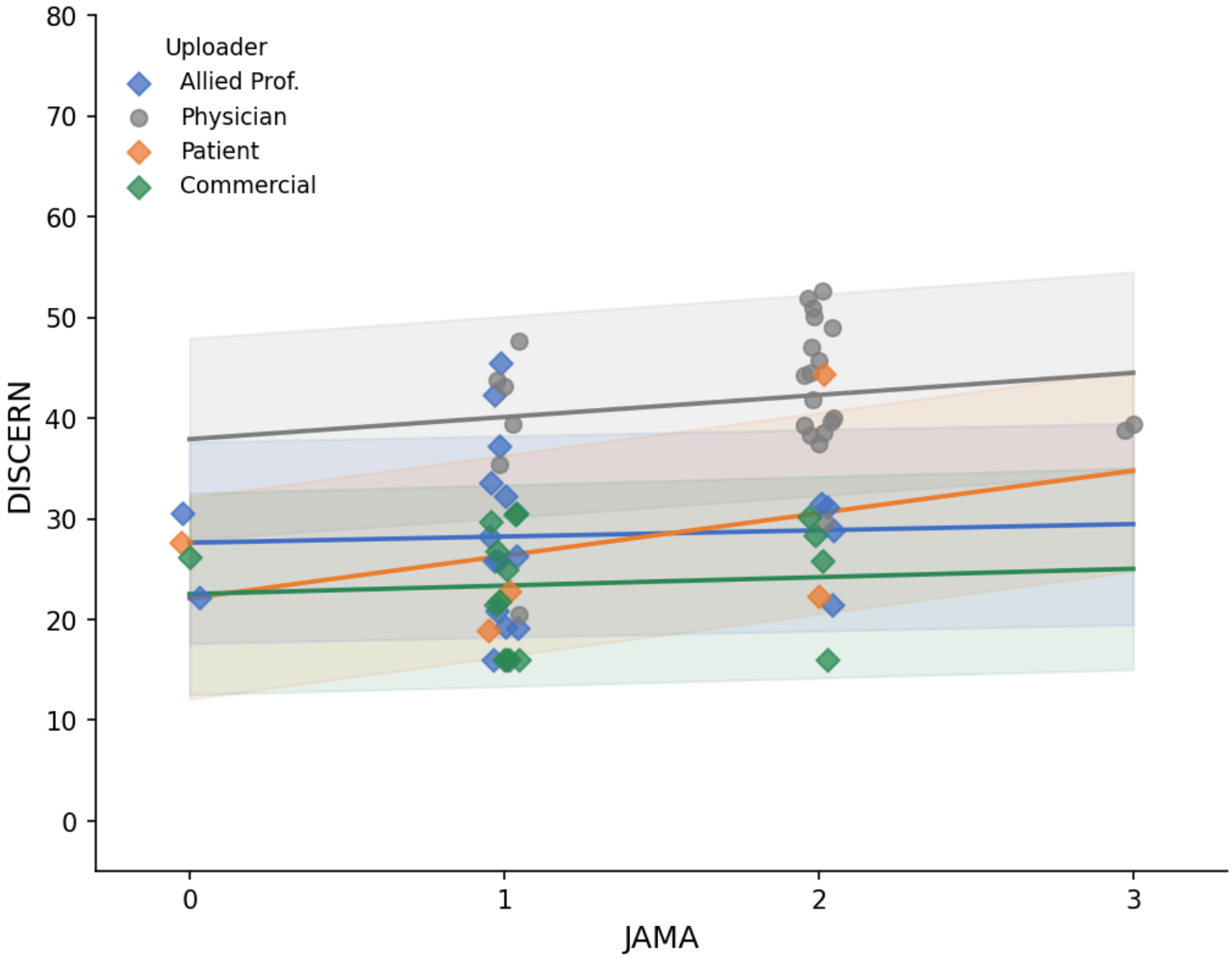


Figure 2

Scatter plot illustrating the correlation between DISCERN and JAMA scores stratified by uploader category. Lines represent group-specific regression trends with 95% confidence intervals.