RESEARCH ARTICLE

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Educational Value of Youtube Videos in Dialysis Catheter Application

ABSTRACT

Objective: Youtube is one of the most popular video-sharing websites and can be a powerful tool for disseminating health information. The number and use of Youtube videos in the medical field is increasing, so there is a need to research its educational value. We examined dialysis catheter application videos' characteristics, usefulness, and scientific accuracy.

Methods: We performed a Youtube search with the keywords of "dialysis catheter" without selecting any filter in the English language in April 2022. The content of the videos, video sources, type of catheter mentioned in the video, presence of animation, and the accuracy of the information was evaluated. mDISCERN score was also determined to clarify the power of the accuracy.

Results: The evaluation showed that the number of videos with accurate information was 171 (83.4%) with a significantly higher mDISCERN score (2.85±0.59). Among the targeted videos, the mDISCERN score of the videos uploaded by healthcare professionals and the official institution was significantly higher. The average usefulness score was 1.96±0.23, and there was no significant difference between the sources.

Conclusions: It would be more appropriate to present the videos selected in terms of education and reliability under a sub-title such as "YouTube Medical Education" for use by medical professionals.

Keywords: Hemodialysis, Catheter, Youtube, Internet, Social Media.

Diyaliz Kateter Uygulamasında Youtube Videolarının Eğitimsel Değeri

ÖZET

Amaç: Youtube, en popüler video paylaşım sitelerinden biridir ve sağlık bilgilerini yaymak için güçlü bir araç olabilir. Medikal alanda Youtube videolarının sayısı ve kullanımı giderek artmakta olup bu nedenle eğitici değerini araştırma ihtiyacı doğmuştur. Diyaliz kateter uygulama videolarının özelliklerini, kullanışlılığını ve bilimsel doğruluğunu inceledik.

Gereç ve Yöntem: Nisan 2022'de İngilizce dilinde herhangi bir filtre seçmeden "diyaliz kateteri" anahtar kelimeleri ile Youtube araması yaptık. Videoların içeriği, video kaynakları, videoda bahsedilen kateter tipi, animasyon varlığı ve bilgilerin doğruluğu değerlendirildi. Doğruluğun gücünü netleştirmek için mDISCERN skoru da belirlendi.

Bulgular: Değerlendirme, doğru bilgi içeren video sayısının 171 (%83,4) olduğunu ve mDISCERN puanının (2,85±0,59) anlamlı derecede yüksek olduğunu gösterdi. Hedeflenen videolar arasında sağlık çalışanları ve resmi kurum tarafından yüklenen videoların mDISCERN puanı anlamlı olarak daha yüksek çıktı. Ortalama kullanışlılık puanı 1,96±0,23 idi ve kaynaklar arasında anlamlı bir fark yoktu.

Sonuç: Eğitim ve güvenilirlik açısından seçilen videoların "YouTube Tıp Eğitimi" gibi bir alt başlık altında tıp profesyonellerinin kullanımına sunulması daha uygun olacaktır.

Anahtar Kelimeler: Hemodiyaliz, Kateter, Youtube, İnternet, Sosyal Medya

INTRODUCTION

Being an indispensable element for hemodialysis (HD), the history of vascular access is rich (1). According to the United States Renal Data System, in 2021, it is reported that 80% of the patients started hemodialysis with a catheter, and 21% of these patients continued hemodialysis with a catheter in the first year (2).

Complications may appear in the existence of a catheter. Especially catheter-associated blood infections are an important reason for hospitalization, morbidity, and death. Therefore, the Centers for Disease Control and Prevention underline the importance of catheter care and aseptic conditions (3).

Likewise, catheter-associated complications are common in the early period of peritoneal dialysis and cause technical inadequacy (4). During catheter insertion, complications such as bleeding and bowel perforation may occur (5). Many studies conducted worldwide have shown that with the increase in the experience of doctors in inserting catheters, infectious complications decrease, and they become more effective in establishing a peritoneal access route (6).

Video broadcasting sites are frequently used today to obtain information. Especially on YouTube, more than 2 billion media are viewed per day. Recent surveys report that 8 out of 10 internet users access health-related information over the internet. As it is known, people with chronic diseases are increasingly using the resources on the internet to manage their conditions (7).

The number and use of Youtube videos in the medical field is increasing. Although this seems like a great opportunity, information with or without educational value can cause information pollution and chaos. Therefore, there was a need to explore the educational value of these videos. This study is the first to inspect Youtube as a source of data about dialysis catheters. This study aims to investigate videos about dialysis catheters on YouTube systematically.

MATERIAL AND METHODS

Video Selection and Search: In April 2022, 'dialysis catheter' was typed in English in the search bar of YouTube, a video broadcasting website, without selecting any filters. Three hundred seventy-five videos found after the search were evaluated. Videos with less than one minute in duration, irrelevant content, replications and commercials, and non-English and silent videos were excluded. While 170 videos were excluded, 205 videos were included in the study. The included videos were examined in the sense of the year they were published, the duration, the number of views, and the number of likes, dislikes, and comments. The content, video sources, type of catheter mentioned in the video, presence of animation, and the accuracy of the information they contain were evaluated. Catheters were divided into two main groups hemodialysis and peritoneal dialysis catheters. Hemodialysis catheters were also assessed into two groups temporary and tunneled. Video contents were grouped as catheter insertion, removal, care, complications, theoretical knowledge about the catheter, patient experience, and catheter insertion during the dialysis procedure. The accuracy of the video content was evaluated by a nephrologist and a cardiovascular surgeon as accurate and not.

The DISCERN questionnaire is valid and reliable for analyzing written consumer health information. It is the first standardized quality index of consumer health information that can be used by healthcare professionals and patients, and the general population as a critical assessment tool to assess health information. The mDISCERN score is a five-question scale adapted from a 16-question DISCERN vehicle developed by Singh (8) and Charnock et al. (9). Each criterion is rated as 1–0 (yes/no) and scored between 0 and 5. The scoring system was integrated into the study to avoid the subjective evaluation of the content regarding accuracy.

Global quality score (GQS) is a scoring system that has a five-point scale based on the quality of information and was created to evaluate its usefulness to patients. We used GQS to clarify the usefulness of the videos included in the study and compared the scores between the sources. Scores lower than three were accepted as very limited use to patients (Table 1).

Statistical Analysis: IBM SPSS Statistics 22 (IBM SPSS, Turkey) software was used for statistical analysis to evaluate the findings obtained in the study. Descriptive statistics were used to assess the data. Continuous variables were expressed as mean ± standard deviation, and categorical variables were expressed as frequency and percentage. In determining the conformity of the data to the normal distribution, the Shapiro–Wilk test was used. Pearson v2 or Fisher' Exact test was used to comparing categorical variables. Continuous variables, on the other hand, were compared using Student's t-test or Mann-Whitney U test.

RESULTS

In total, 375 videos were watched. 170 (45.3%) of these videos were excluded from the study. Most of the excluded videos (n=47, 27.6%) were irrelevant to the content. Exclusion criteria are shown in Table 2, and the characteristics of 205 (54.7%) videos included in the study are shown in Table 3.

Table 1. Global Quality Score, mDISCERN Score Parameters

Global Quality Score
1. Low quality, video information flow weak, most information missing, not beneficial for patients
2. Usually, low quality and low flow of information, some listed information and many important issues are missing, very limited use for patients
3. Moderate quality, the insufficient flow of information, and some important information is sufficiently discussed, but some are poorly discussed and somewhat useful for patients
4. Good quality and generally good information flow. Most of the relevant information is listed, but some topics are not covered, useful for patients
5. Excellent quality and information flow, very useful for patients
mDISCERN Score
1. Are the aims clear and achieved?
2. Are reliable sources of information used?
3. Is the information presented balanced and unbiased?
4. Are additional sources of information listed for patient reference?
5. Are areas of uncertainty mentioned?

Table 2. Excluded videos and the reasons from the study

	n (%)
Dublicate videos	17 (10.0)
Non-English	27 (15.8)
Advertisement	45 (26.4)
Short recorded videos (less than 1 min)	29 (17.1)
Irrelevant	47 (27.6)
No voice included	5 (2.9)
Total	170 (100.0)

Table 3. Characteristics of the videos included in the analysis.

	n	%
Date (year) uploaded		
• 2012 and earlier	11	5.3
• 2013-2016	72	35.1
• 2017-2020	111	54.1
• 2021 (first 11 months)	11	5.3
Source of uploaded item		
• Doctor	92	44.8
• Nurse	23	11.2
• Medical website	28	13.6
• Patient experience	29	14.1
• Supply institution	14	6.8
• Television show	1	0.4
• Regular internet user	3	1.4
• Governmental/official institution (Hospital)	15	7.3
Video content		
• Instructional video for catheter insertion	105	51.2
• Instructional video for catheter care	16	7.8
• Theorotical information for HD catheters	35	17.1
• Complications of the catheter procedure	13	6.3
• Instructional video for catheter removal	4	1.9
• Patient experience	27	13.1
• Starting HD with the catheter	5	2.4
Types of HD catheters		
• Temporary HD catheter	93	45.3
• Permanent HD catheter	53	25.8
• Peritoneal HD catheter	59	28.7
Information accuracy		
• True	171	83.4
• False	4	1.9
• Experience/Uncertain	30	14.6
Was animation used in the content?		
• Yes	15	7.3
Total	205	100.0

HD, hemodialysis.

The average duration of 205 videos met the inclusion criteria was 6.1 ± 2.82 minutes (min: 1.52, max: 18.22). The number of likes of the videos was 154.284, and the video with the most likes received 18.212. The average number of likes was 6122.41 ± 4251. The total number of dislikes of the videos was 21.432, and the video with the most dislikes received 1624. The average number of dislikes was 252.14 ± 91.8. The total number of comments was 21.542, and the video with the most comments received 512. The average number of comments was 156.22 ± 101.24.

It was determined that 111 (54.1%) of the videos included in the study were released between 2017 and 2022. 76.9% (n=158) of the videos were uploaded by doctors, nurses, and medical websites or official institutions. Most videos included catheter insertion (n=105, 51.2%) and theoretical information about HD catheters (n=35, 17.1%). All videos (n=13, 6.3%) about complications that may occur during catheter insertion were edited by a doctor or a health facility. A nephrologist and a cardiovascular surgeon evaluated the accuracy of these video contents uploaded from different sources. The evaluation showed that the number of videos with accurate information was 171. (83.4%).

Videos about dialysis catheters were compared for information accuracy. When mDISCERN scores were compared between video sources, the scores of healthcare professionals and the governmental/official institution (Hospital) were significantly higher. These findings are given in Table 4. Video content uploaded by healthcare professionals (doctors, nurses), official institutions (Hospitals), and medical websites had significantly more accurate information content. No significant difference was observed between the correct and incorrect information content of videos uploaded from other sources. Among the related videos, the average GQS was 1.96±0.23, with no significant difference between the sources. The associated videos were accepted as "not useful" to patients due to an average score lower than three, even though the accuracy of video content uploaded by healthcare professionals (doctor, nurse) and official institutions (Hospital) were significantly higher.

Table 4. Comparison of the accuracy with respect to source of upload.

	True (n, %)	mDISCERN Score	Not true (n, %)	mDISCERN Score	*p value
Healthcare Professional (Doctor, nurse)	112	3.27±0.48	3	1.17±0.31	0.001*
Governmental/official institution (Hospital)	13	3.33±0.39	2	1.11±0.23	0.002*
Medical website	23	2.12±0.64	5	1.98±0.62	0.018
Others	23	2.27±0.61	24	1.91±0.29	0.061
Total	171	2.85±0.59	34	1.38±0.30	0.012

*P-value <0.05 accepted as the significant in comparison

DISCUSSION

Today, most people have access to information about their diseases both in written and visual form on the internet before going to the hospital. Although this information has sometimes increased the awareness of patients, inaccurate information can cause serious disinformation for the patient.

Similarly, there are many resources available for health education today. In this regard, internet video broadcasting sites are also frequently used, and Youtube stands out among them (10).

Although the number of these videos as sources is increasing daily, as we mentioned earlier, it is confusing how accurate the content of most videos is. Access to the video that provides precise information about the patient's disease and treatment is only possible by scanning the suitable materials, diagnosing the disease, and following the correct treatment procedures. This is almost impossible for the patient, and these situations need to be assisted and directed by healthcare professionals.

Moreover, most of the current health education and information videos are not prepared by health professionals and are advertisements. The procedures performed do not contain sufficient and accurate information about the diseases. There are many studies examining how helpful these videos are. Among these are studied by Ching et al. and similarly Gunes et al. on varicose veins. It has been stated in these studies that the uploader of most of the videos related to the varicose vein on Youtube is hospitals and official institutions (11, 12). Similarly, it was found in our study that approximately 76.9% of the videos were uploaded by official institutions or health professionals (doctors, nurses, and medical websites). Therefore, we believe that the high accuracy of the information in these viewed videos is associated with whether or not they are uploaded by professionals (information accuracy is 83.4%).

On the other hand, the fact that the videos are uploaded by health professionals or experts and the information is correct does not mean that it can be easily understood and beneficial to the patient. Medical language is used heavily in most video content, including surgical procedures. It can be used for the education of health professionals, but it may not be suitable for in-patient education. The article by Kyong No Lee et al. stated that surgical and academic videos would not be ideal for patients (13). To measure the usefulness of the content for patients, we used GQS, a tool to assess the site's overall quality, including information flow, ease of

use, and usefulness to patients. Even though mDISCERN scores of the videos uploaded by health-care professionals and governmental/official institutions were significantly higher, the GQS of videos from the health-care professionals and governmental/official institutions were similar, lower than three, and there was no significant difference between the groups. As a result, although the accuracy of the related content uploaded by professions or institutions was high, we can report that most of the videos in our study may not be suitable and valuable for patients as they include academic and surgical procedures.

Catheters are essential instruments of both hemodialysis and peritoneal dialysis treatments (14,15). Increasing knowledge and experience about catheter insertion can reduce catheter-related complications (14). YouTube can be an innovative tool for learning surgical procedures (16). Many of the videos included in our study (76.9% in total) were educational content videos prepared by healthcare professionals or healthcare facilities, were educational, and had high accuracy, proven by mDISCERN scores. This may be important for health professionals to increase visual memory.

The 205 videos included in the study were high-accuracy videos. However, their number of views was not high. On the other hand, the number of views of the media uploaded by others, which constitutes 23.1% of the videos, was 284.144 more, and this value was statistically significant (p=0.0021). Even though the number of videos with high accuracy is much higher, this restricts access without being filtered correctly and prevents the patient from accessing correct information. Like us, Gunes et al. observed in their study that the videos uploaded by health centers about varicose veins do not have a high viewing rate and usefulness. On the contrary, Yaylacı et al. searched for training videos on cardiopulmonary resuscitation on Youtube and emphasized that the videos uploaded by health centers are essential in community education (17). In light of this information, we think that uploading the videos about dialysis catheters in a language that can be understood by the audience, after being re-evaluated in the light of most healthcare professionals and healthcare facilities, will increase the quality of education and access to correct information primarily for the patients.

LIMITATIONS

The number and content of videos uploaded to the Internet are continuously variable. This study was created based on the videos that emerged from searching by typing the keyword of dialysis catheter on Youtube. Searches with other words and excluding videos with languages other than English reduced the number of videos evaluated.

CONCLUSIONS

Even though they were increasing uncontrollably and uploaded without any pre-evaluation, the video content on Youtube remains essential for health and patient education. Although the videos uploaded to Youtube about dialysis catheters have high information quality, they may not be able to communicate the correct information to the patient through the right communication channel because their language and content are primarily academic. Therefore, we believe that although these videos are essential for the experts in the selection, maintenance, and follow-up of the proper dialysis catheter, it is still necessary for the doctor to provide appropriate and accurate patient information. We also believe that there is a need for more professional and pre-evaluated videos in which the language and visuals are adjusted according to the target audience for accurate patient information on this subject. YouTube may be a "Procedures Consult"-like platform designed to help medical professionals prepare, perform, and test their knowledge of medical procedures (18). However, it would be more appropriate to present the videos eliminated in terms of education and reliability under a sub-title such as "YouTube Medical Education.". While YouTube-like platforms are known to have content moderation mechanisms, a sub-committee consisting of health professionals and academics, and soon even artificial intelligence technologies, could be utilized for the "moderation of medical training videos".

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