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Research Article

Informative or Misleading? Analysis of Pediatric Head Trauma Videos on YouTube

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Abstract

Aim: This study aimed to evaluate the reliability, quality, understandability, and content comprehensiveness of YouTube videos about pediatric head trauma.

Material and Methods: A YouTube search was conducted on April 14, 2025, using the keyword “pediatric head trauma.” Of the first 60 Turkish-language videos retrieved, 18 that met the inclusion criteria were evaluated. Two independent researchers reviewed the videos and recorded the following data: duration, number of views, likes, and comments, as well as uploader type, channel type, and content features. The contents were classified under five headings: trauma mechanism, examination findings, neurological symptoms, CT indications, and follow-up recommendations. Video reliability and quality were assessed using the Modified DISCERN (mDISCERN) scale and the Global Quality Score (GQS). Understandability and actionability were evaluated using the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-AV).

Results: 83.33% of the videos scored ≥3 on the mDISCERN scale and 66.67% scored ≥3 on the GQS, indicating moderate to high reliability and quality. Videos produced by healthcare professionals scored higher on the mDISCERN scale and were significantly more reliable. The videos demonstrated high understandability (PEMAT-AV score: 69.33%) but were insufficient in providing practical advice, with a low actionability score (53.28%). Videos containing ≥4 content items scored significantly higher on the mDISCERN scale. No significant correlations were found between video popularity metrics (views, likes, comments) or video duration and the reliability, quality, or understandability scores (mDISCERN, GQS, PEMAT-AV).

Conclusion: YouTube videos addressing pediatric head trauma are limited in number, and their content and actionability are insufficient. Videos produced by healthcare professionals have been shown to provide more comprehensive content and are more reliable. Therefore, we believe that simple and accessible videos based on guidelines prepared by health professionals will increase health literacy and contribute to the effective use of the health system.

Keywords: Pediatric Head Trauma, GQS, mDISCERN, PEMAT-AV, YouTube

INTRODUCTION

Pediatric head trauma is one of the most common causes of emergency department visits and represents a significant concern for both healthcare professionals and parents. Various mechanisms, including falls, traffic accidents, sports injuries, and physical abuse, can lead to head trauma in children. The anatomical and physiological characteristics of children such as a higher head-to-body ratio and underdeveloped protective reflexes make this age group more susceptible to traumatic brain injury (1). Consequently, head trauma remains one of the leading causes of trauma-related mortality in childhood (2).

Clinical evaluation after head trauma is a complex process, and detecting serious intracranial pathologies can be challenging. Physicians must exercise caution when ordering computed tomography (CT) scans to avoid unnecessary radiation exposure (3). This decision is further complicated by the child’s age, trau-

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ma mechanism, clinical findings, and risk factors. Additionally, parental concerns add complexity to the balance between physicians' legal and ethical responsibilities and medical necessity. In pediatric head trauma cases, effective physician-family communication is critically important for providing parental education and guidance. Clinical algorithms that distinguish high- and low-risk patients and provide clear CT indications and follow-up recommendations are equally essential. When a child with head trauma presents to the emergency department, parental anxiety can impair their ability to understand the physician's recommendations. Therefore, educational videos with clear narration and visual aids can serve as valuable supplementary resources when time constraints in busy emergency departments limit in-depth counseling. Such videos can facilitate appropriate post-trauma observation, follow-up, and timely emergency referral decisions. When parents can recognize emergency signs and symptoms, understand CT indications, and perform appropriate follow-up, they can access timely healthcare services more effectively. This knowledge also enhances the efficiency of medical processes by reducing unnecessary examination requests. Ultimately, the risk of exposing children to unnecessary radiation can be minimized. With the widespread adoption of digital communication tools, educational videos aimed at improving health literacy have become an increasingly important resource for parents. YouTube is one of the most widely used platforms for accessing video content (4). This study evaluated whether YouTube videos on pediatric head trauma adequately address key topics, including indications for emergency department visits, warning signs, CT indications, and follow-up recommendations. The reliability, quality, and understandability of these videos were assessed using the Modified DISCERN (mDISCERN), Global Quality Score (GQS), and Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-AV) scales.

MATERIAL AND METHODS

This study was designed as a cross-sectional analysis to evaluate the reliability, quality, understandability, actionability, and content comprehensiveness of YouTube videos providing information to parents about pediatric head trauma. After clearing the search history, a YouTube search was conducted on April 14, 2025, using the keyword "pediatric head trauma." Since studies on internet search engines (5) have reported that more than 90% of users review only the first three pages of search results, we screened the first 60 Turkish-language videos. We excluded repetitive videos, videos shorter than 1 minute, videos with advertising content, videos in foreign languages, and videos covering irrelevant or overly general topics (e.g., traumatic stress disorder, adult trauma, brain hemorrhage). Although platforms such as YouTube serve as potential sources of health information, accessing relevant content can be challenging. Consequently, approximately 70% of the screened videos did not meet our inclusion criteria, and the remaining 18 videos were included in the analysis.

Two independent researchers reviewed the videos and recorded the following data: uploader type (1: healthcare professional; 2: other), upload date, video duration (seconds), number of views, number of likes, and number of comments. Video reliability and quality were assessed using the Modified DISCERN (mDISCERN) scale and the Global Quality Score (GQS). Understandability and actionability were evaluated using the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-AV).

In addition, we defined five key content items based on clinical algorithms commonly used to determine CT indications and risk stratification in pediatric head trauma: (1) trauma mechanism, (2) examination findings, (3) neurological symptoms, (4) CT indications, and (5) follow-up recommendations. We systematically assessed whether each video addressed these items.

Rating Scales

The DISCERN scale was developed to help individuals and information providers using health services evaluate the quality of written information about treatment options for a health problem. For visual media, the Modified DISCERN (mDISCERN) scale, consisting of 5 questions, is used (5). The mDISCERN scale evaluates the reliability and integrity of the information in the content by scoring from 1 (lowest) to 5 (highest) (6).

The Global Quality Score (GQS) is a scale that evaluates the overall quality of videos, again scored from 1 to 5. A score of 1–2 represents low quality, a score of 3 represents moderate quality, and a score of 4–5 represents high quality (5, 6).

The PEMAT-AV is a scale used to assess the understandability and actionability of audiovisual health materials (7). The instrument consists of 17 items in total, 13 for understandability (e.g., simplicity of language, visual support) and 4 for actionability (e.g., practical suggestions, action guidance). Each item is scored as 0 (no), 1 (yes), or N/A (cannot be assessed), depending on whether the material meets the relevant criterion. The total scores obtained are converted into two separate percentage (%) scores for understandability and actionability.

Statistical Analysis

Descriptive statistics (mean, median, minimum, maximum, standard deviation) were calculated for all variables. In the mDISCERN and GQS evaluations, the cut-off value for moderate to high reliability and quality was determined as ≥3, and the cut-off value for low reliability and low quality was determined as <3, in accordance with the literature. Differences in quality according to uploader type were analyzed with the Mann-Whitney U test; differences between PEMAT-AV understandability and actionability scores were analyzed with the independent samples t-test. Relationships between content items and mDISCERN, GQS, and PEMAT-AV scores were evaluated with Spearman correlation analysis. Additionally, videos containing ≥4 and ≤3 content items were compared using Mann-Whitney U and t-tests. A power analysis was conducted to determine the required sample size, assuming an effect size of 0.50 (medium effect) with a significance level of α=0.05 and statistical power of 0.80, which indicated that a minimum of 18 videos would be required. All analyses were performed using SPSS 25.0 software, and the significance level was accepted as p<0.05.

RESULTS

The basic characteristics of the videos are summarized in Table 1. The average duration of the videos was 6.53 minutes (392 seconds; median: 291.5 seconds), with the longest video being 19.6 minutes. The number of views (mean: 31,844.83) and the number of likes (mean: 311.22) showed high variance, indicating that a few popular videos significantly affected the distribution. The average time from the publication date to the present was 1,538.44 days (approximately 4.2 years), with the oldest video being 12.6 years old and the newest video being 6 months old.

The mean mDISCERN score was 3.17 and the mean GQS score was 3.06, both generally around 3, indicating that the videos were mostly of moderate quality. The PEMAT-AV understandability score was good at 69.33%, while the actionability score was low at 53.28% (median: 34%). This suggests that the videos were successful in providing information to parents but inadequate in providing practical advice. The mDISCERN, GQS, and PEMAT-AV scores of the videos are given in Table 2.

Video reliability and quality were assessed using mDISCERN and GQS scores (Table 3). 83.33% (n=15) of the videos were classified as moderate to high quality with an mDISCERN score ≥3, while only 16.67% (n=3) were found to be of low quality (<3). In the GQS assessment, 66.67% (n=12) of the videos were assessed as moderate to high quality (≥3), and 33.33% (n=6) were assessed as low quality. No video received a score of 5 on the mDISCERN scale, while only one video received a score of 5 on the GQS.

The quality differences according to uploader type are presented in Table 4. Videos produced by healthcare professionals showed significantly higher reliability on the mDISCERN scale (mean: 3.40; median: 4; p=0.014). Although videos produced by healthcare professionals received a higher average quality score (3.20) on the GQS, this difference was not found to be statistically significant (p=0.121).

Videos produced by healthcare professionals achieved higher scores in terms of understandability (71.07%) and actionability (58.13%); however, these differences were not statistically significant (p=0.254 and p=0.297; Table 5).

When evaluated in terms of content items, the rates of inclusion of content items in the videos are given in Table 6. Neurological symptoms were mentioned in all videos, while CT indications and potential harms were the least discussed topics.

Comprehensive videos containing ≥4 content items (n=6, 33.33%) were compared with videos containing ≤3 items (n=12, 66.67%) (Table 7). Videos containing ≥4 items demonstrated significantly higher quality on the mDISCERN scale (mean: 3.83; median: 4; p=0.042). A higher mean was also observed on the GQS (3.67 vs. 2.75), but the difference was not significant (p=0.066). Although PEMAT-AV understandability (76.50% vs. 65.83%, p=0.096) and actionability (67.67% vs. 46.58%, p=0.252) scores were higher in more comprehensive videos, these differences were not statistically significant. However, the fact that all 6 videos containing ≥4 content items were produced by healthcare professionals supports the finding that healthcare professionals provide more comprehensive and higher-quality content.

Popularity metrics (number of views, likes, comments) and video duration were assessed in relation to mDISCERN, GQS, and PEMAT-AV scores using Spearman correlation analysis (Table 8). The number of views showed a weak, non-significant relationship with mDISCERN (r=0.42, p=0.081), but no significant correlations were found between popularity metrics or duration and quality or understandability scores in general. This suggests that popular videos do not necessarily guarantee quality and reliability.

Table 1. Basic Features of YouTube Videos

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Duration (seconds)	392.06	291.50	288.52	118	1176
Number of Views	31,844.83	7,833.50	61,026.24	45	238,509
Number of Likes	311.22	60	885.62	2	3800
Number of Comments	84.67	0	219.63	0	961
Days Since Upload	1,538.44	1,159.00	1,249.46	170	4,596

Note: The high standard deviation in the number of views and likes indicates that a few popular videos have influenced the distribution.

Table 2. mDISCERN, GQS, and PEMAT-AV Scores of the Videos

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
mDISCERN Score	3.17	3	0.99	1	4
GQS Score	3.06	3	1.00	1	5
PEMAT-AV Understandability (%)	69.33	67	12.41	56	100
PEMAT-AV Actionability (%)	53.28	34	34.33	0	100

Abbreviations: GQS, Global Quality Score; mDISCERN, Modified DISCERN; PEMAT-AV, Patient Education Materials Assessment Tool for Audiovisual Materials.

Table 3. Distribution of Scores Based on mDISCERN and GQS Ratings of the Videos

Score	mDISCERN (n, %)	GQS (n, %)
1 point	1 (5.56%)	2 (11.11%)
2 points	2 (11.11%)	4 (22.22%)
3 points	6 (33.33%)	7 (38.89%)
4 points	9 (50.00%)	4 (22.22%)
5 points	0 (0%)	1 (5.56%)
Moderate to High Quality (≥3 points)	15 (83.33%)	12 (66.67%)
Low Quality (<3 points)	3 (16.67%)	6 (33.33%)

Note: No video received a full score of 5 on the mDISCERN scale, which may indicate that the highest level of quality was not achieved.

Table 4. mDISCERN Reliability and GQS Quality Scores by Uploader Type

Uploader Type	Healthcare Professional (n=15)	Other (n=3)	p-value
mDISCERN Mean (Median)	3.40 (4)	1.67 (1)	0.014
GQS Mean (Median)	3.20 (3)	2.33 (2)	0.121

Note: Videos by healthcare professionals showed significantly higher quality on the mDISCERN scale ($p<0.05$). Comparison performed using the Mann-Whitney U test.

Table 5. PEMAT-AV Scores by Uploader Type

Uploader Type	Healthcare Professional (n=15)	Other (n=3)	p-value
Understandability (%)	71.07	61.67	0.254
Actionability (%)	58.13	34.67	0.297

Note: Although videos by healthcare professionals had higher understandability and actionability scores, the differences were not statistically significant. Comparison performed using the t-test.

Table 6. Distribution of Content Items in the Videos

Content Item	Number of Videos (n, %)
1. Mechanism of Trauma	12 (66.67%)
2. Physical Examination Findings	8 (44.44%)
3. Neurological Symptoms	18 (100%)
4. CT Indications	7 (38.89%)
5. Follow-up Recommendations	9 (50.00%)

Abbreviation: CT, Computed Tomography.

Table 7. Comparison by Number of Content Items

Variable	≥4 Items (n=6)	≤3 Items (n=12)	p-value
mDISCERN Mean (Median)	3.83 (4)	2.83 (3)	0.042
GQS Mean (Median)	3.67 (3.5)	2.75 (3)	0.066
Understandability (%)	76.50	65.83	0.096
Actionability (%)	67.67	46.58	0.252

Note: Videos containing ≥4 content items showed significantly higher quality on the mDISCERN scale ($p<0.05$). Comparison performed using the Mann-Whitney U and t-tests.

Table 8. Correlation of Popularity and Duration with mDISCERN, GQS, and PEMAT-AV Scores

Variable	mDISCERN (r, p)	GQS (r, p)	Understandability (r, p)	Actionability (r, p)
View Count	0.42, 0.081	0.39, 0.108	0.33, 0.189	0.27, 0.284
Like Count	0.38, 0.119	0.35, 0.154	0.29, 0.247	0.24, 0.338
Comment Count	0.31, 0.223	0.28, 0.274	0.22, 0.389	0.18, 0.474
Duration (seconds)	0.15, 0.557	0.12, 0.635	-0.08, 0.753	-0.11, 0.668

Note: No statistically significant correlation was found between popularity or duration and reliability, quality, or understandability, indicating that more popular videos are not necessarily of higher quality. Analysis performed using Spearman's correlation.

DISCUSSION

Today, access to information is largely provided through digital platforms. This study examined the potential role of digital resources, especially YouTube videos, in informing parents about emergency department visits after pediatric head trauma. However, our analysis reveals that the number and content of available videos on this common and critical health issue are quite limited.

While platforms like YouTube are considered potential sources of information, it is often difficult to find appropriate content from reliable sources. In our study, 70% of the videos did not meet the inclusion criteria. Previous studies on the reliability of YouTube videos also excluded 80-94% of the videos (11). The high exclusion rate makes it difficult to find appropriate content on video-sharing sites like YouTube. The lack of a mechanism to monitor videos and uploaders raises questions about the reliability, adequacy, and quality of online medical information (12). Therefore, regulations to increase the accuracy and informative value of YouTube videos are of great importance (5, 13).

In one study, videos prepared by healthcare professionals or health institutions on open-access platforms such as YouTube were found to have significantly higher scores on the mDISCERN scale (14). In our study, the mDISCERN score was also higher, and comprehensive videos containing ≥4 items were all prepared by healthcare professionals. This demonstrates that the contribution of healthcare professionals is critical in terms of accuracy, reliability, and informative value of video content.

In one study, no significant relationship was found between quality criteria and the number of video views. This shows that popular videos do not necessarily mean that they are of higher quality or more reliable (15). Similarly, in our study, no significant correlations were found between interaction metrics and views and mDISCERN, GQS, or PEMAT-AV scores.

In one study, it was shown that the vast majority of videos did not describe at least one action that users could implement, and none of the videos contained explanatory visuals such as graphs, tables, or diagrams (16). In our study, similar to the literature, the PEMAT-AV actionability score was found to be low in the videos addressing pediatric head trauma, and it was observed that they did not contain explanatory visuals such as graphs and tables.

Most of the videos (83.33%) had mDISCERN scores ≥3, indicating moderate to high reliability. This finding was supported by the study of Patel et al., who found good reliability in kidney cancer videos (17). However, our study contradicts the study of Rathnayaka et al. (16), who found that only 10 out of 37 videos (27%) had good reliability according to mDISCERN criteria.

In some studies, YouTube is not considered a reliable source of health information (18). Indeed, our study demonstrates the lack of Turkish-language videos that comprehensively address the topic of pediatric head trauma (covering all 5 items) and have high mDISCERN and GQS scores. This supports the fact that social video platforms such as YouTube are not yet a reliable source in terms of health literacy. One study stated that as YouTube has become increasingly popular and has become a source of extensive medical information for users, videos containing misleading information posted by anonymous individuals pose a threat to public health (19). The same study mentioned that videos uploaded by official institutions received high mDISCERN scores; however, they only constituted 2% of all videos, and that it is critical for healthcare professionals and official institutions to produce more videos. To prevent this negative situation, official institutions need to use their digital communication skills to produce quality and accessible video content for the public, and these videos need to be prioritized in YouTube's software algorithm.

Strengths and Limitations

The strength of our study is that scales such as PEMAT-AV, mDISCERN, and GQS, which are reliable and validated tools, were used to evaluate the videos. In addition, the fact that we evaluated the content of the videos in item form allowed us to identify complete and incomplete information in the videos. There are also some limitations to the study. First, the quality and clarity evaluation scores may be biased because all the raters were specialist physicians. Therefore, these scores may not fully reflect the perspective of anxious families or the general public who will gain information by watching the videos. Second, the analysis was limited to videos in Turkish only and from a certain time period. However, different videos may be available for people who want to access information on pediatric

head trauma in different languages. Since YouTube's content is updated rapidly, the number of videos, their order in the algorithm, and the number of interactions may change over time. In addition, the findings of this study cannot be generalized to other video-sharing platforms, because different videos published by different sources may also be available on other platforms.

CONCLUSION

Pediatric head trauma is a complex and sensitive issue in terms of both clinical decision-making and family communication. It is vital that parents can access accurate information quickly and reliably to monitor the child, to make emergency referrals when necessary, and to understand the physician's recommendations. However, it is evident that the current video content is insufficient and that there is very little quality and reliable information available. Therefore, the preparation of informative content on frequently encountered topics such as head trauma, especially by healthcare providers, should be encouraged. Videos prepared in an up-to-date and plain language based on guidelines will increase health literacy and provide gains in terms of patient safety and effective use of the healthcare system.

Ethical Approval

Since this study did not use any human or animal data and only examined videos publicly available on YouTube, ethics committee approval was not required, as in other similar studies (8-10).

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