Research Square

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Educational Quality, Reliability, and Reporting Completeness of YouTube Videos on Laparoscopic Sacrocolpopexy: A Cross-sectional Study

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Research Article

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Abstract

Background

Laparoscopic sacrocolpopexy (LSC) is widely regarded as the gold-standard surgical treatment for apical pelvic organ prolapse. As video-based learning has become an essential component of contemporary surgical education, YouTube is increasingly used by surgeons and trainees as a source of procedural instruction. However, the educational quality, information reliability, and reporting completeness of YouTube videos on LSC have not been comprehensively evaluated.

Methods

In this cross-sectional content analysis, 100 publicly available YouTube videos related to laparoscopic sacrocolpopexy were identified using predefined search terms in an incognito browser on 14 January 2026. Video characteristics and engagement metrics were recorded. Educational quality was assessed using the Global Quality Scale (GQS), information reliability using the DISCERN instrument, surgical educational value and ethical risk using predefined 5-point Likert scales, and reporting completeness using selected items from the LAP-VEGaS educational framework.

Results

Overall educational quality was moderate (GQS, 3.08 ± 1.01; median, 3 [IQR, 2–4]), whereas information reliability showed considerable variability (DISCERN, 34.78 ± 14.24; median, 30 [IQR, 24–45]). Surgical educational value was relatively high (3.43 ± 1.08), while ethical risk remained generally low (2.07 ± 0.90). Mesh or prosthetic device use was reported in 90% of videos; however, mesh safety information was provided in only 41%. Educational value differed significantly according to uploader category ($p = 0.038$), with physician- and surgeon-uploaded videos achieving the highest scores. Ethical risk varied significantly according to video format ($p < 0.001$). Views per day demonstrated weak but significant positive correlations with GQS ($\rho = 0.29$, $p = 0.003$) and DISCERN scores ($\rho = 0.24$, $p = 0.018$), and a negative correlation with ethical risk ($\rho = -0.30$, $p = 0.003$).

Conclusions

YouTube videos on laparoscopic sacrocolpopexy demonstrated moderate educational quality but substantial variability in information reliability and reporting completeness. Important deficiencies were identified in mesh safety reporting, procedural transparency, evidence-based referencing, discussion of treatment alternatives, and postoperative follow-up. Development of standardized, evidence-based surgical videos aligned with established reporting frameworks may enhance online surgical education and support safer, more effective procedural training.

Introduction

Pelvic organ prolapse (POP) is a common pelvic floor disorder that substantially impairs women's quality of life by causing pelvic pressure, urinary, bowel, and sexual dysfunction. The lifetime risk of undergoing surgery for POP is estimated to be approximately 12.6% by the age of 80 years, representing a considerable clinical and healthcare burden (1, 2). Restoration of durable apical support is a key determinant of successful reconstructive pelvic surgery, and sacrocolpopexy is widely regarded as the reference standard for apical prolapse because of its superior long-term anatomical outcomes compared with native tissue repair techniques (3, 4).

Laparoscopic sacrocolpopexy (LSC) is an established minimally invasive approach that offers the advantages of reduced postoperative pain, shorter hospital stay, and faster recovery while maintaining excellent anatomical and functional outcomes. Nevertheless, it remains a technically demanding procedure requiring advanced laparoscopic skills, detailed knowledge of pelvic anatomy, and meticulous dissection around critical structures such as the ureters and presacral vessels. Several operative steps—including promontory dissection, mesh fixation to the vaginal wall, and peritonealization—are technically challenging, thereby contributing to a steep surgical learning curve (5–7).

Video-based learning has become an integral component of contemporary surgical education, allowing trainees and practicing surgeons to observe complex procedures beyond the operating room. Among the available platforms, YouTube is the most widely used repository of freely accessible surgical videos and is increasingly utilized for procedural learning. However, unlike peer-reviewed educational resources, YouTube content is not subject to standardized editorial oversight, resulting in substantial variability in educational quality, scientific reliability, and reporting completeness (8, 9). This issue is particularly relevant for mesh-based reconstructive procedures such as LSC, where incomplete or inaccurate reporting of operative indications, mesh safety, key technical steps, complications, alternative treatment options, and postoperative outcomes may reduce educational value and compromise safe surgical learning.

Although the educational quality of YouTube videos has been evaluated for various laparoscopic, robotic, and endoscopic procedures, evidence regarding laparoscopic sacrocolpopexy remains limited. Given the increasing reliance on online videos for procedural training, a comprehensive assessment of the quality, reliability, and completeness of these educational resources is warranted to identify current deficiencies and guide future improvements in surgical education.

To improve the quality and transparency of surgical educational videos, several reporting recommendations have been proposed, including the **Laparoscopic Video Educational GuidelineS (LAP-VEGaS)** framework. Because publicly available YouTube videos are not designed to satisfy every criterion of the complete LAP-VEGaS guideline, the present study evaluated selected reporting items considered most relevant to openly accessible educational videos while preserving the framework's core principles of transparency and educational completeness.

The present study aimed to evaluate the educational quality, information reliability, and reporting completeness of YouTube videos on laparoscopic sacrocolpopexy. Educational quality was assessed using the Global Quality Scale (GQS), information reliability using the DISCERN instrument, and reporting completeness using selected LAP-VEGaS-derived items. In addition, we investigated whether uploader category, video format, and viewer engagement were associated with higher educational quality and reporting performance

Materials and Methods

Study Design

This cross-sectional content analysis evaluated publicly available YouTube videos related to laparoscopic sacrocolpopexy (LSC). The primary outcomes were educational quality, information reliability, and reporting completeness.

Search Strategy and Video Selection

YouTube was searched on **14 January 2026** using predefined keywords related to LSC, including *“laparoscopic sacrocolpopexy,” “lap sacrocolpopexy,” “laparoscopic sacral colpopexy,” “vaginal vault prolapse laparoscopic sacrocolpopexy,” “VALS sacrocolpopexy,”* and *“pectopexy vs sacropexy.”* Searches were performed in incognito/private browsing mode without user login to minimize personalization bias. All searches were completed on the same day to reduce temporal variation in search results.

Videos were screened sequentially according to YouTube's default relevance ranking until **100 eligible videos** were identified. This sample size was selected because previous YouTube quality assessment studies commonly evaluate the first 50–100 search results, representing the videos most likely to be accessed by users. Duplicate videos (identical URL or identical content uploaded by different channels) were excluded, and only the first eligible version was retained.

Eligibility Criteria

Videos were included if they primarily focused on LSC through surgical demonstrations, procedural explanations, or step-by-step educational content. Videos presenting LSC as part of a combined pelvic reconstructive procedure were also eligible provided that the LSC technique was clearly demonstrated.

Videos were excluded if they were unrelated to LSC, duplicated, contained insufficient educational information for evaluation (e.g., very short clips), or consisted solely of promotional or non-medical material.

Videos were eligible regardless of language. Non-English videos were evaluated using available subtitles or by reviewers familiar with the respective language whenever possible.

Data Extraction

Video title, channel name, upload date, total views, channel subscribers, country/region (when available), language, and views/day were extracted using a standardized data collection form. Views/day was calculated by dividing the total number of views by the number of days between the upload date and the search date.

Content characteristics included procedure type, mesh/device mention, mesh safety information, uploader category, video format, disclaimer presence, references or guideline citation, discussion of complications, alternative treatment options, and postoperative outcomes or follow-up.

Quality Assessment

Educational quality was evaluated using the **Global Quality Scale (GQS)**. Information reliability was assessed using the **DISCERN instrument**, and the total DISCERN score was used for statistical analyses.

Surgical educational value and ethical risk were evaluated using two predefined 5-point Likert scales specifically developed for this study. Detailed scoring criteria are provided in **Supplementary Tables S1 and S2**.

Reporting completeness was assessed using **selected reporting items derived from the LAP-VEGaS educational framework**, including disclosure statements, references, procedural description, mesh safety, complications, discussion of alternative treatments, and postoperative follow-up (**Supplementary Table S3**).

Reviewer Process

Videos were independently evaluated using predefined scoring criteria. Whenever differences in interpretation occurred, consensus discussion was undertaken before assigning the final score entered into the study database. Reviewer-specific ratings were not retained after consensus scoring; therefore, inter-rater agreement statistics, including the intraclass correlation coefficient (ICC) and Cohen's kappa (κ), could not be calculated.

Ethics Statement

Ethical approval was not required because this study analyzed publicly available online videos and did not involve human participants or identifiable patient data.

Statistical Analysis

Continuous variables are presented as mean ± standard deviation (SD) or median (interquartile range, IQR), whereas categorical variables are presented as frequencies and percentages.

Because quality scores were ordinal and engagement metrics were non-normally distributed, non-parametric statistical methods were applied. Comparisons among uploader categories and video formats were performed using the Kruskal–Wallis test followed by Holm-adjusted pairwise Mann–Whitney U tests where appropriate. Associations between engagement metrics and quality scores were evaluated using Spearman's rank correlation coefficient (ρ).

Subgroup analyses were considered exploratory because of the relatively small number of videos in several uploader categories. No formal sample size calculation was performed because this was an exploratory content analysis.

Statistical analyses were performed using **IBM SPSS Statistics** (IBM Corp., Armonk, NY, USA). A two-sided **p** value < 0.05 was considered statistically significant.

Results

Video characteristics and engagement metrics

A total of 100 YouTube videos related to laparoscopic sacrocolpopexy were included in the analysis. Video characteristics and engagement metrics are summarized in Table 1. Engagement metrics demonstrated a markedly right-skewed distribution, with a small number of highly viewed videos accounting for a substantial proportion of total views. The mean number of total views was 7,698.9 ± 16,292.2, whereas the median was 1,101 (IQR, 313.5–5,376.5). The median number of views per day was 0.53 (IQR, 0.24–3.99), with a mean of 3.83 ± 7.98. Subscriber information was available for 87 videos, with a median of 2,710 subscribers (IQR, 363–24,450).

Table 1
Video characteristics and engagement metrics (n = 100)

Variable	Value
Views (total)	Mean ± SD: 7698.9 ± 16292.2
	Median [IQR]: 1101.0 [313.5-5376.5]
	Range: 2.1-71604.0
Views/day	Mean ± SD: 3.83 ± 7.98
	Median [IQR]: 0.53 [0.24–3.99]
	Range: 0.00-41.27
Channel subscribers	Available for 87/100 videos
	Mean ± SD: 39182.8 ± 89395.9
	Median [IQR]: 2710 [363-24450]
	Range: 1-413000
Uploader/source type, n (%)	Physician/Surgeon: 52 (52.0%)
	Academic/Hospital: 32 (32.0%)
	Society/Conference: 5 (5.0%)
	Media/Other: 5 (5.0%)
	Unknown: 4 (4.0%)
	Commercial/Industry: 2 (2.0%)
Video format, n (%)	Unknown: 37 (37.0%)
	Operative demonstration: 16 (16.0%)
	Lecture/Talk: 10 (10.0%)
	Unedited/Live: 10 (10.0%)
	Edited highlights: 7 (7.0%)
	Voiceover: 6 (6.0%)
	Step-by-step: 4 (4.0%)
	Other: 4 (4.0%)
	Animation: 3 (3.0%)
	Patient education: 3 (3.0%)

Physician- or surgeon-operated channels accounted for the largest proportion of videos (52%), followed by academic or hospital channels (32%). The remaining videos were uploaded by professional societies or conferences, media or other sources, commercial channels, or could not be classified. Operative demonstration was the most common identifiable video format, although a substantial proportion of videos could not be assigned to a specific format.

Reporting completeness and transparency

Reporting completeness varied substantially across evaluated domains (Table 2). Mesh or prosthetic device use was reported in 90% of videos; however, only 41% included any discussion of mesh safety (35% complete and 6% partial reporting).

Table 2
Reporting items and transparency indicators among included videos (n = 100)

Item	Yes, n (%)	Partial, n (%)	No, n (%)	Missing, n
Mesh/device mentioned	90 (90.0)	—	10 (10.0)	0
Mesh safety information	35 (35.0)	6 (6.0)	59 (59.0)	0
Disclaimer present	19 (19.8)	—	77 (80.2)	4
References/guidelines cited	8 (8.0)	3 (3.0)	89 (89.0)	0
Alternatives discussed	9 (9.0)	15 (15.0)	76 (76.0)	0
Outcomes/follow-up mentioned	26 (26.0)	5 (5.0)	69 (69.0)	0

Note: Percentages were calculated using n = 100 as the denominator unless otherwise indicated. For 'Disclaimer present', percentages were calculated among videos with available data (n = 96).

Disclaimers were present in 19.8% of evaluable videos, while scientific references or clinical guideline citations were identified in only 11%. Alternative treatment options were discussed in 24% of videos, and postoperative outcomes or follow-up information was reported in 31%.

Educational quality according to uploader category

Comparisons according to uploader category are presented in Table 3. Overall educational quality (GQS), information reliability (DISCERN), and ethical risk did not differ significantly among uploader categories (all $p > 0.05$). In contrast, surgical educational value differed significantly (Kruskal–Wallis, $p = 0.027$). Physician/surgeon channels and professional society or conference videos achieved the highest educational value scores, whereas media and other sources demonstrated the lowest scores.

Table 3
Comparison of educational quality, information reliability, surgical educational value, and ethical risk according to uploader category

Uploader category	n	GQS Median (IQR)	DISCERN Median (IQR)	Educational value Median (IQR)	Ethical risk Median (IQR)
Physician/Surgeon	52	3 (2–4)	30 (24–45)	4 (3–4)	2 (2–3)
Academic/Hospital	32	3 (2–4)	30 (23–45)	3.5 (3–4)	2 (1–3)
Society/Conference	5	4 (4–5)	45 (32–54)	4 (4–4)	1 (1–2)
Media/Other*	11	2 (2–3.5)	26 (23–33)	3 (2–3)	3 (1–4)
Kruskal–Wallis p value	—	0.057	0.285	0.027	0.174

Note. Values are presented as median (IQR). GQS, Global Quality Scale; DISCERN, DISCERN total score; IQR, interquartile range. *Media/Other includes media, commercial, and unknown uploader categories.

Although overall group differences reached statistical significance, no individual pairwise comparison remained significant after Holm–Bonferroni adjustment, indicating that these subgroup findings should be interpreted as exploratory.

Educational quality according to video format

Educational outcomes differed according to video format (Table 4). Lecture-based videos achieved the highest educational quality scores (median GQS = 4), whereas edited-highlight and unedited/live operative videos demonstrated the lowest educational quality.

Table 4
Comparison of educational quality, information reliability, surgical educational value, and ethical risk according to video format

Video format	n	GQS Median (IQR)	DISCERN Median (IQR)	Educational value Median (IQR)	Ethical risk Median (IQR)
Operative demonstration	16	3 (2–4)	30 (25–45)	4 (3–4)	2 (1–2)
Lecture/Talk	14	4 (3.2–4)	44.5 (29.5–55.5)	2.5 (2–4)	1 (1–1)
Unedited/Live	9	2 (2–2)	26 (24–28)	3 (2–4)	3 (2–3)
Edited highlights	7	2 (2–2.5)	26 (22–39)	3 (3–3.5)	3 (2.5–3)
Voice-over	6	3 (3–3.8)	36.5 (26–47.8)	4.5 (4–5)	2 (1.2–2)
Animation	3	4 (3.5–4)	34 (33–35)	3 (2–3.5)	1 (1–1)
Step-by-step	3	4 (3.5–4)	32 (31–33.5)	4 (4–4.5)	2 (2–2.5)
Patient education	3	3 (2.5–4)	30 (25–44)	2 (1.5–3.5)	2 (1.5–2)
Other/Unknown	39	3 (2–4)	29 (22–43)	4 (3–4)	2 (2–3)
Kruskal–Wallis p value	—	0.002	0.358	0.016	< 0.001

Note. Values are presented as median (IQR). GQS, Global Quality Scale; DISCERN, DISCERN total score; IQR, interquartile range.

Educational value also varied significantly among video formats (p = 0.016), with the highest scores observed for voice-over, operative demonstration, and step-by-step instructional videos. Ethical risk differed significantly across formats (p < 0.001), remaining lowest in lecture and animation videos and highest in edited and unedited operative videos.

No statistically significant differences were observed in DISCERN total scores according to video format (p = 0.358).

Correlations between viewer engagement and educational quality

Viewer engagement demonstrated weak but statistically significant associations with educational quality and information reliability.

Views per day showed a weak positive correlation with GQS (Spearman's ρ = 0.292, p = 0.003) (Fig. 1) and DISCERN total score (ρ = 0.236, p = 0.018) (Fig. 2). Conversely, views per day demonstrated a weak negative correlation with ethical risk (ρ = −0.298, p = 0.003) (Fig. 3).

Although statistically significant, all observed correlations were weak ($|\rho| < 0.30$), indicating that viewer engagement explains only a limited proportion of variation in educational quality and reliability.

Discussion

In this cross-sectional evaluation of 100 YouTube videos on laparoscopic sacrocolpopexy (LSC), we found that overall educational quality was moderate, whereas information reliability and reporting completeness varied substantially. Although most videos adequately demonstrated key operative steps and reported mesh use, important educational elements—including mesh safety, evidence-based references, treatment alternatives, disclaimers, and postoperative follow-up—were frequently absent. These findings suggest that while YouTube offers valuable procedural exposure, it often lacks the comprehensive, evidence-based information required to support high-quality surgical education and informed clinical decision-making.

The clinical implications of these findings are considerable. Successful laparoscopic sacrocolpopexy depends not only on technical proficiency but also on appropriate patient selection, comprehensive mesh counseling, recognition and management of potential complications, and structured postoperative follow-up. Previous studies have demonstrated that LSC provides durable anatomical outcomes comparable to those of open abdominal sacrocolpopexy, with the additional benefits of minimally invasive surgery (10). However, optimal outcomes depend on standardized surgical technique and sound perioperative decision-making rather than operative execution alone. Consequently, videos focusing exclusively on procedural steps may provide an incomplete educational resource for surgeons in training.

Our findings are consistent with previous investigations evaluating YouTube-based surgical education. In a recent analysis of YouTube videos related to overactive bladder, Cakiroglu and Avci reported moderate educational quality accompanied by considerable variability in information reliability (9). Likewise, Özcan and Sancı observed moderate educational quality but limited reliability in robotic sacrocolpopexy videos, with very limited citation of scientific references (11). Similar deficiencies have also been reported across laparoscopic, robotic, and endoscopic procedures in multiple surgical specialties, where operative videos frequently emphasize technical demonstration while providing limited discussion of indications, complications, postoperative management, or supporting evidence. Taken together, these findings suggest that the deficiencies identified in LSC videos reflect a broader challenge in online surgical education rather than a procedure-specific problem.

One of the most important observations in the present study was the limited reporting of mesh-related safety information. Although mesh or prosthetic device use was reported in 90% of videos, only 41% included any discussion of mesh safety, while references, alternative treatment options, and postoperative follow-up were reported in fewer than one-third of videos. Because sacrocolpopexy involves permanent mesh implantation, balanced discussion of indications, potential complications, expected outcomes, and long-term surveillance represents an essential component of high-quality

educational content. Current recommendations from professional societies emphasize comprehensive patient counseling regarding mesh-related risks and long-term outcomes (12, 13). Accordingly, omission of mesh-related counseling may substantially reduce the educational completeness and clinical relevance of publicly available instructional videos.

Video format also influenced educational performance. Lecture-based and structured instructional videos achieved significantly higher educational quality scores than edited or unedited operative recordings. Likewise, voice-over and step-by-step instructional videos demonstrated greater educational value than raw operative footage. These findings are consistent with the educational principles promoted by the LAP-VEGaS framework, which emphasizes structured presentation, procedural standardization, and transparent reporting of essential educational elements (14, 15). Importantly, the present study evaluated selected reporting items derived from the LAP-VEGaS framework rather than applying the complete validated assessment tool, reflecting the characteristics of publicly available YouTube videos.

Ethical risk also differed significantly according to video format. Edited and unedited operative videos demonstrated higher ethical risk scores than lecture-based presentations, primarily because they more frequently lacked transparency regarding patient consent, privacy protection, or disclosure statements. Ethical guidance for surgical video publication consistently emphasizes patient confidentiality, informed consent, and appropriate anonymization, particularly for videos that are freely accessible online (16–18). These findings indicate that educational quality and ethical transparency should be considered complementary components of high-quality surgical educational resources.

Although engagement metrics demonstrated statistically significant associations with educational quality and information reliability, these correlations were consistently weak. Accordingly, popularity indicators such as total views or views per day should not be regarded as reliable surrogate markers of scientific or educational quality. This observation is consistent with previous evaluations of health-related YouTube content showing that highly viewed videos may still contain incomplete, poorly referenced, or potentially misleading medical information despite attracting substantial audience engagement (19–22).

From an educational perspective, our findings highlight the need for more standardized reporting of publicly available surgical videos. Professional societies, academic institutions, and experienced surgical educators could improve online educational resources by promoting consistent reporting of patient selection, mesh characteristics, key operative steps, safety precautions, complications, alternative treatment options, and postoperative outcomes. Wider adoption of reporting principles derived from the LAP-VEGaS framework may improve the educational quality, transparency, reproducibility, and clinical relevance of online surgical videos while supporting more consistent surgical training.

Strengths and limitations

The principal strength of this study is its comprehensive evaluation of educational quality, information reliability, ethical considerations, and reporting completeness using validated assessment instruments together with structured reporting indicators relevant to minimally invasive surgery. The use of multiple complementary assessment tools allowed a multidimensional evaluation of publicly available surgical videos. In addition, the study reflects the real-world information encountered by surgeons, trainees, and patients using an unrestricted public platform.

Several limitations should be acknowledged. First, YouTube search results are dynamic and may change over time despite the use of an incognito browser and a standardized search strategy. Second, only information presented within the videos and their accompanying descriptions was evaluated. Third, reviewer-specific ratings were not retained after consensus scoring; therefore, inter-rater agreement statistics could not be calculated. Fourth, viewer comments and user interactions were not analyzed and may provide additional insights into perceived educational value. Finally, subgroup analyses should be interpreted cautiously because several uploader categories included relatively few videos.

Conclusion

YouTube provides a substantial number of videos on laparoscopic sacrocolpopexy with moderate overall educational quality; however, important deficiencies remain in information reliability, reporting completeness, and ethical transparency. Critical educational components—including mesh safety, evidence-based references, discussion of alternative treatment options, and postoperative follow-up—were frequently omitted. Structured educational videos produced by healthcare professionals generally demonstrated greater educational value than unstructured operative recordings. Broader adoption of standardized reporting recommendations, including principles derived from the LAP-VEGaS framework, may improve the quality, transparency, reproducibility, and clinical relevance of publicly available surgical videos, thereby supporting higher-quality surgical education and safer clinical practice.

Declarations

Ethics approval and consent to participate

Ethics committee approval was not required because this study analyzed publicly available YouTube videos and did not involve human participants, identifiable personal data, patient records, or patient interventions. Therefore, informed consent to participate was not required.

Consent for publication

Not applicable.

Availability of data and materials

The videos analyzed during the current study are publicly available on YouTube. The dataset generated and analyzed during the current study is 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

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All authors read and approved the final manuscript and agree to be accountable for all aspects of the work.

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Use of artificial intelligence

No generative artificial intelligence (AI) tools were used to generate, write, or substantially revise the scientific content of this manuscript. The authors take full responsibility for the accuracy, integrity, originality, and interpretation of all reported findings.

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Figures

Figure 1. Correlation between views per day and Global Quality Scale (GQS).

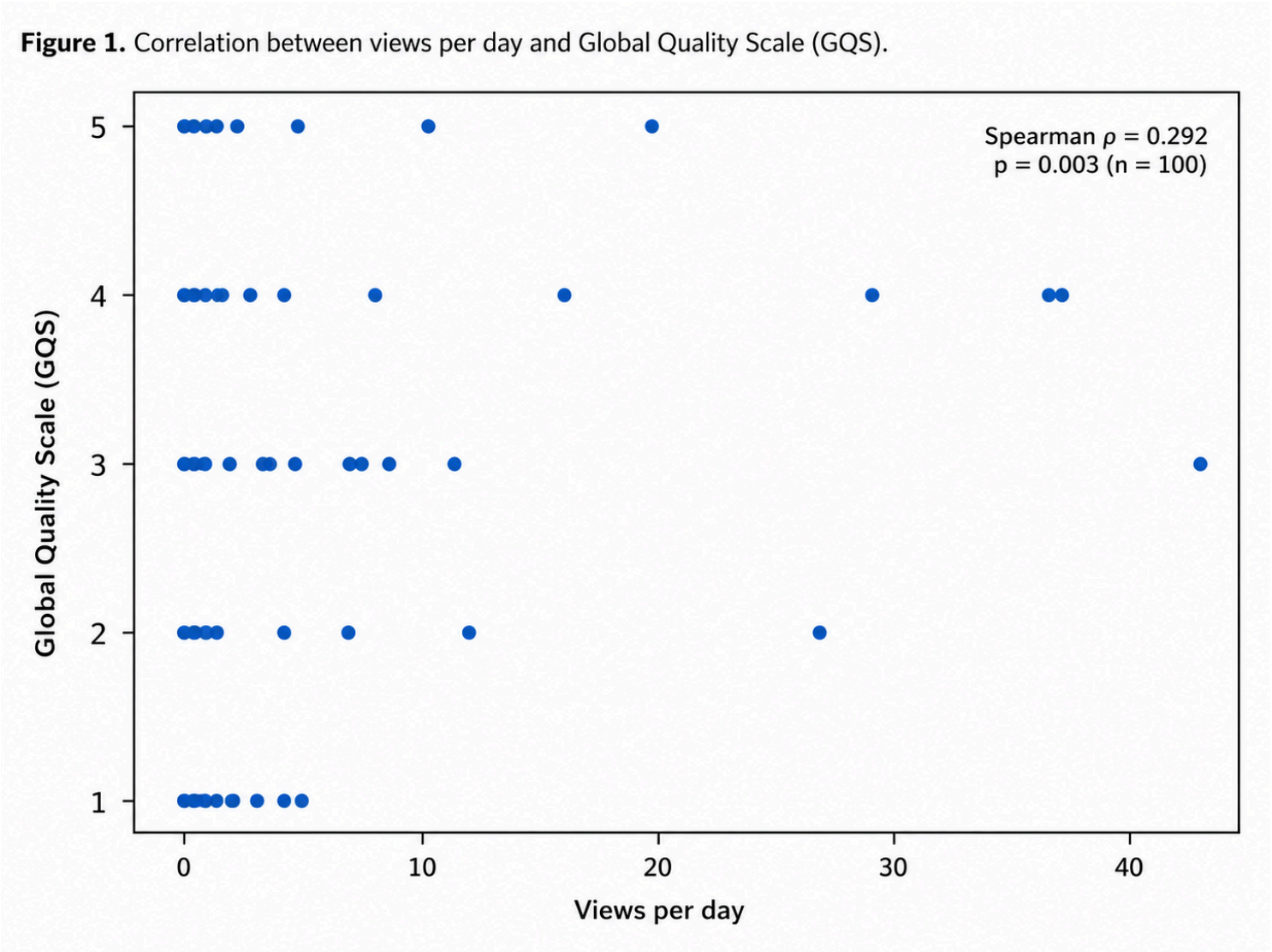


Figure 1

Correlation between views per day and Global Quality Scale (GQS). Scatter plot showing a weak positive correlation between daily video views and educational quality (Spearman's ρ = 0.292, p = 0.003).

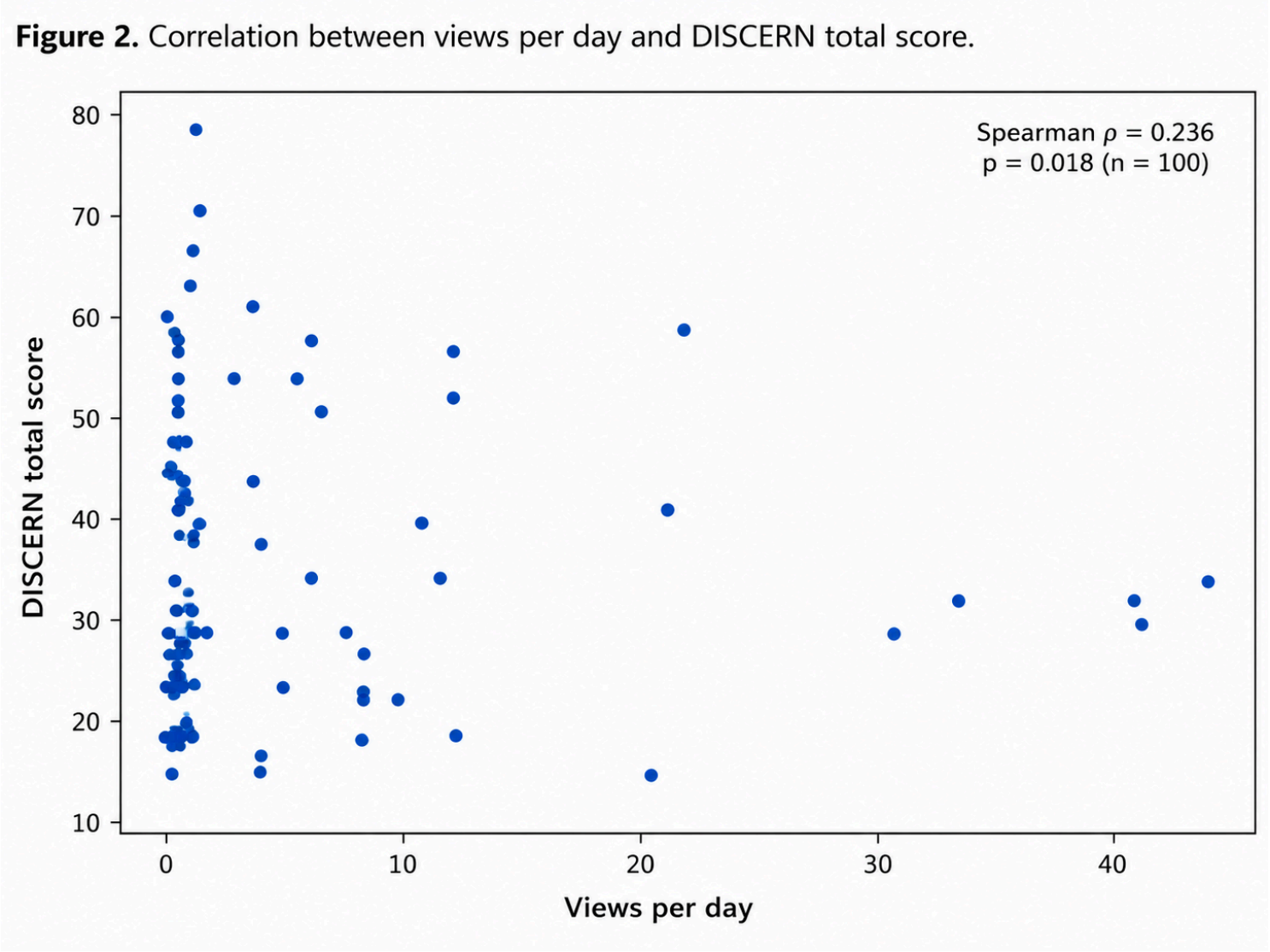


Figure 2

Correlation between views per day and DISCERN total score. Scatter plot demonstrating a weak positive association between daily video views and information reliability (Spearman's ρ = 0.236, p = 0.018).

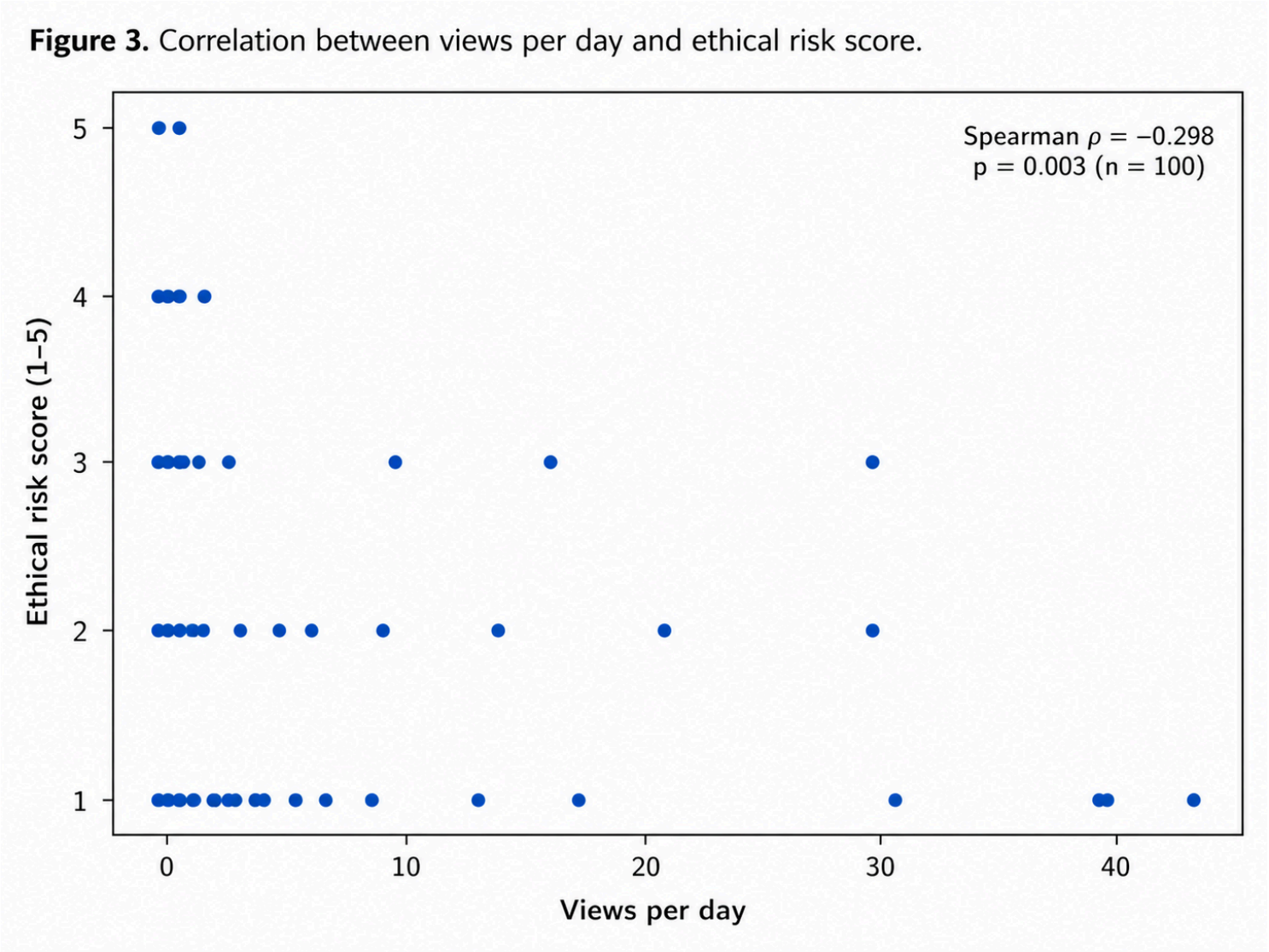


Figure 3

Correlation between views per day and ethical risk score. Scatter plot illustrating a weak negative correlation between daily video views and ethical risk (Spearman's ρ = −0.298, p = 0.003).