Original Article

Cukurova Anestezi ve Cerrahi Bilimler Dergisi

Assessment of Quality, Reliability, and Popularity of Kidney Cancer–Related YouTube™ Videos: A Cross-Sectional Study

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Abstract

Objective: This study aimed to systematically evaluate the informational quality, reliability, and popularity of kidney cancer–related content on YouTube™ using validated assessment tools. **Methods:** A total of 300 YouTube™ videos identified using kidney cancer–related search terms were screened, and 157 videos meeting the predefined inclusion criteria were included in the analysis. Video popularity was assessed using the Video Power Index (VPI). Informational quality and reliability were evaluated using the modified DISCERN (mDISCERN), Journal of the American Medical Association (JAMA) benchmark criteria, Global Quality Score (GQS), and Video Information Quality Index (VIQI). Videos were classified according to publisher type and narrator. **Results:** Of the analyzed videos, 121 (77%) were classified as useful, while 36 (23%) contained misleading or incomplete information. Hospital- and physician-based videos demonstrated significantly higher mDISCERN, JAMA, GQS, and VIQI scores compared to health-related channels (all $p<0.001$). VPI values did not differ significantly among publisher types ($p=0.863$). Informational quality scores were positively correlated with view ratio, whereas a significant negative correlation was identified between like ratio and view ratio ($r = -0.376$, $p<0.001$). **Conclusions:** YouTube™ videos on kidney cancer vary widely in quality. While institutional and physician-led videos provide more reliable information, popularity metrics do not necessarily reflect informational accuracy. These findings emphasize the need for greater institutional involvement in digital health communication and improved patient guidance regarding online oncology content.

Keywords: Kidney cancer; YouTube™; Health information; Video quality; DISCERN

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1. Introduction

Kidney cancer represents a significant global health burden and accounts for a considerable proportion of urological malignancies worldwide. Advances in diagnostic imaging and treatment modalities have improved outcomes; however, the disease continues to pose substantial physical and psychological challenges for patients. In parallel with these developments, patients increasingly seek health-related information beyond traditional clinical encounters[1].

The widespread use of the internet and social media platforms has fundamentally transformed access to medical information. Among these platforms, YouTube™ has emerged as one of the most frequently used sources due to its free access, audiovisual format, and extensive global reach[2]. Patients with cancer, their relatives, and even healthcare professionals commonly use YouTube™ to obtain information regarding disease mechanisms, diagnostic procedures, treatment options, and expected outcomes[3].

Despite its popularity, YouTube™ content is not subject to peer review or standardized quality control. Previous studies across multiple medical disciplines have demonstrated that online videos may contain incomplete, misleading, or inaccurate information[4]. In oncological diseases, where misinformation can directly affect patient anxiety, treatment compliance, and decision-making, the reliability of online content becomes particularly critical[5].

Although YouTube™ has been analyzed as a source of information for various urological malignancies, data specifically addressing kidney cancer–related video content remain limited. Therefore, this study aimed to evaluate the scientific quality, reliability, and popularity of YouTube™ videos related to kidney cancer using validated scoring systems and to investigate the relationship between informational quality and viewer engagement metrics.

2. Materials and Methods

2.1. Study Design and Video Selection

This cross-sectional study analyzed publicly available YouTube™ videos related to kidney cancer. Initially, a total of 300 videos were identified through a systematic search strategy. Duplicate videos and videos not meeting the predefined inclusion criteria were excluded during the initial screening. After this step, 162 videos remained eligible. Subsequently, 5 videos with a duration shorter than 30 seconds were excluded, resulting in 157 videos included in the final analysis. The video selection and exclusion process is summarized in Figure 1.

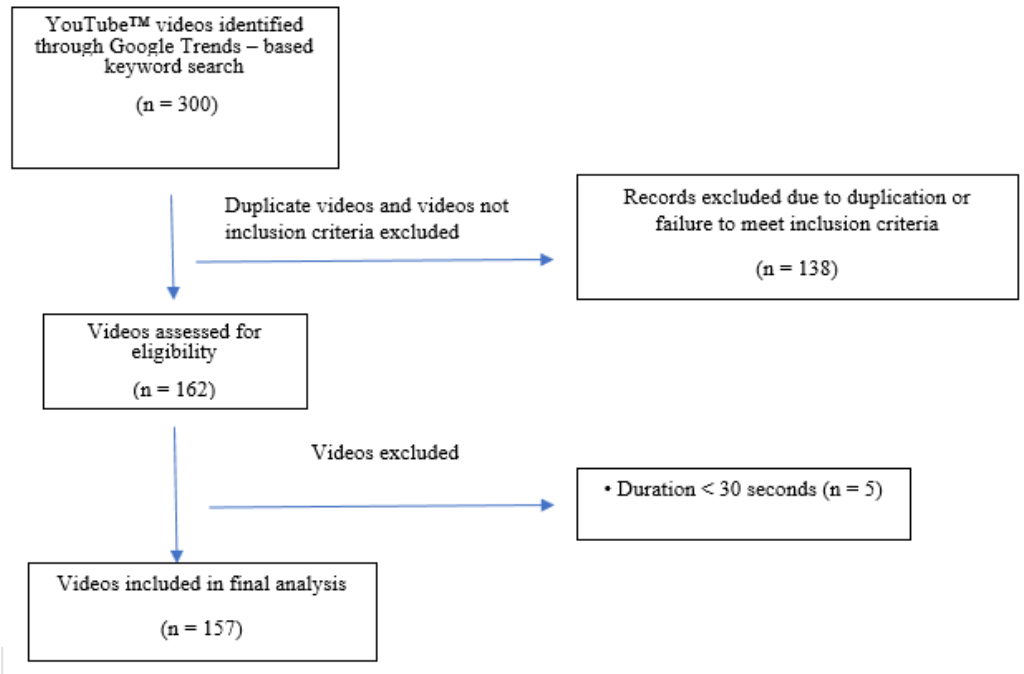

Figure 1. Flowchart of YouTube™ Video Selection Process

2.2. Search Strategy and Keyword Selection

Google Trends was used to identify the most relevant search terms related to kidney cancer. The term "kidney cancer" was entered into Google Trends, and search settings were restricted to the United States and the past five years. Google Trends was selected to reflect real-world public interest and search behavior related to kidney cancer within a stable, high-volume search environment.

Following a consensus among two urologists and one medical oncologist, the six most popular keywords were selected for further analysis: "cancer of kidney," "kidney cancer symptoms," "kidney cancer treatment," "kidney cancer causes," "what is kidney cancer," and "kidney cancer pain." To minimize potential bias arising from personalized search algorithms, new YouTube accounts were created on the same day prior to the search. All searches were performed using newly created accounts, with the default "sort by relevance" setting maintained. All browser cookies were disabled, and all advertisements were ignored during the search process.

2.3. Data Collection

For each video, upload date, duration (seconds), total number of views, likes, dislikes, and comments were recorded. Video age (days since upload) and view ratio were calculated. Videos were categorized according to publisher type and narrator.

2.4. Quality and Reliability Assessment

All included videos were independently evaluated by two urologists and one medical oncologist, who were blinded to each other's assessments. The scientific quality and reliability of the videos were assessed using the modified DISCERN (mDISCERN)[6], Journal of the American Medical Association (JAMA) benchmark criteria[7], Global Quality Score (GQS), and Video Information Quality Index (VIQI)[8,9]. Video popularity was evaluated using the Video Power Index (VPI). Interobserver reliability was assessed using intraclass correlation coefficients and Spearman correlation analysis.

2.5. Statement of Ethics

This study analyzed publicly available YouTube™ videos and did not involve human participants or animals. Therefore, institutional ethical approval was not required, in accordance with previous studies using publicly accessible online data.

2.6. Statistical Analysis

Statistical analyses were performed using SPSS for Windows (version 25.0; IBM Corp., Armonk, NY, USA). Inter-observer reliability was evaluated using the intraclass correlation coefficient. Categorical variables were summarized as frequencies and percentages; continuous variables were expressed as mean ± SD or median (min–max). The Shapiro–Wilk test was used to assess normality. Group comparisons were performed using the Mann–Whitney U test or Kruskal–Wallis test with Bonferroni correction. Correlations were evaluated using the Spearman correlation test. A p-value < 0.05 was considered statistically significant.

3. Results

A total of 300 YouTube™ videos were initially screened. After applying the predefined exclusion criteria, 157 videos meeting the inclusion criteria were included in the final analysis and independently evaluated by two urologists and one medical oncologist.

Interobserver agreement demonstrated excellent reliability. Intraclass correlation coefficients exceeded 0.90 for all scoring systems. Spearman correlation analysis revealed strong agreement between evaluators for mDISCERN ($\varrho = 0.945$, $p < 0.001$), JAMA ($\varrho = 0.982$, $p < 0.001$), GQS ($\varrho = 0.938$, $p < 0.001$), and VIQI ($\varrho = 0.963$, $p < 0.001$).

The descriptive characteristics of the analyzed videos are summarized in Table 1. The mean video duration was 468 ± 713 seconds, and the mean video age was 1,466 ± 1,133 days. The videos had a mean total view count of 176,427 ± 952,667, with a mean of 2,363 ± 13,451 likes and 168 ± 946 comments. Mean informational quality scores were 3.61 ± 0.84 for mDISCERN, 2.87 ± 0.90 for JAMA, 3.55 ± 0.79 for GQS, and 13.82 ± 3.17 for VIQI.

Table 1. Descriptive Characteristics of YouTube™ Videos on Kidney Cancer

Variable	Mean ± SD
Video duration (seconds)	468 ± 713
Video age (days)	1466 ± 1133
Total number of views	176,427 ± 952,667
Number of likes	2,363 ± 13,451
Number of dislikes	46 ± 242
Number of comments	168 ± 946
View ratio	128 ± 661
Like ratio (%)	97.94 ± 6.33
Video Power Index (VPI)	125.31 ± 644.53
mDISCERN score	3.61 ± 0.84
JAMA score	2.87 ± 0.90
Global Quality Score (GQS)	3.55 ± 0.79
Video Information Quality Index (VIQI)	13.82 ± 3.17

Abbreviations: VPI, Video Power Index; JAMA, Journal of the American Medical Association; GQS, Global Quality Score; VIQI, Video Information Quality Index.

Of the 157 videos analyzed, 121 (77%) were classified as useful, whereas 36 (23%) contained misleading or incomplete information. The majority of misleading or incomplete videos originated from patient experience–based content (n = 14, 39%) and videos published by sources with unidentified narrators (n = 10, 28%). Approximately half of the patient experience videos demonstrated insufficient informational quality scores.

3.1. Comparison According to Publisher Type

VPI, mDISCERN, JAMA, GQS, and VIQI scores according to publisher type are presented in Table 2. Hospital-based YouTube™ channels constituted the largest publisher group (n = 59, 38%). There was no statistically significant difference in VPI values among publisher groups ($p = 0.863$). However, all informational quality scores differed significantly according to publisher type. Videos published by hospitals and physicians demonstrated significantly higher mDISCERN, JAMA, GQS, and VIQI scores compared with videos published by health-related channels (all $p < 0.001$).

Table 2. Comparison of VPI, mDISCERN, JAMA, GQS, and VIQI Scores According to Video Source

Source of Upload	n	VPI (Mean ± SD)	mDISCERN (Mean ± SD)	JAMA (Mean ± SD)	GQS (Mean ± SD)	VIQI (Mean ± SD)
Physicians	14	475.71 ± 1557.81	3.79 ± 0.80	3.21 ± 0.89	3.79 ± 0.70	14.57 ± 2.87
Hospitals	59	94.71 ± 630.32	3.88 ± 0.77	3.31 ± 0.73	3.80 ± 0.71	15.03 ± 2.67
Health-related channels	45	121.64 ± 403.78	3.11 ± 0.91	2.16 ± 0.85	3.11 ± 0.88	11.56 ± 3.41
Foundations / Associations	39	50.07 ± 165.81	3.72 ± 0.60	2.90 ± 0.68	3.62 ± 0.59	14.31 ± 2.30

Abbreviations: VPI, Video Power Index; JAMA, Journal of the American Medical Association; GQS, Global Quality Score; VIQI, Video Information Quality Index.

The majority of videos were narrated by urologists (n = 57, 36%). Videos presenting patient experiences (n = 29) demonstrated lower mDISCERN (3.00 ± 0.85), JAMA (2.24 ± 0.87), GQS (2.97 ± 0.68), and VIQI (11.59 ± 2.98) scores. Although no statistically significant difference was observed in VPI values among narrator groups, mDISCERN, JAMA, GQS, and VIQI scores differed significantly across narrator types (all $p < 0.001$).

Videos narrated by urologists and oncologists consistently demonstrated higher informational quality and reliability scores. Detailed comparisons are shown in Table 3.

Table 3. Comparison of VPI, mDISCERN, JAMA, GQS, and VIQI Scores According to Narrator Type

Narrator	n	VPI (Mean ± SD)	mDISCERN (Mean ± SD)	JAMA (Mean ± SD)	GQS (Mean ± SD)	VIQI (Mean ± SD)
Urologists	57	17.69 ± 43.12	3.82 ± 0.73	3.39 ± 0.67	3.89 ± 0.67	15.21 ± 2.55
Oncologists	29	6.62 ± 14.42	3.86 ± 0.79	2.90 ± 0.77	3.62 ± 0.78	14.03 ± 2.85
Patients	29	32.49 ± 56.12	3.00 ± 0.85	2.24 ± 0.87	2.97 ± 0.68	11.59 ± 2.98
Other physicians	7	936.47 ± 2182.17	4.14 ± 0.69	3.86 ± 0.38	3.86 ± 0.69	16.29 ± 1.80
Unknown	35	313.61 ± 921.49	3.46 ± 0.78	2.31 ± 0.72	3.37 ± 0.77	12.71 ± 3.30

Abbreviations: VPI, Video Power Index; JAMA, Journal of the American Medical Association; GQS, Global Quality Score; VIQI, Video Information Quality Index.

Correlation analysis between mDISCERN, JAMA, GQS, VIQI scores, like ratio, and view ratio is presented in Table 4. Strong positive correlations were observed among mDISCERN, JAMA, GQS, and VIQI scores (all $p < 0.001$). Additionally, mDISCERN, JAMA, GQS, and VIQI scores demonstrated positive correlations with view ratio ($p = 0.011$, $p = 0.022$, $p < 0.001$, and $p < 0.001$, respectively). A statistically significant negative correlation was identified between like ratio and view ratio ($r = -0.376$, $p < 0.001$).

Table 4. Correlation between Video Quality Scores and Popularity Metrics

	mDISCERN	JAMA	GQS	VIQI	Like Ratio	View Ratio
mDISCERN	—	r=0.673 p<0.001	r=0.678 p<0.001	r=0.812 p<0.001	r=0.019 p=0.812	r=0.202 p=0.011
JAMA	r=0.673 p<0.001	—	r=0.681 p<0.001	r=0.841 p<0.001	r=0.006 p=0.946	r=0.183 p=0.022
GQS	r=0.678 p<0.001	r=0.681 p<0.001	—	r=0.800 p<0.001	r=-0.027 p=0.737	r=0.302 p<0.001
VIQI	r=0.812 p<0.001	r=0.841 p<0.001	r=0.800 p<0.001	—	r=-0.056 p=0.489	r=0.319 p<0.001
Like Ratio	r=0.019 p=0.812	r=0.006 p=0.946	r=-0.027 p=0.737	r=-0.056 p=0.489	—	r=-0.376 p<0.001
View Ratio	r=0.192 p=0.016	r=0.176 p=0.027	r=0.291 p<0.001	r=0.308 p<0.001	r=-0.376 p<0.001	—

Abbreviations: GQS, Global Quality Score; JAMA, Journal of the American Medical Association; VIQI, Video Information Quality Index.

4. Discussion

The present study provides a comprehensive evaluation of the quality, reliability, and popularity of YouTube™ videos related to kidney cancer. Our findings demonstrate that although a substantial proportion of videos are widely viewed, informational quality and reliability vary considerably, and popularity metrics do not reliably reflect content accuracy.

In the current analysis, 77% of the evaluated videos were classified as useful, whereas nearly one-quarter contained misleading or incomplete information. This rate of misinformation is clinically relevant, given that patients with oncological diseases increasingly rely on online sources for health-related information. Similar rates of misleading content have been reported in previous studies evaluating YouTube™ videos related to other urological malignancies, including bladder and prostate cancer, suggesting that misinformation on social media is a consistent concern across oncological conditions[10,11].

A key finding of this study is the strong positive correlation observed among mDISCERN, JAMA, GQS, and VIQI scores, indicating internal consistency and construct validity across different quality assessment tools. Comparable correlations between these scor-

ing systems have been demonstrated in prior analyses of online medical videos, supporting their combined use for assessing informational quality and reliability[12,13].

When videos were analyzed according to publisher type, hospital- and physician-based videos demonstrated significantly higher informational quality scores compared with health-related channels, consistent with previous literature indicating that content produced by healthcare professionals and academic institutions is more likely to be accurate and evidence-based[9,14]. Accordingly, video popularity, as measured by the VPI, did not differ significantly among publisher types. These findings indicate a disconnect between user engagement metrics and informational quality in kidney cancer–related YouTube content. Previous studies have reported that engagement-based metrics such as views, likes, and shares are poor indicators of scientific accuracy and reliability in online health content[15,16].

Narrator type also played a pivotal role in informational quality. Videos narrated by urologists and oncologists consistently demonstrated higher mDISCERN, JAMA, GQS, and VIQI scores, whereas videos featuring patient experiences or unidentified narrators were more likely to contain incomplete or misleading information[6,17]. It is important to note that such content may fulfill a different but valuable need by providing psychosocial support and shared experiences, which are key components of holistic cancer care[16]. The primary concern arises when patients use these narratives as a substitute for evidence-based medical guidance on diagnosis and treatment[18]. Notably, videos narrated by non-specialist physicians and unidentified narrators exhibited the highest VPI scores, further emphasizing the divergence between popularity and content quality.

Correlation analysis revealed a positive association between informational quality scores and view ratio, suggesting that higher-quality videos may sustain viewer interest over time. However, a statistically significant negative correlation was observed between like ratio and view ratio, indicating that videos reaching larger and more heterogeneous audiences may receive relatively fewer positive evaluations. Similar patterns have been observed in prior social media studies[19].

This study has several limitations. The cross-sectional design reflects video characteristics at a single time point, and popularity metrics may change over time. Only English-language videos were included, which may limit generalizability. Additionally, patient comprehension and behavioral outcomes were not evaluated.

5. Conclusions

YouTube™ hosts a large volume of content related to kidney cancer; however, the quality and reliability of this information vary substantially. Although the majority of videos analyzed in this study were classified as useful, a considerable proportion contained misleading or incomplete information, which may adversely influence patient understanding and decision-making. Videos produced by hospitals and healthcare professionals demonstrated significantly higher informational quality and reliability, whereas popularity metrics such as views and likes did not reliably reflect content accuracy.

These findings emphasize the need for greater involvement of urologists, oncologists, and academic institutions in the creation and dissemination of evidence-based digital content. In addition, clinicians should actively counsel patients regarding the limitations of online medical information and guide them toward trustworthy sources. Improving the quality of health-related content on social media platforms is essential to enhance patient education and to mitigate the potential harms of misinformation in oncological care.

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