ORIGINAL PAPER

UROLITHIASIS

YouTube and TikTok as patient resources: assessment of online video content on extracorporeal shock wave lithotripsy

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Introduction Our objective was to determine the content, reliability, and quality of YouTube and TikTok videos related to extracorporeal shock wave lithotripsy (SWL).

Material and methods The key word "shock wave lithotripsy" was searched on YouTube and TikTok in July 2025 and the first 100 videos on both platforms were watched. Video characteristics were documented, and each video was independently evaluated by two urologists using a custom-designed comprehensiveness scale, along with the modified DISCERN and Global Quality Scale (GQS).

Results Sixty-five YouTube and 23 TikTok videos met the inclusion criteria. While YouTube videos were longer in duration ($p < 0.001$), TikTok videos achieved a significantly greater median view count ($p = 0.048$). YouTube videos demonstrated significantly higher scores on the comprehensiveness scale, modified DISCERN, and GQS compared to TikTok videos, respectively ($p = 0.001$, $p < 0.001$, $p = 0.002$). Most narrators were urologists (54.5%), and their videos scored significantly higher GQS compared to others ($p = 0.001$). Comprehensiveness scale modified DISCERN and GQS scores were significantly positively correlated with duration of video ($p < 0.001$). The scales demonstrated positive intercorrelations among themselves ($p < 0.001$).

Conclusions YouTube videos about SWL were of higher quality, reliability, and comprehensiveness than TikTok videos, although TikTok content attracted more viewers. The results emphasize that popularity does not equate to accuracy and underscore the importance of increasing the availability of high-quality, expert-led educational content across social media platforms.

Key Words: extracorporeal shock wave lithotripsy ‹› internet ‹› social media ‹› TikTok ‹› urolithiasis ‹› YouTube

INTRODUCTION

Urolithiasis represents a major global health concern, impacting millions of individuals. Its incidence is rising in developed countries, largely due to dietary and lifestyle changes associated with modernization [1]. Owing to notable developments in minimally invasive procedures over recent years, the reliance on invasive surgical methods has markedly declined. Current strategies for treating kidney stones include extracorporeal shock wave lithotripsy (SWL), flexible ureteroscopy (fURS), percutaneous nephrolithotomy (PCNL), and, when necessary, open surgical intervention [2]. SWL, introduced approximately 40 years ago, utilizes externally produced shock waves to fragment renal calculi into smaller pieces, which are subsequently expelled through the urinary tract without the need for surgery [3]. Over time, advancements in lithotripter technology have led to marked improvements

in the safety and efficacy of SWL, solidifying its role as a preferred treatment for both renal and ureteral calculi [4].

The last twenty years have witnessed a growing reliance on the internet as a source of medical information. YouTube, the world's second most visited website, offers a wide array of health-related videos that support patient education and decision-making [5, 6]. TikTok, with over one billion monthly active users, has also emerged as a popular platform for sharing and accessing health information [7].

However, the lack of quality control on video-sharing platforms leads to a high risk of misinformation, posing challenges for users attempting to identify reliable and accurate content [8]. To address these concerns, several studies have been conducted to evaluate the content, reliability, and quality of online videos on surgical procedures such as ureteral stenting, retrograde intrarenal surgery (RIRS), cystoscopy, and hysteroscopy [9–12]. As far as we are aware, there is no study evaluating SWL videos on YouTube and TikTok in the literature. In this study, we aimed to determine the content, reliability, and quality of YouTube and TikTok videos related to SWL.

MATERIAL AND METHODS

YouTube (https://www.youtube.com) and TikTok (https://www.tiktok.com) searches for the keyword "shock wave lithotripsy" in English were performed on July 10, 2025. To avoid user bias, incognito mode was employed and personal accounts were logged out prior to the search. Consistent with prior studies that typically analyze the top 100 videos and acknowledging that most users review only the first three pages of search results, the initial 100 videos on SWL were chosen for analysis in this study [13, 14]. Two urologists independently viewed the videos over the course of one week. Exclusion criteria included duplicates, off-topic content, non-English language, and absence of audio or visuals. A total of 88 videos (65 YouTube, 23 TikTok) met the inclusion criteria. The video selection process is depicted in Figure 1.

Video features and quality analysis

Two investigators – an endourologist with 10 years of clinical experience (KT) and a European Board-certified urologist (AI) – independently assessed the content, reliability, and quality of the videos included in the analysis. Data collected for each video comprised its duration, upload date, view count, number of likes, comments, presence of animated content, narrator, and the source or country of origin.

Table 1 shows the assessment tools of videos for SWL. The comprehensiveness of the videos was evaluated with a 5-item scale prepared by the authors for this study in line with the recommendations of the European Association of Urology (EAU) and British Association of Urological Surgeons [2, 15]. Each item of information presented in the video was awarded one point, resulting in a possible total score ranging from 0 to 5 on the scale. To evaluate the reliability of the videos, we employed the

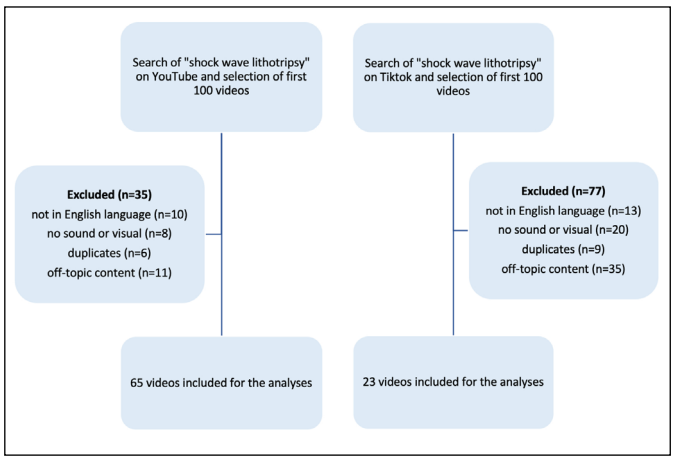

Figure 1. *Study flowchart.*

Table 1. *Comprehensiveness, reliability, and quality assessment tools of videos for shock wave lithotripsy*

5-item scale for comprehensiveness (1 point per each item covered in the video) • The mechanism of shock wave lithotripsy and imaging method to be used were specified. It was explained that the stones would be excreted in the urine. • The location, position, and duration of the procedure were clearly stated. • It was stated that the procedure generally does not require general anesthesia or hospitalization. • The possibility of failure and the possible need for repeat sessions or surgery were explained. • Postoperative side effects (such as hematuria, infection, severe pain, hematoma) were mentioned.
Modified DISCERN for reliability (1 point per question if answered yes) • Is the video clear, concise, and understandable? • Are valid sources cited? • Is the information provided balanced and unbiased? • Are additional sources of information listed for patient reference? • Does the video address areas of controversy/uncertainty?
Global Quality Scale (GQS) 1. Poor quality, poor flow, most information missing, not helpful for patients 2. Generally poor, some information given but of limited use to patients 3. Moderate quality, some important information is adequately discussed 4. Good quality good flow, most relevant information is covered, useful for patients 5. Excellent quality and excellent flow, very useful for patients

modified DISCERN tool, as originally designed by Charnock et al., using a five-point scale [16, 17]. Videos were rated for informational quality with the 5-point Global Quality Scale (GQS), considering factors such as patient usability, potential benefits, and presentation standards [18]. Agreement between observers regarding the scores of the comprehensiveness scale, modified DISCERN, and GQS was also evaluated. In cases of disagreement, a final decision was made by a third investigator (a senior endourologist, OA).

Statistical analysis

Data were analyzed using SPSS version 26 (Armonk, NY: IBM Corp, USA) [19]. Categorical variables were reported as frequency (n) and percentage (%). The 1-sample Kolmogorov–Smirnov test was applied to quantitative data to assess the normality of their distribution. Variables without normal distribution were presented as median (interquartile range (IQR)) for descriptive statistics. Comparisons between two independent groups for non-normally distributed or ordinal variables were performed using the Mann–Whitney U test. Categorical variables between the two groups were compared using the chi-squared test. Correlations between variables were determined using the Spearman test. The percentage agreement between scores and the kappa coefficient were used to calculate interrater reliability. Statistical significance was defined as a p-value below 0.05.

Bioethical standards

Ethics approval was not required as this study analyzed publicly available videos without animal or human participants.

RESULTS

A total of 88 videos fulfilled the eligibility requirements and were analyzed in this study. Of these, 65 were sourced from YouTube and 23 from TikTok. The duration (seconds) of YouTube videos was longer compared to those from TikTok (165 [IQR: 15–2,751] vs 32 [IQR: 15–118], p <0.001). The median number of views for TikTok videos was significantly higher than YouTube videos (20,700 [IQR: 250–789,000] vs 4,265 [IQR: 8–1,144,929], p = 0.048). YouTube videos demonstrated significantly higher scores on the comprehensiveness scale, modified DISCERN, and GQS compared to TikTok videos (p = 0.001, p <0.001, p = 0.002, respectively). Table 2 summarizes the videos' features and comparisons of YouTube and TikTok videos.

Most narrators were urologists (54.5%) (Figure 2A), and their videos scored significantly higher GQS compared to others (4 [IQR: 2–5] vs 3 [IQR: 1–5], p = 0.001) (Table 3). More than half of the videos

Table 2. *Comparison of characteristics between YouTube and TikTok videos*

	YouTube videos (n = 65)	TikTok videos (n = 23)	p-value
Duration of video (seconds), median (IQR)	165 (15–2,751)	32 (15–118)	<0.001[a]
Days since upload date, median (IQR)	1,674 (108–5,569)	463 (10–1,526)	<0.001[a]
Views, median (IQR)	4,265 (8–1,144,929)	20,700 (250–789000)	0.048[a]
Likes, median (IQR)	24 (0–4,300)	123 (11–8,885)	0.004[a]
Comments, median (IQR)	1 (0–415)	12 (0–439)	0.004[a]
Animated content, n (%)	32 (49.2)	10 (43.5)	0.635[b]
Comprehensiveness score, median (IQR)	3 (1–5)	2 (1–5)	0.001[a]
Modified DISCERN score, median (IQR)	3 (1–5)	2 (1–5)	<0.001[a]
GQS, median (IQR)	4 (1–5)	2 (1–5)	0.002[a]

[a]Mann–Whitney U test
[b]Pearson's χ^2 test
GQS – Global Quality Scale; IQR – interquartile range

Table 3. *Comparison of video features according to narrator types*

	Urologist (n = 48)	Non-urologist (n = 40)	p-value
Source, n (%) YouTube TikTok	 35 (72.9) 13 (27.1)	 30 (75.0) 10 (25.0)	0.825[a]
Duration of video (seconds), median (IQR)	110 (15–2,751)	105 (15–877)	0.583[b]
Days since upload date, median (IQR)	1,268 (116–4,788)	896 (10–5,569)	0.374[b]
Views, median (IQR)	12,550 (152–1,144,929)	4288 (8–445,917)	0.147[b]
Likes, median (IQR)	48 (0–8,885)	40 (0–4,061)	0.296[b]
Comments, median (IQR)	9 (0–439)	1 (0–130)	0.009[b]
Animated content, n (%)	14 (29.2)	28 (70.0)	<0.001[a]
Comprehensiveness score, median (IQR)	3 (1–5)	3 (1–5)	0.002[b]
Modified DISCERN score, median (IQR)	4 (1–5)	3 (1–5)	0.004[b]
GQS, median (IQR)	4 (2–5)	3 (1–5)	0.001[b]

[a]Pearson's χ^2 test
[b]Mann–Whitney U test
GQS – Global Quality Scale; IQR – interquartile range

(53.4%) were from the USA, whereas contributions from European countries were limited (Figure 2B). Comparisons by video origin (USA-based vs others) did not reveal any statistically significant differences. The number of videos has grown markedly in recent years. Figure 3 illustrates the yearly distribution of YouTube and TikTok videos.

Comprehensiveness scale, modified DISCERN, and GQS scores were significantly positively correlated with duration of video ($p < 0.001$). The scales demonstrated significant positive intercorrelations with one another ($p < 0.001$) (Table 4).

The agreement between the two independent urologists rating and analyzing the videos was excellent, with kappa coefficients of 0.83, 0.87, and 0.85 for the comprehensiveness scale, modified DISCERN, and GQS, respectively.

DISCUSSION

SWL is a procedure that can be confusing for patients due to its non-invasive nature, minimal anesthesia requirements, outpatient setting, and the use of shock waves [4]. In addition to written informational materials, accessible visual aids are needed to help patients prepare for this treatment. In today's digital landscape, video-sharing websites play a pivotal role in patient education by helping individuals understand treatment approaches [20]. Growing evidence indicates that patients increasingly rely on such content when making medical decisions [5]. YouTube enables users to obtain health information while maintaining privacy; however, exposure to inaccurate content can lead to misinformed decisions. Evaluating the content and accuracy of existing videos and distinguishing informative videos from marketing promises can be challenging for individuals without medical training. Studies focusing on YouTube videos related to urological interventions – including cystoscopy, RIRS, ureteral stenting, and holmium laser enucleation of the prostate – consistently indicate that the platform should not be recommended as a trustworthy source of patient education [9–11, 21]. The same applies to TikTok, a platform that has recently gained popularity. Evidence indicates that the quality of information provided is generally poor, with videos frequently containing misleading or inaccurate content [12, 22]. To the best of our knowledge, this study is the first to systematically evaluate the quality of YouTube and TikTok content related to SWL. Therefore, it was designed to fill that void and present key observations.

We found that YouTube videos on SWL exhibited superior quality, comprehensiveness, and reliability relative to TikTok videos. These results are consistent with prior studies assessing online video content on erectile dysfunction and prostate cancer screening [23, 24]. The higher scores observed for YouTube may be explained by the comparatively longer duration of its videos. However, TikTok videos were more frequently viewed and reached a larger audience. This finding was anticipated, as prior studies have demonstrated that short and easily consumable videos tend to attract higher viewer engagement [25]. Similar results were reported in recent comparative studies of YouTube and TikTok [23, 26]. Augustyn et al. [24]

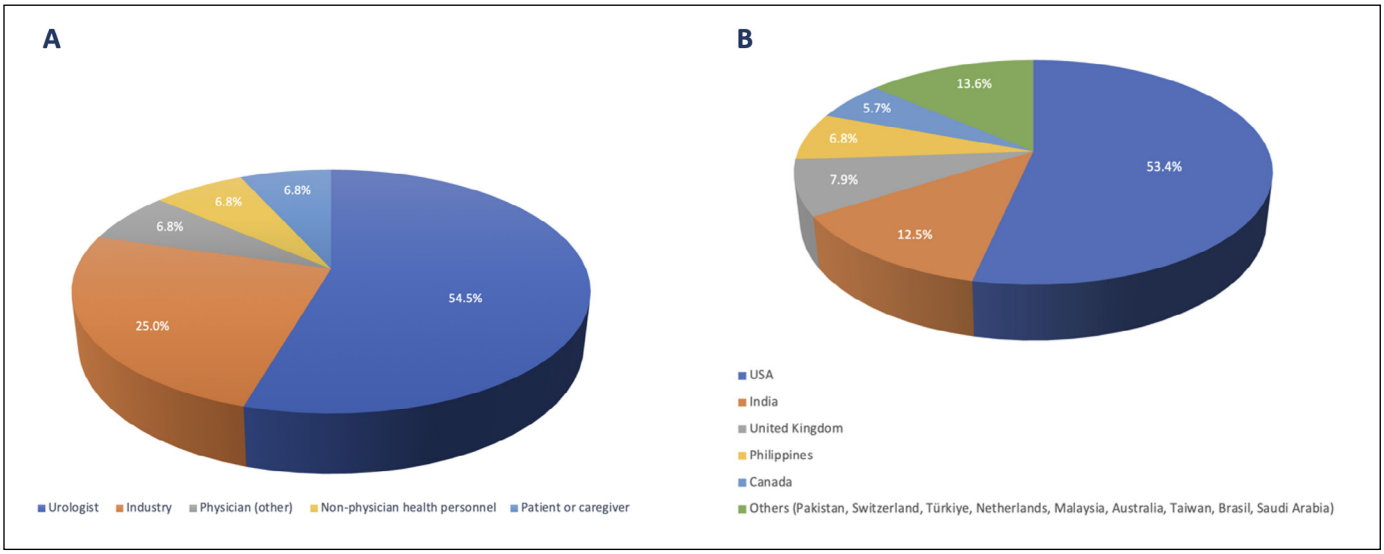

Figure 2. A) *Percentage distribution of narrator types in analyzed videos.* **B)** *Percentage breakdown of videos by source of upload.*

demonstrated in their study on kidney stone information that video quality was unrelated to likes or views across platforms. We likewise found that likes and views do not reliably reflect content quality, highlighting the need to direct patients to reliable resources that are both comprehensive and impartial.

In our study, urologists were the primary narrators, resulting in higher-quality, more reliable, and more comprehensive videos. This finding aligns with previous research indicating that videos uploaded by physicians, academic institutions, and universities tend to demonstrate superior quality [12, 27, 28]. We propose that offering patients credible, urologist-generated video resources could play a key role in improving adherence and optimizing disease management.

Our findings demonstrated positive intercorrelations among the comprehensiveness scale, modified DISCERN, and GQS. Videos with higher comprehensiveness or reliability were associated with greater informational quality. Furthermore,

Table 4. *Correlations between scales and video features*

	Comprehensiveness score		Modified DISCERN score		Global Quality Scale	
	r	p-value	r	p-value	r	p-value
Duration of video	0.474	<0.001	0.414	<0.001	0.449	<0.001
Days since upload date	0.175	0.102	0.226	0.035	0.172	0.110
Views	0.047	0.664	0.113	0.295	0.102	0.344
Likes	–0.011	0.920	0.040	0.711	0.073	0.504
Comments	–0.005	0.965	0.058	0.636	0.108	0.373
Animated content	0.019	0.858	0.042	0.699	–0.003	0.980
Comprehensiveness score	–	–	0.846	<0.001	0.857	<0.001
Modified DISCERN score	0.846	<0.001	–	–	0.936	<0.001
Global Quality Scale	0.857	<0.001	0.936	<0.001	–	–

Spearman test was used.

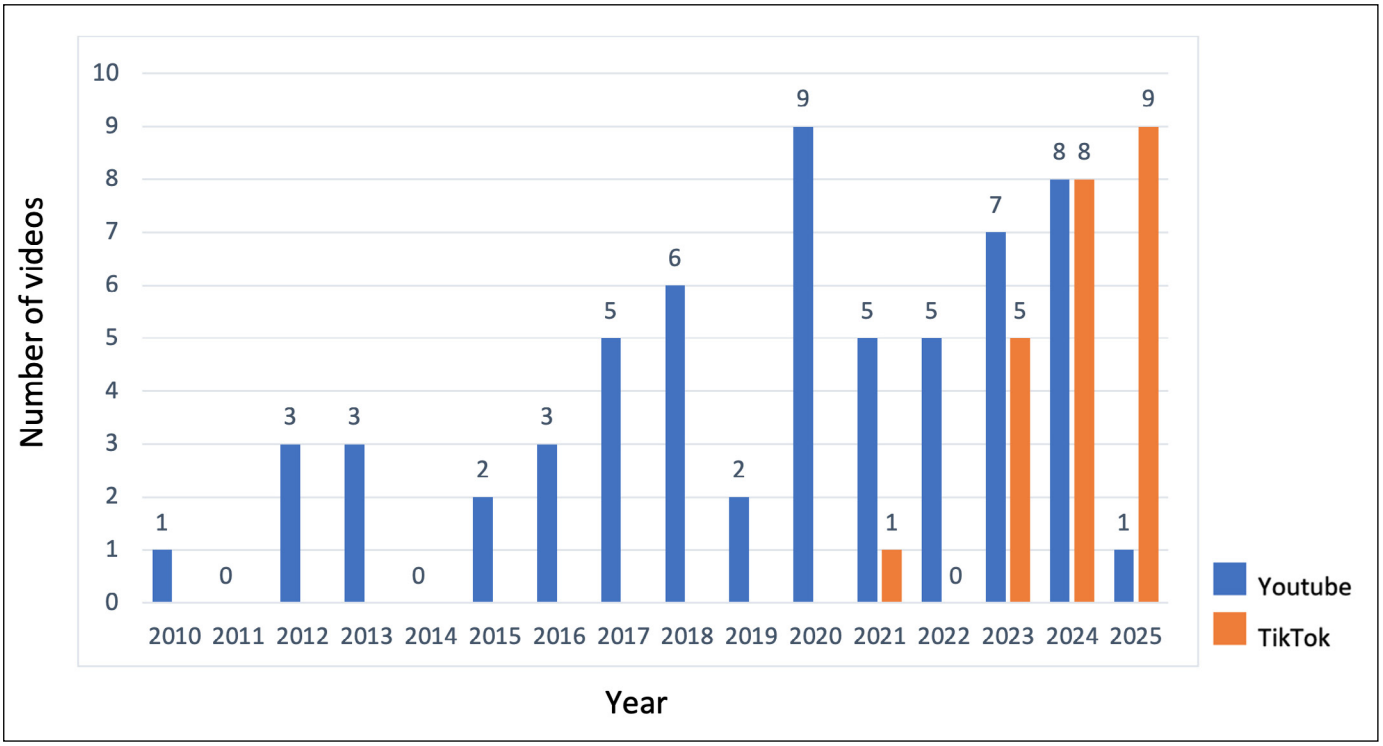

Figure 3. *Distribution of YouTube and TikTok videos by year.*

comprehensiveness scale, modified DISCERN, and GQS scores were positively correlated with video duration. Videos of sufficient duration allow for more comprehensive coverage of topics, which can enhance viewers' ability to grasp and process the presented information. Nonetheless, it is acknowledged that increased duration may reduce user engagement over time [29]. In this context, videos that present accurate and high-quality information within an optimal timeframe may be more effective in reaching and engaging viewers.

Our analysis revealed a striking dominance of video content produced in the USA. However, there was no qualitative difference between USA-based videos and the rest. This suggests that video production is influenced by cultural, regulatory, and platform-centric factors, and that content quality depends more on the content provider's expertise and the way the information is presented than on the location of production. The underrepresentation of European videos in our analysis may reflect our exclusive focus on English-language content. Another potential contributing factor may be a lower propensity among Europeans to produce popular online video content. While we acknowledge the importance of educational materials in native languages, we also advocate for greater global production of English-language resources to enhance accessibility and reach.

This study has several limitations. The sample size was limited, and the analysis was confined solely to videos available on YouTube and TikTok. The selection of videos using the single keyword "shock wave lithotripsy" may have resulted in the omission of relevant material lacking this term, despite the reasonable assumption that content creators would include it in searchable fields. Only English-language videos were included; videos in other languages may provide different results. When comparing content across platforms, a bias may arise due to differences in video length restrictions; YouTube imposes no time limits, while TikTok videos were limited to 3–10 minutes during the study period. Despite utilizing established reliability and quality assessment tools, DISCERN and GQS, consistent with prior studies, the subjective evaluation of video comprehensiveness represents a methodological limitation [30, 31]. None of the assessment tools were formally validated for video-based content, and in the absence of an established comprehensiveness scale, we developed our own scoring system. Despite these limitations, the current study provides a valuable cross-sectional overview of SWL videos on YouTube and TikTok.

CONCLUSIONS

Our study revealed that YouTube videos about SWL exhibit higher quality, reliability, and comprehensiveness than those on TikTok, even though TikTok videos attract more viewers. The findings indicate that video popularity does not necessarily reflect informational accuracy. Encouraging the production of high-quality, urologist-narrated educational content, and implementing quality control mechanisms on social media platforms may help minimize misinformation and enhance patient understanding of SWL.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

ETHICS APPROVAL STATEMENT

Ethical approval was waived due to the study design. Videos were open to the public, and the study did not involve animal or human participants. Similar studies in the literature were also conducted without ethics approval.

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