DOI: 10.4274/anatoljmed.2024.13285
Anatol J Gen Med Res 2024;34(2):184-93

CLINICAL RESEARCH / KLİNİK ARAŞTIRMA

ANATOLIAN JOURNAL of GENERAL MEDICAL RESEARCH

Analysis of Scientific Videos Explaining Continuous Renal Replacement Therapies Applied in Intensive Care Units on YouTube Channel

YouTube Kanalında Yoğun Bakım Ünitelerinde Uygulanan Sürekli Renal Replasman Tedavilerini Açıklayan Bilimsel Videoların Analizi

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Cite as: Öner Ö, Hancı V. Analysis of Scientific Videos Explaining Continuous Renal Replacement Therapies Applied in Intensive Care Units on YouTube Channel. Anatol J Gen Med Res. 2024;34(2):184-93

Abstract

Objective: Continuous renal replacement therapy (CRRT) is a critical alternative among hemodialysis options in intensive care patients. Healthcare professionals provide access to health-related information using social media. Our aim in this study is to investigate the accuracy and effectiveness of their presentations on the international video sharing site YouTube.

Methods: A video scan was performed on the "www.YouTube.com" website on 21-22 April 2022 using the "CRRT" scan key without any filter. The quality, reliability and accuracy of the videos was determined by the "global quality score" (GQS), "Journal of American Medical Association (JAMA) quality test" and "Modified DISCERN" questionnaire, respectively.

Results: When the quality of the videos was evaluated with the GQS score, 81% of the videos were found to be low quality, 16% medium and 3% high quality according to the GQS results. When videos are analyzed according to their source, it has been determined that only 3% of the academically sourced videos are of high quality. Statistically significant correlation was found between the source of the videos and the results of the quality, reliability and accuracy scale GQS (p=0.026), JAMA (p=0.010), and modified DISCERN (p=0.003).

Conclusion: Our study determined that most of the YouTube videos about CRRT application in intensive care units contain poor quality and insufficient data. High-quality videos were found to be longer and academically sourced videos. However, low quality or erroneous videos should always be checked for accuracy and reliability before being used as educational and training material, as they may harm users.

Keywords: E-learning, YouTube, intensive care unit, continuous renal replacement therapy

Öz

Amaç: Sürekli renal replasman tedavisi (CRRT), yoğun bakım hastalarında hemodiyaliz seçenekleri arasında kritik bir alternatiftir. Sağlık çalışanları sosyal medyayı kullanarak sağlıkla ilgili bilgilere erişim sağlamaktadır. Bu çalışmadaki amacımız, uluslararası video paylaşım sitesi YouTube'daki sunumlarının doğruluğunu ve etkinliğini araştırmaktır.

Yöntem: 21-22 Nisan 2022 tarihlerinde "www.YouTube.com" internet sitesinde herhangi bir filtresiz "sürekli renal replasman tedavisi" tarama anahtarı kullanılarak video taraması yapılmıştır. Yoğun bakımda çekilen ilk 100 CRRT videosu listelendi. Görüntülenme, beğeni, beğenmeme, yorum, yüklenen kaynak,

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Received/Geliş tarihi: 03.04.2023
Accepted/Kabul tarihi: 12.02.2024

Öz

kaynak ülke ve kıta sayıları belirlendi ve içerik analizleri yapıldı. Videoların kalitesi, güvenilirliği ve doğruluğu sırasıyla "global quality score" (GQS), "Journal of American Medical Association (JAMA) quality test" ve "Modified DISCERN" anketi ile belirlendi.

Bulgular: Videoların kalitesi GQS puanı ile değerlendirildiğinde, GQS sonuçlarına göre videoların %81'i düşük, %16'sı orta ve %3'ü yüksek kalitede bulunmuştur. Videolar kaynağına göre incelendiğinde akademik kaynaklı videoların sadece %3'ünün yüksek nitelikli olduğu tespit edilmiştir. Videoların kaynağı ile kalite, güvenilirlik ve doğruluk ölçeği GQS (p=0,026), JAMA (p=0,010) ve modifiye DISCERN (p=0,003) ve sonuçları arasında istatistiksel olarak anlamlı bir ilişki bulundu.

Sonuç: Çalışmamız, yoğun bakım ünitelerinde CRRT uygulaması ile ilgili YouTube videolarının çoğunun kalitesiz ve yetersiz veri içerdiğini belirledi. Yüksek kaliteli videoların daha uzun ve akademik kaynaklı videolar olduğu tespit edildi. Bu nedenle, ücretsiz olarak sunulan YouTube videolarını öğretim materyali olarak kullanmak mümkündür. Ancak, düşük kaliteli veya hatalı videolar, kullanıcılara zarar verebileceğinden, eğitim ve öğretim materyali olarak kullanılmadan önce her zaman doğruluk ve güvenilirlik açısından kontrol edilmelidir.

Anahtar Kelimeler: Uzaktan eğitim, YouTube, yoğun bakım ünitesi, sürekli renal replasman tedavisi

Introduction

The incidence of acute renal failure (ARF) in intensive care patients varies between 15-25%, and this rate rises to 90% in cases of multi-organ failure[1]. The incidence of ARF requiring renal replacement therapy (RRT) in the intensive care unit (ICU) is reported to be 4-6%. The mortality rate in these patients varies between 4 and 70%[2]. In the case of renal failure that does not respond to medical treatment, choosing the most appropriate method for the right patient at the right time among the RRT options is life-saving[3].

Continuous renal replacement therapy (CRRT) has been used as an alternative to intermittent dialysis renal replacement therapy in intensive care patients in recent years[1]. In intensive care patients, CRRT is a substantial alternative, especially in patients with hypotensive and septic shock, who are hypersensitive to volume reduction, and who are started on high inotropic support[4]. However, preparing the set and seeing the CRRT indication as medically suitable for a patient is essential. Manual medical procedures are best learned under the supervision and guidance of an experienced instructor. An essential step in developing gifted medical students involves observing procedures on dummies or patients after they have been learned through a textbook or a professional health educator[5]. Unfortunately, a limited number of experts may not have enough time for training[6]. Also, since education has become more difficult due to the ongoing Coronavirus disease-2019 (COVID-19) pandemic, multimedia materials can improve learning outcomes among medical students[7]. Therefore, there is a need for freely accessible, quality, and accurate videos that meet the needs of students and teachers. In addition, medical students, educators, general practitioners, resident doctors, allied health personnel, and even patients can often view online visual documents and videos on websites to visually learn and interpret medical conditions[8].

Social media and video-sharing sites such as YouTube are becoming a part of daily life, and the number of health-related videos is increasing daily. YouTube; as considering its popularity and ease of access, it seen as an essential audio-visual education platform for sharing health care information[8]. Freely available video streaming sites such as YouTube are popular sources of information, with more than 100 million daily viewers[7]. However, the quality of the medical information in these videos is very heterogeneous, and inaccurate and misleading information may spread, leading to misdiagnosis and treatment[9].

For this reason, this study aims to analyze the quality of scientific videos on the YouTube website describing CRRT applied in the intensive care unit, according to the sources the videos are uploaded to, the number of views, like-dislikes, comments, and video durations. Thus, it is aimed to evaluate the reliability and effectiveness of learning through video.

Materials and Methods

Search Strategy

Our research, planned as a cross-sectional study, was conducted on April 21st and 22nd 2022, after obtaining approval from the Non-Interventional Ethics Committee of Dokuz Eylül University Faculty of Medicine (ethics committee decision no: 2021/26-14, date: 22.09.2021).

A search was conducted on the YouTube website (www.youtube.com, YouTube, LLC, San Bruno, USA) using the keywords "CRRT" and "CRRT". The first 100 videos with

medical content were analyzed without using any filtering. The first 100 videos, the number of views and their duration, the number of likes and dislikes, and the number of comments were recorded. A similar method was followed for the analysis used in previous studies[10,11]. Two independent researchers (Ö.Ö and V.H) viewed and analyzed all videos. The difference between the authors was resolved by review and consensus. In order to avoid any interaction before the scan and not affect the research results, the computer internet browser and YouTube history and cookies were deleted. Signed out of Google and YouTube accounts[10,11]. Videos of continuous renal replacement therapies in the intensive care unit; video interaction features (number of views, like-dislikes, number of comments, and video durations), the year they were published, video sources (Academic, Doctor, Association/ Professional Organization, Health-related website, and State institution) animation content, high definition (HD) feature, from which country they were loaded and from which continent they were loaded were recorded.

Exclusion Criteria

Only videos in English were included in our study. The analysis excluded videos unrelated to CRRT, duplicate videos, music videos, and videos without sound. Exclusion criteria were established under the guidance of previous studies[10,11].

Data Collecting

Since the search results may change on different days, a playlist was created from the detected videos, and the search result was saved. The source locators (URLs) of the videos were recorded. The intelligibility of the videos was evaluated using the Materials Appropriateness Assessment (MAA)[12]. User engagement metrics were taken for each video. There is no verified scoring system available for videos; The educational content in each video was assessed by the presence/absence of the following factors.

1- Are the indications and contraindications of "continuous renal replacement therapies" explained?

2- Is the type of approach chosen to perform the procedure specified?

3- Is there a clear description of the targeted anatomical region?

4- Is information about anatomical signs given?

5- Have possible complications been explained?

6- Is the information given about the needle/catheter used?

7- Is appropriate monitoring done?

8- Is sufficient information given about sterilization and local anesthesia?

Evaluation of the educational value of videos in terms of reliability and quality:

Global Quality Score (GQS):

The GQS is a five-point Likert scale that indicates website quality, ease of use, and flow[13]. GQS of 5: Excellent quality and excellent flow, very beneficial for patients; 4: Good quality and generally good flow are beneficial for patients; 3: Moderate quality, sub-optimal flow, somewhat beneficial for patients 2: Generally poor quality and poor flow for minimal use for patients; it is scored as 1: Poor quality, poor flow of the site, not useful at all for patients[14].

Journal of American Medical Association (JAMA) Quality Testing Criteria

JAMA quality criteria, online videos, and resources; examines them under 4 criteria: Authorship, attribution, explanation, and timeliness. In the JAMA score; "Authority (1 point): Authors and contributors, their links and relevant credentials must be provided; Citation (1 point): References and sources should be listed for all content; Disclosure (1 point): Conflicts of interest, funding, sponsorship, advertising, endorsement, and video ownership must be fully disclosed; Currency (1 point): The dates on which the content was published and updated should be stated"[15]. JAMA is used to evaluate video accuracy and reliability. The rater gives 1 point for each criterion set in the video, and the final score ranges from 0 to 4. Four points indicate the highest quality[15].

Modified DISCERN Survey

It is a scoring tool consisting of 5 yes/no questions developed to evaluate the quality and reliability of publications related to health information[16]. The score of this questionnaire varies between 0 and 5 points, and the total score is obtained by summing up the yes scores (yes=1 point, no=0 points). The questions included in the survey are: éDoes the video address areas of controversy/ambiguity?", "Are additional sources of information listed for patient reference?", "Is the information provided balanced and unbiased?", "Cite valid sources? (valid studies, doctors)", "Is the video clear, concise and understandable?"[16].

Statistical Analysis

The obtained data were analyzed using SPSS (Statistical Package for Social Sciences, Chicago, IL, USA) 24.0 package program. Data with continuous values were shown as mean ± standard deviation, and data indicating frequency were shown as numbers (n) and percentages (%). The chi-square test was used in the analysis of frequency data, the Kruskal-Wallis test was used in the analysis of data with continuous values, and the Pearson correlation test was used in correlation analysis. A p-value less than 0.05 was accepted as a significant difference.

Results

In our study, the first 100 videos with medical content related to RRT in the intensive care unit were viewed by typing the keywords "CRRT" and "CRRT" on the YouTube search engine on April 21st and 22nd 2022, were examined.

A total of 42 hours, 27 minutes, and 12 seconds of footage was viewed. The longest of the videos is 1 hour 51 minutes, and the shortest is 16 seconds. The video with the most likes got 2.613 likes, and the video with the least likes got 0 likes. The most watched video was watched 1.227,547 times, and the least watched the video was 12 times. The video with the most comments received 499 comments, and the video with the least comments received 0 comments.

The average number of views per video is 23093.13±124630.68, the average number of likes is 177.09±493.31, the average number of dislikes is 2.02±5.98, the average number of comments is 14±54.95, and the average video duration is 1528.34 It was observed as ±1484.69 seconds.

When the videos are separated according to their dates, it has been determined that 51 (51%) of the videos on the YouTube platform were published before 2020, and 49 (49%) were published after 2020 (Table 1). It was determined that 70 (70%) of the videos contain animation and 48 (48%) HD videos (p= 0.009). The dislike of the videos after 2020 was found to be 2.43±5.78, statistically significant (p=0.049). It was determined that 37 (37%) of the videos were from the United States, 13 (13%) from India, 9 (9%) from Italy, and 41 (41%) from other countries. When the continents where the videos were uploaded were evaluated, it was determined that 43% of the videos were uploaded from the Americas, 24% from the Asian continent, 23% from the European continent, 6% from the African continent, and 4% from the countries located in the Australian continent.

When the sources of the videos were evaluated, it was determined that 64% were health-related sites, 21% were academic sites, 8% were commercial sites, 5% were doctors, and 2% were government sites.

The medical content of the videos related to CRRT; 51% indication, 3% contraindication, 57% explanation of application, 34% explanation of different techniques, 21% coagulation, 19% complications, 2% infectious transmission, 19% timing, 17% solution properties, 8% application termination (Table 1).

When the quality of the videos was evaluated with the GQS score, according to the GQS results, it was determined that 81% of the videos were of low quality, 16% of them were of medium quality, and only 3% of them were of high quality. When the quality of the videos was evaluated with the JAMA score, 76% of the videos were found to be inadequate, 23% partially sufficient, and only 1% entirely sufficient. When the videos were classified according to the modified DISCERN questionnaire, 74% were rated with 1 point, 23% with 2 points, and 3% with 3 points.

No statistically significant difference was found between the sources of the videos and the number of views, likes, dislikes, and comments (p=0.539, p=0.438, p=0.344, and p=0.191), respectively (Table 2).

When the videos were examined according to their sources, it was determined that only 3% of the academic videos were of high quality. A statistically significant correlation was found between the sources of the videos and the results of GQS (p=0.026), JAMA (p=0.010), and modified DISCERN (p=0.003) (Table 3).

There is a weak positive correlation between video durations and GQS (r=0.365, p<0.01) and JAMA (r=0.322, p<0.01) results. Accordingly, videos with higher quality and reliable data have longer durations (Table 4). However, no significant relationship was found between the video sources and the duration of the videos (p=0.086) (Table 3).

There was no statistically significant difference between the stanzas where the videos were uploaded and the number of video views (p=0.291), likes (p=0.370), dislikes (p=0.237), comments (p=0.202), and duration (p=0.193).

Discussion

In our study, in which the content, quality, reliability, and user participation of the videos on YouTube about CRRT in the ICU were evaluated, we evaluated the quality and reliability of the

Table 1. Video content analysis by years

Video content/years		<2020, n (%)	≥2020, n (%)	p-values
HD video	**Exists**	18 (35.3%)	30 (61.2%)	**0.009**
	DNE	33 (64.7%)	19 (38.8%)	
Animation	**Exists**	32 (62.7%)	38 (77.6%)	0.106
	DNE	19 (37.3%)	11 (22.4%)	
Indication	**Exists**	24 (47.1%)	27 (55.1%)	0.421
	DNE	27 (55.1%)	22 (44.9%)	
Contraindication	**Exists**	0 (0%)	3 (10%)	0.114
	DNE	51 (52.6%)	46 (47.4%)	
Explanation of the application	**Exists**	26 (51%)	18 (36.7%)	0.215
	DNE	25 (49%)	31 (63.3%)	
Explanation of the technical detail	**Exists**	14 (41.2%)	20 (58.8%)	0.158
	DNE	37 (72.5%)	29 (43.9%)	
Explanation of the coagulation	**Exists**	7 (13.7%)	14 (66.7%)	0.068
	DNE	44 (86.3%)	35 (44.3%)	
Explanation of infection risk	**Exists**	1 (2%)	1 (2%)	0.742
	DNE	50 (98%)	48 (98%)	
Time description	**Exists**	10 (19.6%)	9 (18.4%)	0.874
	DNE	41 (80.4%)	40 (81.6%)	
Solution features	**Exists**	7 (13.7%)	10 (20.4%)	0.374
	DNE	44 (86.3%)	39 (79.6%)	
Termination features	**Exists**	2 (3.9%)	6 (12.2%)	0.122
	DNE	49 (96.1%)	43 (87.8%)	
	DNE	16 (94.1%)	38 (88.4%)	
Source of the video	Academic (n=21)	12 (23.5%)	9 (18.4%)	0.618
	Doctor (n=5)	2 (3.9%)	3 (6.1%)	
	Health site (n=64)	31 (60.8%)	33 (67.3%)	
	Commercial site (n=8)	4 (7.8%)	4 (8.2%)	
	Government (n=2)	2 (3.9%)	0 (0%)	
JAMA	Inadequate (1 point)	38 (74.5%)	38 (77.6%)	0.509
	Somewhat adequate (2/3 points)	13 (25.5%)	10 (20.4%)	495
	Adequate (4 points)	0 (0%)	1 (2%)	500
GQS	Low quality (1/2 points)	42 (82.4%)	39 (79.6%)	0.817
	Mid quality (3 points)	8 (15.7%)	8 (16.3%)	505
	High quality (4/5 points)	1 (2%)	2 (4.1%)	510
Modified DISCERN	1 point	39 (76.5%)	35 (71.4%)	0.637
	2 points	10 (19.6%)	13 (26.5%)	
	3 points	2 (3.9%)	1 (2.0%)	

HD: High definition, GQS: Global quality score, JAMA: Journal of American Medical Association

Table 2. Video interaction characteristics according to evaluation criteria and different years

Years	Number of views Mean ± SD	Likes Mean ± SD	Dislikes Mean ± SD	Comments Mean ± SD	Duration (second) Mean ± SD
<2020 (n=51)	33465±171606	65.6±115.9	1.62±6.2	12.5±69.8	1434.6±1486.7
≥2020 (n=49)	12297±33576	293±678	2.43±5.78	15.4±33.8	1625.9±1491.6
p-values	0.087	0.074	0.**049**	0.058	0.057
Video source					
Academic (n=21)	5837±14123	39.8±62.9	0.19±0.68	0.62±1.07	1972±1743
Doctor (n=5)	12015,65±29510,75	164.36±518.97	5.77±12.57	7.95±26.62	1203.2±904.4
Site about health (n=64)	13666±31892	252±602.8	2.27±5.79	13.05±30.3	1513.3±1441.5
Commercail site (n=8)	23093.1±124630.6	177±493.3	2.02±5.98	14±54.95	1528.3±1484.6
Government (n=2)	889	9570±0.70	0.50±0.707	1.5±2.12	1109±1055
p-values	0.539	0.438	0.344	0.191	0.086
GQS (1-5 point)					
Low quality (1/2 points) (n=81)	13472.91±30536.004	221.53±558.519	2.51±6.78	11.45±76	1249.4±1329.6
Mid quality (3 points) (n=16)	3926.8±5116.6	61.4±78	1.44±3	2.75±4.79	2781±1464.5
High quality (4-5 points) (n=3)	854±619.9	19.7±22.14	1±1.7	0.33±0.57	2374.7±2348.1
p-values	0.866	0.676	0.396	0.688	**<0.001**
JAMA score (0-4 points)					
Inadequate data (n=76) (1 point)	13472.9±30536	221.53±558.519	2.51±6.78	11.45±26.13	1222.87±1170.10
Somewhat sufficient data (n=23) (2/3 point)	55819.17±255457.07	36±56.79	0.39±0.89	23±103.81	2383.7±1895.88
Adequate data (4 points)	1531	45	3	1	5070.00
p-values	0.611	0.533	0.197	0.243	**0.001**
Modified DISCERN score (0-5 points)					
1 point (n=74)	11693.24±29739.67	156.9±429.03	1.74±5.53	7.27±17.71	1363.7±1507.4
2 points (n=23)	62104.76±254733.4	254.1±689.2	2.87±7.63	37.2±108.7	2068±1404.3
3 points (n=3)	5201±4599.96	82±69.87	2.33±1.15	2±1.73	1452±349.8
p-values	0.644	0.531	**0.029**	0.810	**0.019**

n: Number of videos, SD: Standard deviation, GQS: Global quality score, JAMA: Journal of American Medical Association

videos according to GQS and JAMA. We modified DISCERN scores, where more videos were uploaded before 2020. Results were found to contain low-quality and insufficient data. In addition, although it was determined that the videos with high video quality and reliability scores were longer, a significant relationship could not be determined between the sources and the duration of the videos.

YouTube is not limited to patient education but also can potentially train healthcare professionals to a significant extent[17]. Especially during the COVID-19 pandemic, the disruption of face-to-face education practices caused healthcare providers to consider internet and video-based education applications, and education shifted in this direction[7,8]. Although YouTube offers invaluable opportunities for disseminating medical knowledge, unfiltered, poor-quality, unscientific content can be misleading or harmful[18].

For this reason, we aimed to investigate the accuracy and reliability of the visual presentations on YouTube, which we think has a vital role in health education.

Table 3. Evaluation according to video source

		Academic	Doctor	Health site	Commercial site	Government	p-values
GQS (1-5 points)	Low quality (1/2 points) (n=81)	13 (16%)	5 (6.2%)	54 (66.7%)	8 (9.9%)	1 (1.2%)	**0.026**
	Mid quality (3 points) (n=16)	5 (31.3%)	0 (0%)	10 (62.5 %)	0 (0%)	1 (6.3%)	
	High quality (4/5 points) (n=3)	3 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
JAMA score (0-4 points)	Inadequate data (1 points) (n=76)	9 (11.8%)	4 (5.3%)	54 (71.1%)	8 (10.5%)	1 (1.3%)	**0.010**
	Somewhat adequate data (2/3 points) (n=13)	11 (47.8%)	1 (4.3%)	10 (43.5%)	0 (0%)	1 (4.3%)	
	Adequate data (4 points) (n=3)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Modified DISCERN score (0-5 points)	1 points (n=74)	12 (16.2%)	4 (5.4%)	49 (66.2%)	8 (5.4%)	1 (1.4%)	**0.003**
	2 points (n=23)	9 (39.1%)	(4.3%)	13 (56.5%)	0 (0%)	0 (0%)	
	3 points (n=3)	0 (0%)	0 (0%)	2 (66.7%)	0 (0%)	1 (33.3 %)	

GQS: Global quality score, JAMA: Journal of American Medical Association

Table 4. Correlations between quality variables and interaction parameters

	GQS	JAMA	Modified DISCERN	Number of views	Number of like	Number of dislike	Number of comments	Video duration	Year of upload
GQS	1	**0.707****	0.731	0.027	0,001	0.017	0.043	**0.365****	0.088
JAMA	**0.707****	1	**0.635****	0.078	-0.142	-0.104	0.031	**0.322****	0.073
Modified DISCERN	**0.731****	**0.635****	1	0.124	0.048	0.070	0.164	0.157	0.052
Number of views	0.027	0.078	0.0124	1	0.136	0.029	0.920	-0.093	**-0.228***
Number of like	0.001	-0.142	1	0.136	1	**0.465****	0.377**	-0.136	0.170
Number of dislike	0.017	-0.104	0.070	0.029	**0.465****	1	0.205*	-0.135	0.131
Number of comments	0.043	0.031	0.164	**0.920****	**0.377****	**0.205***	1	-0.110	-0.113
Video duration	**0.365****	**0.322****	0.157	-0.093	-0.136	-0.135	-0.110	1	0.107
Year of upload	0.088	0.073	0.052	**-0.226***	0.170	-0.131	0.113	0.107	1

**p<0.01 Pearson correlation test,

* p<0.05 Pearson correlation test,

GQS: Global quality score, JAMA: Journal of American Medical Association

Past studies evaluate YouTube videos' content, quality, and reliability; deficiencies in the content are emphasized[7]. Zengin and Onder[5] evaluated the videos describing musculoskeletal system ultrasonography training and found the video to be of low quality with a rate of 59%. Rodriguez-Rodriguez et al.[19] found that most cancer rehabilitation training videos were low-quality. The mean modified DISCERN, JAMA, and GQS scores in the study were 2.14, 2.03, and 2.78, respectively. Similarly, Boztaş et al.[20] evaluated the anterior abdominal wall blocks and determined that 58% of the videos were inadequate. Tolu et al.[21] pointed out that videos uploaded by doctors, academic sources, and professional organizations offer higher-quality content.

Pamukcu and Izci Duran[22] evaluated the quality of videos describing the self-injection methods of anakinra according to GQS. They found that 21.6% of the videos were of low quality, 35.3% were of medium quality, and only 43.1% were of high quality. In another study examining the technical data of YouTube videos about percutaneous tracheostomy in the intensive care unit, it was found that most of them (49%, 70%) shared personal experiences, and medical equipment companies uploaded some (10.3%) for advertising purposes[23].

When we questioned how accurate and reliable the contents of YouTube videos, especially for teaching medical information, were, we saw that the result was unfortunately not very promising. Based on this situation, we sought an answer to the question, "Can the videos have different reliability according to their sources"[22]. In a study investigating videos teaching ultrasonography-guided brachial plexus blocking techniques in the literature, academic videos contained higher accuracy and precision than other sources[24]. In another study evaluating videos that still examined frailty syndrome, videos with doctor uploaders had the highest average DISCERN and average GQS scores[25]. Consistent with the literature, higher GQS and JAMA scores were found in academic videos in our study. This statistical difference can be explained by the fact that academically sourced videos are higher quality and more reliable. Similarly, Arslan et al.[26], found that even on vital issues such as endotracheal intubation in the operating room and intensive care COVID-19 patients, YouTube videos do not provide sufficient and comprehensive educational information.

Similarly, videos describe the operating room's regional anesthesia and procedure technique. A report evaluating the quality of the videos found that half of the videos were of low quality[27]. Besides quality scores, video interaction data should also be considered when evaluating YouTube videos, but the relationship between them is unclear. In a study investigating the reliability of YouTube videos on self- injection of anti-TNF agents, while half of the videos examined taught safe and appropriate injection techniques with accurate and unbiased information, misleading information was detected in the other half[21]. However, the good news in the same study was that videos that were most likely to attract viewers had high-reliability values in viewer interaction parameters (daily views and likes). Similarly, Delli et al.[28] found that 51% of the videos about Sjögren's syndrome were applicable. In their study, Singh et al.[29] found that 54.9% of YouTube videos about rheumatoid arthritis were helpful, while 30.4% were misleading. In another study evaluating anterior abdominal wall blocks, they determined a weak positive correlation between the quality levels of the videos and the number of views, likes, dislikes, and comments[22]. However, in another study in which he evaluated YouTube videos about oral care in Parkinson's patients, it was found that videos originating from low-quality television channels had a high number of views, likes, and dislikes[30]. In the study we presented, no statistically significant difference was found between the sources of the videos and the number of views, like-dislikes, comments, and the duration of the video. This shows that YouTube users cannot distinguish between reliable and quality videos and videos with potentially low quality and insufficient content when choosing videos. Thus, although the reliability and quality scores of the videos describing CRRT, academic and long-term, were high, this situation was not significant in the audience selection and was not reflected in the video interaction data. It is also essential to enable the YouTube audience to critically evaluate the information hosted in the presentations when trying to learn medical knowledge.

Video duration is among the criteria that show the quality and usefulness of video content[10]. A study investigating the quality of COVID-19 vaccines and informational videos during the pandemic process found that high-quality videos were of longer duration[17]. In our research, we have found that videos with high reliability and quality have longer video durations. This situation can also be interpreted as needing more time while presenting quality video content. Based on this situation, we think that while designing the video duration, it should be aimed to provide quality information without distracting the audience but without missing the necessary information in the content.

Our study analyzed English-language YouTube videos about CRRT in the intensive care unit. Many of the videos included in the study were rated as having poor quality, low reliability, and insufficient data scores. Although it was determined in our study that the videos with high quality and reliability were academically sourced and of longer duration, they were not reflected in the video interaction data. For this reason, we think that watching the visual presentations that mediate the learning and dissemination of medical information without making source, quality, and accuracy analysis may lead to objectionable results.

Study Limitations

Since we included the first 100 videos in the study, our sample size may be limited. Secondly, we only included videos with English content in our study. Since we could not include non-English videos, we could not include knowledge and experience of other nationalities in our work. However, considering that English is the world's most widely spoken language, we think this limitation will not affect our study too much.

Conclusion

In our research, we have found that videos with high reliability and quality have longer video durations. This situation can also be interpreted as needing more time while presenting quality video content. Based on this situation, we think that while designing the video duration, it should be aimed to provide quality information without distracting the audience but without missing the necessary information in the content.

Our study analyzed English-language YouTube videos about CRRT in the intensive care unit. Many of the videos included in the study were rated as having poor quality, low reliability, and insufficient data scores. Although it was determined in our study that the videos with high quality and reliability were academically sourced and of longer duration, they were not reflected in the video interaction data. For this reason, we think that watching the visual presentations that mediate the learning and dissemination of medical information without making source, quality, and accuracy analysis may lead to objectionable results.

Ethics

Ethics Committee Approval: Our research, planned as a cross-sectional study, was conducted on April 21st and 22nd 2022, after obtaining approval from the Non-Interventional Ethics Committee of Dokuz Eylül University Faculty of Medicine (ethics committee decision no: 2021/26-14, date: 22.09.2021).

Informed Consent: Since the research was not conducted on patients, informed consent forms were not obtained.

Authorship Contributions

Concept: Ö.Ö., V.H., Design: Ö.Ö., V.H., Data Collection or Processing: Ö.Ö., V.H., Analysis or Interpretation: Ö.Ö., V.H., Literature Search: Ö.Ö., V.H., Writing: Ö.Ö., V.H.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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