RESEARCH ARTICLE

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Quality Assessment of YouTube Videos on Transperineal Prostate Biopsy: A Systematic Content Analysis

ABSTRACT

Objective: This study aimed to evaluate the quality, reliability, and educational value of YouTube videos related to transperineal prostate biopsy (TPB), an increasingly adopted diagnostic approach in urology.

Method: This was a descriptive and analytical content analysis. In this study, a systematic YouTube search was conducted using predefined keywords. Videos were included if they were in English, 1–10 minutes in length, and featured audio narration. A total of 21 videos met the inclusion criteria. Video quality was assessed using the BAUS scoring system, the DISCERN instrument, and the Global Quality Score (GQS).

Results: Among the analyzed videos, 28.6% were classified as reliable and 71.4% as unreliable. Reliable videos had significantly higher BAUS ($p<0.001$), DISCERN ($p=0.014$), and GQS ($p<0.001$) scores. No significant differences were observed in popularity metrics between groups. The majority of reliable videos were produced by universities or non-profit organizations, yet 68.8% of institution-based videos were still classified as unreliable.

Conclusions: YouTube videos on transperineal prostate biopsy generally exhibited low educational quality and reliability. Institutional affiliation did not guarantee content quality. There is a pressing need for structured, evidence-based, and patient-centered educational video content. Healthcare professionals and institutions must take active responsibility in producing reliable digital resources for patient education.

Keywords: Transperineal Biopsy, Prostate Cancer, Youtube, Video Quality, Patient Education.

Transperineal Prostat Biyopsisi ile İlgili YouTube Videolarının Kalite Değerlendirmesi: Sistematik Bir İçerik Analizi

ÖZET

Amaç: Bu çalışmada, ürolojide giderek daha fazla tercih edilen bir tanı yöntemi olan transperineal prostat biyopsisi (TPB) ile ilgili YouTube videolarının içerik kalitesi, güvenilirliği ve eğitsel değeri değerlendirilmiştir.

Yöntem: Araştırma tanımlayıcı ve analitik nitelikte bir içerik analizidir. Bu çalışmada, YouTube platformunda belirlenmiş anahtar kelimelerle sistematik arama yapılmıştır. İngilizce, 1–10 dakika aralığında ve sesli anlatıma sahip videolar dahil edilmiştir. Toplam 21 video değerlendirmeye alınmıştır. Video kalitesi BAUS puanlama sistemi, DISCERN aracı ve Global Quality Score (GQS) kullanılarak değerlendirilmiştir.

Bulgular: Videoların %28,6'sı güvenilir, %71,4'ü ise güvenilir olmayan içerik olarak sınıflandırılmıştır. Güvenilir videoların BAUS ($p<0,001$), DISCERN ($p=0,014$) ve GQS ($p<0,001$) puanları anlamlı şekilde daha yüksektir. Popülarite ölçütleri açısından gruplar arasında fark saptanmamıştır. Güvenilir videoların çoğu üniversite veya kar amacı gütmeyen kuruluşlara ait olsa da, bu kurumsal videoların %68,8'i yine de güvenilir bulunmamıştır.

Sonuç: Transperineal prostat biyopsisi ile ilgili YouTube videoları genel olarak düşük eğitimsel kaliteye ve sınırlı güvenilirliğe sahiptir. Kurumsal kaynak olmak, içeriğin kaliteli olduğu anlamına gelmemektedir. Hasta eğitimi açısından yapılandırılmış, kanıta dayalı ve hasta odaklı videolara olan ihtiyaç açıktır. Sağlık profesyonelleri ve kurumları, dijital eğitim içerikleri üretme konusunda daha aktif sorumluluk almalıdır.

Anahtar Kelimeler: Transperineal Biyopsi, Prostat Kanseri, Youtube, Video Kalitesi, Hasta Eğitimi.

INTRODUCTION

Prostate cancer is one of the most commonly diagnosed malignancies in men and remains the second leading cause of cancer-related mortality in developed countries (1,2). Prostate biopsy is the gold standard for definitive diagnosis, particularly in patients with clinical suspicion of malignancy. For many years, the transrectal approach has been the standard method; however, it carries a notable risk of infectious complications, including sepsis, due to needle passage through the rectal mucosa (3,4).

In recent years, the transperineal approach has gained increasing clinical preference, offering several advantages such as lower infection rates, improved sampling precision, and longer tissue cores (3,5). Large multicenter randomized controlled trials published in recent years have demonstrated the safety and diagnostic superiority of the transperineal method, even without antibiotic prophylaxis (6,7).

Beyond evolving clinical practices, how patients access and engage with medical information plays a critical role in modern healthcare. In the digital age, online platforms have become primary sources of health-related information. Among these, YouTube stands out due to its massive global reach—over two billion monthly active users—and the high volume of health-related content consumed daily (8-11).

This widespread use raises essential concerns regarding the reliability and educational value of content available on the platform. Numerous studies have shown that YouTube videos related to health and medicine often lack scientific rigor, present biased or incomplete information, and may mislead patients (12). These concerns are especially critical in the context of invasive procedures like prostate biopsy, where patient anxiety and decision-making are heavily influenced by the quality of pre-procedural information (13,14).

Previous content analyses of YouTube videos on medical topics—including transrectal prostate biopsy (15,16), bladder pain syndrome (17), breast self-examination (18), rheumatoid arthritis (19), and adhesive capsulitis (20)—have consistently reported poor overall quality and limited educational usefulness. These findings underscore the broader need for quality control and evidence-based communication in digital health education.

Despite the increasing clinical adoption of transperineal prostate biopsy, no prior study has systematically evaluated the quality of related video content on YouTube. As patients increasingly turn to digital media for procedural guidance, ensuring the availability of accurate, comprehensive, and accessible content has become a public health priority.

The present study aims to systematically assess the quality, reliability, and educational value of YouTube videos related to transperineal prostate biopsy using validated and structured assessment tools. The findings are expected to inform healthcare professionals, guide the creation of patient-centered educational materials, and contribute to improving the quality of digital health communication.

MATERIAL AND METHODS

Study Design Search Strategy and Ethical Considerations: This was a descriptive and analytical video content analysis aimed at evaluating the quality of YouTube videos related to transperineal prostate biopsy. The search was conducted on February 15, 2023, using four predefined keywords: “transperineal prostate biopsy,” “transperineal biopsy,” “ultrasound guided transperineal biopsy,” and “ultrasound guided transperineal prostate biopsy.” To minimize algorithmic bias and personalization, all searches were performed in incognito mode using Google Chrome, with all user accounts signed out.

For each search term, the first 100 videos were screened, based on prior studies indicating that users typically do not browse beyond the first 100 results. In total, 400 videos were reviewed during the initial screening phase, and 21 videos met the inclusion criteria. The detailed selection process is illustrated in Figure 1 (Video selection flow chart).

This study involved the analysis of publicly accessible video content on YouTube and did not include any human participants or personal data collection. There was no interaction with content creators or viewers, and no identifying information was recorded. As such, the study was exempt from institutional review board approval in accordance with established guidelines for research on publicly available online content.

Eligibility Criteria for Video Inclusion: Videos were included if they: (1) were in English, (2) focused specifically on transperineal prostate biopsy, (3) were between 1 and 10 minutes in duration, and (4) contained narration or voice-over. The restriction to English-language videos was applied to ensure consistency, as English is the predominant language in most prior content analyses of YouTube medical videos and facilitates international comparability. Videos were excluded if they: (1) addressed other biopsy techniques such as transrectal, cognitive/targeted, or MRI-fusion biopsy, (2) were duplicates, (3) lacked audio, (4) fell outside the specified duration limits, or (5) were irrelevant or promotional in nature.

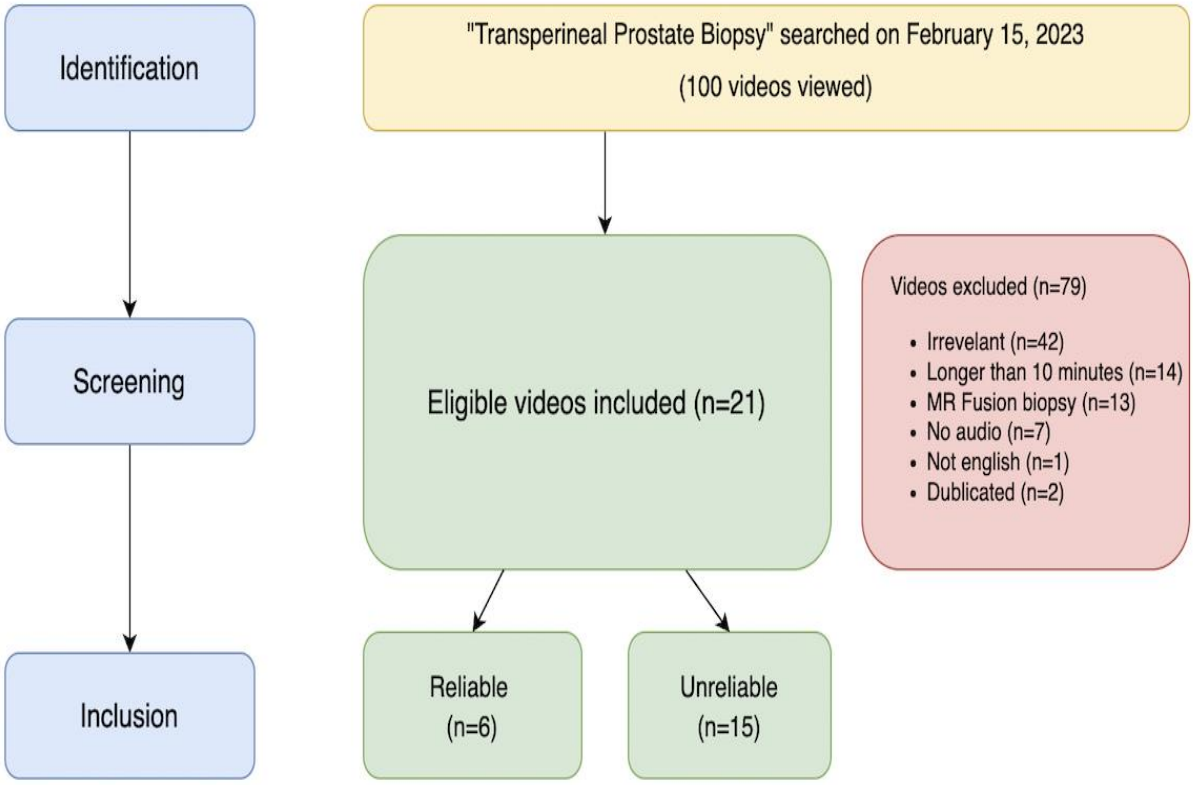


Figure 1. Video selection flow chart

All eligible videos were archived in a private playlist to ensure consistency throughout the evaluation process. Duration thresholds were based on prior literature suggesting that videos under one minute lack educational depth, while those over 10 minutes may compromise viewer engagement.

Data Extraction and Categorization: For each included video, metadata such as upload date, duration, total number of views, number of likes and comments, source of content, and channel type was recorded. To quantify video popularity, the Video Power Index (VPI) was calculated using the following formula:

VPI = [(like count ÷ dislike count) + like count] × 100.

Content sources were categorized into four main groups based on origin and nature of production. These included academic institutions and non-profit organizations, established health information platforms, individual users or commercially affiliated medical providers, and patient experience-based videos.

Video Quality Assessment Tools: Three validated instruments were used to evaluate the quality and educational value of the included videos. The first was the 25-point scoring system developed by the British Association of Urological Surgeons (BAUS), which assesses nine key informational domains specific to transperineal prostate biopsy, including pre-procedural preparation, procedural steps, side effects, recovery, warning signs, and results communication. Each domain carries a designated maximum score, with higher totals indicating more comprehensive and reliable content (Table 1) (21).

To classify reliability, a BAUS score ≥15 was considered to indicate 'reliable' content, whereas a score <15 was categorized as 'unreliable.' For the DISCERN and GQS instruments, no absolute thresholds exist; therefore, scores were analyzed descriptively, with higher values reflecting greater reliability, comprehensiveness, and educational usefulness.

The second tool was the DISCERN instrument, a five-item scale designed to evaluate the reliability, objectivity, and transparency of treatment-related health information. It considers aspects such as clarity of purpose, use of evidence-based sources, balance, and discussion of uncertainty (Table 2) (22).

Lastly, the Global Quality Score (GQS) was applied to assess the overall educational value of each video using a 5-point Likert scale. This scale reflects general quality, structure, and usefulness for patient education, with higher scores representing videos of greater informational utility (Table 3) (23).

Table 1. The British Association of Urological Surgeons (BAUS) based video scoring system

Information Topic	Points awarded	Maximum available Score
Alternatives to TPUS	MRI-guided, transrectal Repeat PSA without biopsy	1
Preparation for procedure	Eat and drink normally on day If not under local anaesthetic: preoperative assessment Stopping Warfarin	4
Procedure: TPUS	Patient position Insertion of ultrasound probe Duration 30-45 minutes Prophylactic antibiotics	4
Procedure: Biopsy	Local anaesthetic around prostate Needle inserted through a special device Series of samples, minimum 12 taken	3
Side effects	Common: haematuria for up to 10 days, blood in semen for up to 6 weeks, bruising in your perineal area, discomfort Uncommon: temporary erection problem, failure to detect significant cancer, need to repeat procedure, acute urine retention, septicaemia	6
Recovering	Antibiotics for 3 days post-procedure Day case if local, 1 day if general anaesthetic Rest for 48 h afterwards, avoid physically demanding activities	3
Signposting	Fever or shivering, lots of bleeding in urine, unable to pass urine at all	1
Results	7-10 days for biopsy results to Become available MDT discussionpossible further investigations such as bone scintigraphy, CT or MRI	2
Further information	Where can the patient get further information?	1

Table 2. The DISCERN scoring system

1	Are aims clear and achieved?
2	Are eliable sources of information used? (published articles cited, a specialist's opinion)
3	Is information presented balanced and unbiased?
4	Are additional sources of information listed for patient reference
5	Are areas of uncertainty addressed?

Table 3. Global Quality Score (GQS)

1	Poor quality, very unlikely to be of any use to patients
2	Poor quality but some information present, of very limited use to patients
3	Suboptimal flow, some information covered but important topics missing; somewhat useful to patients
4	Good quality and flow, most important topics covered, useful to patients
5	Excellent quality and flow, highly useful to patients

Reviewer Protocol and Inter-Rater Reliability: All videos were independently assessed by two reviewers (E.Ö. and B.S.), who were blinded to each other's evaluations. Inter-rater agreement was measured using Cohen's kappa coefficient, with values >0.80 considered indicative of excellent reliability. Any discrepancies in scoring were resolved through consensus discussion with a third reviewer (F.U.Ö.).

Statistical Analysis: All statistical analyses were performed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Prior to comparative testing, the distribution of continuous variables was evaluated using the Kolmogorov–Smirnov test to determine the assumption of normality. For normally distributed variables, descriptive statistics were reported as mean ± standard deviation, and comparisons between groups were conducted using the independent samples t-test. For non-normally distributed variables, data were presented as median with interquartile range (IQR), and comparisons were made using the Mann–Whitney U test.

Categorical variables were summarized as frequencies and percentages, and group differences were assessed using Pearson's chi-square test. When expected cell counts were below 5, Fisher's exact test was used instead. Statistical correlations between continuous variables were evaluated using either Pearson or Spearman correlation coefficients based on the distribution of the data.

To assess inter-rater reliability between the two independent reviewers, Cohen's kappa coefficient was calculated. A kappa value greater than 0.80 was interpreted as indicating excellent agreement.

All statistical tests were two-tailed, and a p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 21 videos met the inclusion criteria and were included in the final analysis. Based on the BAUS scoring system, 6 videos (28.6%) were classified as reliable (BAUS score ≥15), while the remaining 15 videos (71.4%) were considered unreliable (score <15). The mean BAUS score was significantly higher in the reliable group compared to the unreliable group (13.67 ± 2.65 vs. 5.85 ± 3.02; $p < 0.001$). Similarly, the reliable videos demonstrated significantly higher Global Quality Score (3.50 ± 0.55 vs. 1.69 ± 0.75; $p < 0.001$) and DISCERN score (3.67 ± 0.52 vs. 2.33 ± 1.23; $p = 0.014$), indicating superior educational value and information reliability (Table 4).

In contrast, no statistically significant differences were observed between the groups in terms of video duration ($p = 0.07$), total views ($p = 0.436$), days since upload ($p = 0.311$), views per day ($p = 0.424$), subscriber count ($p = 0.938$), likes ($p = 0.112$), dislikes ($p = 0.066$), comments ($p = 0.383$), or Video Power Index scores ($p = 0.127$). These findings suggest that video popularity metrics are not associated with content quality or reliability (Table 4).

When stratified by overall quality, none of the videos were rated as "excellent." Only 2 videos (9.5%) were rated as "good," 4 (19.0%) as "acceptable," 9 (42.9%) as "poor," and 6 (28.6%) as "very poor." Among the 6 reliable videos, 5 (83.3%) were produced by universities or non-profit institutions, and 1 (16.7%) by a health information platform. None of the reliable videos originated from individual users or patient testimonials. However, among the 16 videos produced by academic or non-profit organizations, 11 (68.8%) were still classified as unreliable, suggesting that institutional affiliation alone does not guarantee content quality (Table 4).

Regarding video resolution, 5 of the reliable videos (83.3%) were published in 1080p quality and 1 (16.7%) in 720p. Among unreliable videos, 10 (66.6%) were in 1080p, 3 (20%) in 720p, and 2 (13.3%) in 360p (Table 4).

DISCUSSION

In this study, we systematically evaluated the content quality, reliability, and educational value of YouTube videos related to transperineal prostate biopsy (TPB), a diagnostic approach that is rapidly gaining clinical favor due to its lower infection risk and improved sampling accuracy compared to the traditional transrectal method. Despite the increasing clinical adoption of TPB and its endorsement in recent high-level evidence and guidelines, our findings demonstrate a considerable lack of reliable patient-centered educational materials on YouTube. According to the BAUS criteria, over 70% of the analyzed videos were deemed unreliable, and none were rated as excellent, underscoring a significant gap in online health communication in this area.

These results are consistent with previous studies analyzing the quality of health-related content on YouTube across various medical domains. Jain et al. found similarly poor quality in videos about transrectal prostate biopsy, noting an absence of balanced information and incomplete procedural explanations (21,24). Batur et al. identified comparable deficiencies in videos on bladder pain syndrome (17), while Esen et al. reported low educational value in YouTube content regarding breast self-examination (18). Collectively, these findings reflect a broader issue in digital health literacy: despite YouTube's ubiquity and accessibility, the quality of its health-related content is often insufficient, potentially leading to misinformation or anxiety among patients (25).

Table 4. Analysis of video characteristics by reliability

Characteristics	Reliable Videos (n=6)	Unreliable Videos (n=15)	p
Video length (sn)	349±136.73 (89-477)	228.62±123.31 (86-539)	0.07 [t]
Total views	2437 (230-979170)	1171 (112-32609)	0.436[m]
Duration on YouTube	981±591.2 (483-2088)	1263±778.54 (262-3113)	0.311 [t]
Views per day	3.51 (0.28-1714)	1.23 (0.05-22.94)	0.424 [m]
Subscriber count	1540 (7-142000)	2110 (5-335000)	0.938 [m]
Likes	18.5 (3-22236)	8 (1-125)	0.112 [m]
Dislikes	2.5 (0-365)	0 (0-11)	0.066 [m]
Comments	0.5 (0-75)	0 (0-5)	0.383 [m]
Video power index (VPI)	91.25±11.12 (71.7-100)	97.53±5.78 (80-100)	0.127 [m]
Reliablility score	13.67±2.65 (11-17)	5.85±3.02 (1-9)	
Excellent	0		
Good	2 (33.3%)		**0.000 [t]**
Acceptable	4 (66.6%)		
Poor		9 (60%)	
Very poor		6 (40%)	
GQS score	3.5±0.548 (3-4)	1.69±0.751 (1-3)	**0.000 [m]**
DISCERN score	3.67±0.516 (3-4)	2.33±1.234 (0-4)	**0.014 [m]**
Source			
Universities/non-profit organizations	5 (83.3%)	11 (73.3%)	
Health information websites	1 (16,6%)	1 (6.6%)	
Individual users/medical advertisements		2 (13.3%)	
Patient experience		1 (6.6%)	
Quality of video			
1080p	5 (83.3%)	10 (66.6%)	
720p	1 (16,6%)	3 (20%)	
360p		2 (13.3%)	

[m] Mann-Whitney U test, [t] Independent sample T test; Bold values indicate the significant of p<0.05; Variables are presented as mean±standard deviation (minimum-maximum), median (minimum-maximum) or frequency (%)

Interestingly, although 76.2% of the analyzed videos were uploaded by universities or non-profit institutions, only a minority met the threshold for reliability. Among institutionally produced videos, nearly 69% still failed to provide comprehensive, guideline-concordant information. This finding highlights a critical misconception in the public perception that academic or professional affiliation alone ensures content quality. In reality, the absence of standardized frameworks for developing digital educational content—even within medical institutions—can result in inconsistent, fragmented, or outdated information. As previous studies have shown, professional creators often lack training in patient-centered communication or digital pedagogy, which may contribute to the observed quality gap (26,27).

Moreover, our analysis revealed a disconnect between video popularity and educational quality. There were no statistically significant differences between reliable and unreliable videos in terms of views, likes, comments, or Video Power Index scores. This suggests that content visibility on YouTube is driven by engagement algorithms rather than evidence-based value, echoing concerns from Mohamed et al., who emphasized the dangers of "attention-based exposure" overriding content credibility in the digital health landscape (28).

Beyond overall scores, the domain-specific analysis using BAUS criteria revealed a troubling pattern: while procedural steps were commonly described, videos consistently neglected essential domains such as pre-procedural preparation, post-

procedural care, complication counseling, and warning signs requiring medical attention. These informational deficits are particularly problematic in the context of TPB, which, although safer than transrectal biopsy, still entails specific risks, recovery protocols, and patient responsibilities. Prior research has shown that failure to address these topics can increase patient anxiety, decrease adherence to post-procedural instructions, and compromise shared decision-making (29).

Equally concerning is the observation that none of the evaluated videos achieved full coverage across all nine BAUS domains. Even the highest-scoring videos lacked guidance on follow-up expectations or management of potential complications. This omission is inconsistent with best practices in patient education, which emphasize not only procedural transparency but also emotional reassurance, safety netting, and accessibility of follow-up care information.

The implications of these findings are significant. As TPB becomes the standard of care for prostate cancer diagnosis in many centers worldwide, the availability of high-quality educational content becomes not merely a matter of convenience but a prerequisite for informed consent and patient empowerment. Institutions producing such content should align with clinical guidelines (e.g., EAU or AUA recommendations), incorporate structured learning frameworks, and collaborate with health communication experts to ensure clarity, completeness, and cultural appropriateness. Additionally, medical societies may consider endorsing or producing centralized video resources subject to peer review and periodic updating (30,31).

This study has several limitations. First, our analysis was restricted to English-language videos, which may limit generalizability to non-English-speaking populations. Second, the dynamic nature of YouTube's algorithm means that search results may vary across users and time, potentially affecting content visibility and reproducibility. Third, while the BAUS scoring system is robust and procedure-specific, it may not fully capture content accessibility or appeal to diverse literacy levels. Lastly, qualitative aspects of viewer engagement, such as sentiment analysis of comments or viewer satisfaction, were not assessed in this study but may provide valuable insights in future research.

Further studies should evaluate the effectiveness of improved video content on actual patient comprehension, satisfaction, anxiety reduction, and decision-making capacity. Additionally, the integration of artificial intelligence–based tools may allow scalable, real-time monitoring and quality grading of health-related content on open-access platforms. Pilot initiatives using large language models for video transcript evaluation or automated tagging based on guideline adherence may offer promising directions in this field.

CONCLUSION

In conclusion, the current state of educational content on YouTube concerning transperineal prostate biopsy is suboptimal, with most videos lacking completeness, reliability, and patient-centered focus. As the digital ecosystem increasingly shapes health behaviors and expectations, healthcare professionals and institutions must assume a proactive role in developing structured, accurate, and accessible educational materials. Ensuring that patients receive high-quality procedural information is not only a matter of ethical communication but also a critical component of modern, evidence-based clinical care.

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