

Evaluation of YouTube Videos Quality of Pediatric Cardiac Surgery Anesthesia

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ABSTRACT

Introduction: To evaluate the quality of YouTube videos on pediatric cardiac surgery anesthesia (PCSA).

Methods: The keywords including, “PCSA”, “pediatric cardiac surgery”, and “pediatric anesthesia” were browsed on YouTube between January 1st, 2023 and January 10th, 2023. Video characteristics were recorded. The modified DISCERN instrument, the Global Quality Score (GQS), and the Patient Education Materials Assessment Tool (PEMAT) were used to evaluate the quality of the videos. The videos were divided into two groups as professionals (doctor, nurse, hospital, etc.) and non-professional (patient, non-health institutions, etc.) according to the upload source.

Results: A total 82 of the videos were included in the study. Fifty-six (68.3%) videos were uploaded by professional sources and 26 (31.7%) were by non-professional sources. Statistically, the average like of the videos uploaded by professional sources were significantly higher (64.0 and 29.0, $p=0.005$). The average number of comments on professionally sourced videos was 46.0, and it was 30.0 for non-professional videos ($p=0.015$). The GQS was 3.7 ± 1.0 for professional videos and 2.2 ± 0.8 for non-professional videos ($p=0.001$). The Modified DISCERN score was found to be significantly higher in the professional videos ($p=0.001$). The PEMAT score was above 70% in 50 (89.3%) videos in the professional video group and 12 (46.1%) videos in the non-professional video group ($p=0.001$).

Conclusion: Our findings revealed that professional videos about PCSA had significantly higher “likes” number and comments rate and YouTube videos about PCSA, which were shared by professional healthcare providers had significantly higher modified DISCERN score, GQS, and PEMAT score.

Keywords: Cardiac surgery anesthesia, DISCERN, Global Quality Score, pediatric, YouTube

Introduction

Pediatric cardiac surgery anesthesia (PCSA) is performed with increasing frequency due to improvement in pediatric patients' survival with cardiovascular diseases (1). On the other side, PCSA is mostly considered a high-risk morbidity and mortality procedure, and previous studies have emphasized that pediatric patients with cardiovascular disease have a higher risk of possible anesthesia complications, including laryngospasm, bradycardia, brain ischemia, and even death (2). The presence of a chronic and serious cardiovascular pathology of the child, and complications of anesthesia and surgery can cause anxiety in parents. Thus, many parents try to obtain secondary opinions about PCSA from other doctors, other patients' experience, written sources, and social media.

Social media became an important tool for patients and patients' families to obtain knowledge about diseases due to being easily accessible, its free nature, and the presence of multiple resources (3). In addition, Freeman and Chapman (4) analyzed the effect of the source type (being written,

verbal or visual) on the researcher, and the authors found that sources with visual content were significantly more preferred by the researchers (4). When it comes to obtaining this kind of information, YouTube is the most used social media application because as it is widely known, the platform has numerous videos that include many kinds of contents. Previous research stated that YouTube become an important source to obtain knowledge about disease symptoms, treatment options, and treatment outcomes. Ergul (5) analyzed the quality of YouTube videos on the surgical treatment of uterine leiomyomas, and the author stated that despite their high ratings, YouTube videos tend to have low quality. In another study, Kumar et al. (6) emphasized that YouTube videos, which consist information about hypertension had misleading data.

Although previous studies have analyzed the reliability of YouTube videos in many medical conditions and treatments, no research investigated YouTube video quality for PCSA. In this study, we evaluated the quality of YouTube videos on PCSA.



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Methods

The keywords including, “PCSA”, “pediatric cardiac surgery”, and “pediatric anesthesia” were browsed on YouTube between January 1st, 2023, and January 10th, 2023. The videos were sorted by relevance, and were watched by one anesthesiologist and one cardiovascular surgeon. Videos between 1 min and 30 min in length were included in the study. Only videos in the English language were evaluated, and videos in different languages were excluded. Repetitive videos, silent videos, videos in which the video title and the content did not match, and commercial videos were excluded from the study. The videos were divided into two groups as professionals (doctor, nurse, hospital, etc.) and non-professional (patient, non-health institutions, etc.) according to the upload source. URLs of videos, durations, the number of views, likes, dislikes, and comments of the videos were recorded. The target audiences of the videos were recorded as healthcare professionals or patients.

The study was planned after obtaining ethics committee approval from the Bezmiâlem University Faculty of Medicine Local Ethics Committee (approval number: 2022/462; date: 08.12.2022) and patient consent form was not required because patient data were not used. The modified DISCERN instrument, the Global Quality Score (GQS), and the Patient Education Materials Assessment Tool (PEMAT) were used to evaluate the quality of the videos. Scoring was done separately by the two doctors aforementioned above. If the physicians gave different scores to the videos, the average of the two values was recorded.

The modified DISCERN scale was a simplified version of the 16-question DISCERN tool that developed by Charnock and Shepperd (7), and this inquiry form consists of five questions that can be answered as 1 or 0 (yes or no). Five points indicate the highest score and quality. The GQS is a 5-question tool that evaluates video quality, video streaming, and usability. The tool gives results between 1-5 points, and a high score indicates high video quality (8). The PEMAT is a questionnaire that evaluates the understandability and applicability of the videos. It consists of a total of 17 items, 13 of which are related to intelligibility and 4 are related to applicability. Each item was scored as 1 and 0. If the total score is over 70%, it indicates high quality (9).

Statistical Analysis

The Statistical Package for the Social Sciences version 26 (SPSS IBM Corp., Armonk, NY, USA) program was used. The distribution of variables was evaluated using the Shapiro-Wilk test. Comparison of continuous variables between groups was done with the Independent Student’s t-test and Mann-Whitney U test. Categorical variables were grouped and compared using the χ^2 test. A p-value less than 0.05 was considered statistically significant.

Results

A total of 119 videos were evaluated and 82 of the videos were included in the study. Thirty-seven videos were excluded due to being in other languages than English, having durations less than 1 min and more than 30 min, and consisting of inappropriate content (Figure 1).

Data on video features are summarized in Table 1. Fifty-six (68.3%) videos were uploaded by professional sources. The number of views, video lengths, and dislike rates were statistically similar between the groups ($p=0.164$, $p=0.735$, $p=0.280$, and $p=0.272$, respectively). Statistically, the average like of the videos uploaded by professional healthcare

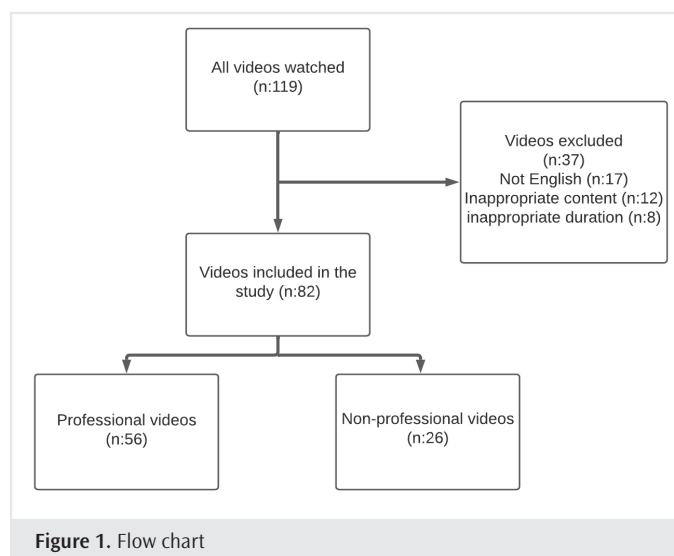


Figure 1. Flow chart

Table 1. Analysis of video features about pediatric cardiac surgery anesthesia by category

Category	Professional	Non-professional	p-value
Number of videos	56 (68.3%)	26 (31.7%)	
Audience interaction parameters*			
Number of views	4328.5 (2518.8-7020.0)	3725.0 (1214.5-5899.3)	0.164
Video length (min)	4.7 (2.5-9.0)	4.2 (2.9-7.5)	0.735
Duration on YouTube (days)	150.0 (120.0-360.0)	120.0 (90.0-240.0)	0.280
Likes	64.0 (15.0-106.8)	29.0 (9.8-59.5)	0.005
Dislikes	11.0 (2.3-21.0)	12.0 (1.0-13.8)	0.272
Comments	46.0 (22.3-234.0)	30.0 (12.0-58.0)	0.015
Target audience			0.162
For healthcare providers	14 (25.0%)	4 (11.5%)	-
For patients	42 (75.0%)	36 (88.5%)	-

*: Median (interquartile range)

Table 2. Analysis of video quality about pediatric cardiac surgery anesthesia by category

Category	Professional	Non-professional	p-value
Number of videos	56 (68.3%)	26 (31.7%)	-
Global Quality Score**	3.7±1.0	2.2±0.8	0.001
Modified DISCERN score**	3.3±0.9	1.8±1.0	0.001
PEMAT (>70%)	50 (89.3%)	12 (46.1%)	0.001

** : Mean ± standard deviation, PEMAT: Patient Education Materials Assessment Tool

providers were significantly higher than the videos uploaded by non-professional sources (64.0 and 29.0, $p=0.005$). The average number of comments on professionally sourced videos was 46.0, and it was 30.0 for non-professional videos ($p=0.015$). The target audience of the videos were patients, rather than healthcare workers in both groups ($p=0.162$).

A comparison of the mean scores of the video quality scales between the groups is shown in Table 2. The GQS was 3.7 ± 1.0 for professional videos and 2.2 ± 0.8 for non-professional videos ($p=0.001$). Similarly, the Modified DISCERN score was found to be significantly higher in the professional videos than in the non-professional videos (3.3 ± 0.9 and 1.8 ± 1.0 , $p=0.001$). The PEMAT score was above 70% in 50 (89.3%) videos in the professional video group and 12 (46.1%) videos in the non-professional video group ($p=0.001$).

Discussion

Easy and free access to social media sources has dramatically modified the patients' way of obtaining information. Today, almost 19 of 20 internet users log in YouTube to watch videos. Thus, we clarified the quality and reliability of YouTube videos on PCSA. In this study, videos about PCSA, which were uploaded by professional sources had a significantly higher "likes" number and comments rate. Moreover, our findings revealed that professional videos about PCSA had significantly higher modified DISCERN core, GQS, and PEMAT score.

The DISCERN score and GQS were defined to evaluate the quality and reliability of videos as an informational tool. Yuksel and Ozgor (10) used the DISCERN score to analyze YouTube videos about pregnancy and COVID-19, and the authors stated that despite the low quality of YouTube videos about pregnancy and COVID-19, videos that were shared by professional healthcare providers had a significantly higher DISCERN score. Another study by Ferhatoglu et al. (11), which analyzed videos about bariatric surgery, found that the DISCERN score of professional videos was significantly higher than videos that were uploaded by non-professional individuals. Moreover, GQS was used by Kılınc and Sayar (12) to analyze the YouTube videos about orthodontics, and the authors found that the YouTube videos about orthodontics that were shared by professional sources had significantly better GSQ. In this research, we found significantly better DISCERN score and GSQ in professional videos, and our results emphasized that professional healthcare workers sharing more videos will lead society to obtain a more accurate information about PCSA.

The PEMAT is defined as an assessment of the applicability and understandability of education tools that are used in patient information. Ji et al. (13) used the PEMAT score to analyze the videos about overactive bladder syndrome, and the authors emphasized that videos that were

shared by professional healthcare providers had a significantly higher PEMAT score. In contrast, Wong et al. (14) tried identifying the PEMAT score of YouTube videos about laryngectomy, and the authors found that the PEMAT scores were unsatisfactory for YouTube videos about laryngectomy. Moreover, Wong et al. (14) claimed that most YouTube videos included information that is too complex to be understood by the average viewer, and the authors suggested a revision of YouTube videos about laryngectomy to reach a wider spectrum of audiences. In our study, the PEMAT scores of professional videos were significantly higher.

Comment numbers and "like" numbers are critical for YouTube videos to achieve more interaction. Sevgili and Baytaroglu (15) analyzed that the "like" numbers for YouTube videos about cardiac disease, and the authors found similar "like" number between professional and non-professional videos. Accordingly, the Yuksel and Ozgor (10) study, which investigated YouTube videos about pregnancy and COVID-19, did not find a significant difference in regards of comment number and "like" number between professional and non-professional videos. However, Ergul (5) found a significantly higher comments number of non-professional videos in YouTube videos about uterine leiomyomas. In contrast, we found significantly higher comments number and "-like" number in professional videos about PCSA. This result may have been caused by the relatives of the patients wanting to ask questions to the healthcare professionals while watching the video.

Study Limitations

Our study has some limitation; we only analyzed YouTube videos in the English language. On the other side, researching in more than one language can be confusing and the results could be difficult to explain and understand. Additionally, more than half of the YouTube videos were uploaded in English. Second, we selected three words to search in YouTube, but some users may have uploaded their videos about PCSA without including these three words. Finally, the research included a certain time, but YouTube videos about PCSA are being continuously shared.

Conclusion

Our study demonstrated that the YouTube videos about PCSA are popular and easily accessible sources of information. Moreover, our findings revealed that professional videos about PCSA had significantly higher "likes" number and comments rate and YouTube videos about PCSA, which were shared by professional healthcare providers had significantly higher modified DISCERN score, GQS, and PEMAT score.

Ethics Committee Approval: The study was planned after obtaining ethics committee approval from the Bezmialem Vakıf University Faculty

of Medicine Local Ethics Committee (approval number: 2022/462; date: 08.12.2022).

Informed consent: Patient consent form was not required because patient data were not used.

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