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EVALUATION OF THE QUALITY AND RELIABILITY OF YOUTUBE VIDEOS ON DRY NEEDLING PROCEDURE

KURU İĞNELEME İLE İLGİLİ YOUTUBE VİDEOLARININ KALİTESİNİN VE GEÇERLİLİĞİNİN DEĞERLENDİRİLMESİ

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Abstract

Aim: With the popularization of the Internet, social media platforms are used frequently as an information source. Patients can watch YouTube videos and gather information on dry needling especially before the procedure. This cross-sectional study aimed to assess the reliability and quality of videos on dry needling.

Methods: A search was conducted on YouTube using the keyword "dry needling". Features of videos, such as the number of views and duration of the videos, were noted. The reliability and quality of videos were assessed with the DISCERN and the Journal of the American Medical Association (JAMA).

Results: A total of 150 videos were screened and 50 videos were excluded: 30 were duplicates, 10 were off-topic, 5 were in a language other than English, and 5 had no audio. Most of the videos were uploaded by non-physician health personnel (42%) and physicians (27%). The most common video content was demonstration (53%) of dry needling. The mean scores of the JAMA and DISCERN tools were 1.9 and 35.3, respectively. Thirty-four percent of videos were very poor, 31% were poor, 18% were fair, 11% were good, and only 6% were excellent.

Conclusions: YouTube is a platform where medical information is freely shared and widespread. In this study, we found that most of the YouTube videos on dry needling were of low quality. Future efforts by healthcare professionals and academic institutions are necessary to improve the reliability and quality of medical information on dry needling.

Keywords: Dry needling, YouTube videos, quality, reliability

Öz

Amaç: İnternetin yaygınlaşmasıyla birlikte sosyal medya platformları bilgi kaynağı olarak sıklıkla kullanılmaktadır. Hastalar özellikle işlem öncesi YouTube videolarını izleyebilir ve kuru iğneleme hakkında bilgi toplayabilir. Bu kesitsel çalışma, kuru iğneleme ile ilgili videoların güvenilirliğini ve kalitesini değerlendirmeyi amaçlamıştır.

Yöntemler: "Kuru iğneleme" anahtar kelimesi kullanılarak YouTube'da arama yapıldı. Videoların izlenme sayıları ve süreleri gibi özellikleri not edildi. Videoların güvenilirliği ve kalitesi DISCERN ve Journal of the American Medical Association (JAMA) skalaları ile değerlendirildi.

Bulgular: Toplam 150 video tarandı ve 50 video çalışmadan hariç tutuldu. Dışlanan videoların 30'u yinelenen, 10'u konu dışı, 5'i İngilizce dışında bir dildeydi ve 5'inde ses yoktu. Videoların çoğu hekim olmayan sağlık personeli (%42) ve doktorlar (%27) tarafından yüklenmişti. En yaygın video içeriği kuru iğneleme işleminin uygulama yöntemiyle ilgiliydi (%53). JAMA ve DISCERN araçlarının ortalama puanları sırasıyla 1.9 ve 35.3 idi. Videoların yüzde %34'ü çok zayıf, %31'i zayıf, %18'i orta, %11'i iyi ve sadece %6'sı mükemmeldi.

Sonuç: YouTube, tıbbi bilgilerin özgürce paylaşıldığı ve yaygınlaştırıldığı bir platformdur. Bu çalışmada, kuru iğneleme ile ilgili YouTube videolarının çoğunun düşük kalitede olduğunu bulduk. Kuru iğneleme ile ilgili tıbbi bilgilerin güvenilirliğini ve kalitesini artırmak için sağlık uzmanları ve akademik kurumların gelecekteki çabaları gereklidir.

Anahtar Kelimeler: Kuru iğneleme, YouTube videoları, kalite, güvenilirlik

Introduction

Local injection therapies or wet needling involves hollow-bore needle injections using corticosteroids, local anesthetics, botulinum toxins, and so forth [1]. However, dry needling is performed without using any medication or solution. It only involves insertion of thin monofilament needles [2]. Dry needling is usually used to treat musculoskeletal problems such as back or neck pain [3, 4]. The needle penetrates the skin and stimulates underlying myofascial trigger points, muscles, ligaments, tendons, and subcutaneous fascia for the management of a variety of neuromusculoskeletal problems [4]. Some professional organizations state that dry needling is a procedure that involves needles only inserted into the trigger points [1]. However, several studies showed that dry needling targets not only trigger points, but also neural, muscular and connective tissues [1]. Although this method of treatment is quite safe, some complications such as bleeding, pain, sympathetic symptoms (nausea, vertigo) and pneumothorax can occur [5].
Patients can use the Internet and social media to obtain information on dry needling and also perform it in their clinical practice by using these videos [6]. In recent years, YouTube has become a popular source of health information; it has been shown that 80% of Internet users access health information online [7]. The fact that YouTube videos are easily accessible and free of charge is one of the most important reasons for its popularity [8]. On the other hand, there are not enough control mechanisms for video quality analysis [6]. As a result, the quality and reliability of videos varies, so healthcare professionals should be alert and guide their patients on the way to obtain accurate and reliable information [9]. There is a potential risk of spreading inaccurate information, which can cause significant problems in healthcare [10]. Moreover, the results of a YouTube search are based on an algorithm that uses the relevancy and popularity of videos [10]. Therefore, patients can watch popular videos that may contain misleading information. In outpatient clinics, patients can confuse dry needling with acupuncture and some patients do not have any idea about the procedure and think that hollow bore needles are used instead of monofilament needles. It can be difficult to change patients' attitude and prejudice when they believe what they watched. Since the quality of dry needling videos has not been evaluated before, this study was conducted to analyze the quality of videos giving information about dry needling to patients.

Materials and Methods

YouTube was searched using the keyword "dry needling". Two-hundred videos were screened and listed by relevance on 15 February 2022. One hundred videos met the inclusion criteria and were analyzed further. Videos in English and that contained information about the introduction, demonstration, indications, and complications of dry needling were evaluated. All videos were watched and analyzed by two reviewers independently and a consensus meeting was held when any discrepancy arose. Videos without sound, videos that were not in English, and duplicated or overlapping videos were excluded. This is a cross-sectional study that included no human or animal participants, so ethical approval was not required and consent was waived.

- *Characteristics of videos*

The number of views, view ratio (number of views/day), total video duration, total number of "likes" and "dislikes", total number of comments, comments ratio (number of comments/day), time since upload, number of subscribers and source of upload were noted. All videos were categorized by source into four groups: physician, non-physician healthcare professional, academic institutions/professional organizations and health-related websites. The content of vid-

eos was categorized as introduction, demonstration, indications and complications of dry needling. Moreover, like ratio and video power index (VPI) were used to evaluate the popularity of the videos. The like ratio was found by using the following formula: [number of likes/(number of dislikes +number of likes)]*100. VPI was calculated as like ratio*view ratio/100 [11].

- *Assessment of quality of videos*

The DISCERN instrument was developed to analyze the quality of information. It consists of 15 questions plus an overall quality rating [12]. It is composed of three sections evaluating reliability (section 1 with 8 questions), quality of information about treatment options (section 2 with 7 questions), and the overall quality of the information (section 3). Each question was scored on a five-point (1-5) scale. If the quality criterion was completely fulfilled, it was scored as 5, and if not fulfilled at all, it was scored as 1. If it met the criterion to some extent, it was scored as 2 to 4 according to the assessors' judgment [13]. The total DISCERN score was calculated by adding up the first 15 questions. It can be categorized as excellent (63-75), good (51-62), fair (39-50), poor (27-38), and very poor (<27) [12, 13].
The Journal of the American Medical Association (JAMA) benchmark criteria were published in order to evaluate the quality of internet information on health care. It assesses four criteria: authorship, attribution, disclosure, and currency. Each criterion scored as 1. The maximum possible score is 4, which represents the maximum score [14]. All of the scales that were used are shown in Table 1.

- *Statistical Analysis of Data*

The Shapiro-Wilk test was performed to test the normality of data. Descriptive measures such as mean, standard deviation, frequency, percentage, and minimum-maximum values were noted. The Kruskal-Wallis test was performed to compare two or more independent variables. The Dunn-Bonferroni post-hoc method was used following a significant Kruskal-Wallis test for pairwise comparison. The Spearman test was performed for correlation analysis. The inter-rater agreement was assessed with the kappa coefficient. The results were evaluated at a 95% confidence interval and a significance level of $P < .05$. The Statistical Package for the Social Sciences 22 (IBM, Armonk, NY, USA) was used for analysis.

Results

A total of 150 videos were screened and 50 videos were excluded: 30 were duplicates, 10 were off-topic, 5 were in a language other than English, and 5 had no audio. The characteristics of the 100 analyzed videos are summarized in Table 2. Most of the videos were uploaded by non-physician health personnel (42%) and physicians (27%). The most common video content was demonstration (53%) of dry needling. The mean scores of the JAMA and DISCERN tools were 1.9 and 35.3, respectively. Thirty-four percent of videos were very poor, 31% were poor, 18% were fair, 11% were good, and only 6% were excellent. The Cohen kappa score was calculated as 0.87 for the JAMA score and 0.85 for the DISCERN total score. DISCERN reliability, DISCERN quality, DISCERN total and JAMA scores were significantly higher in videos that were uploaded by physicians (Table 3). When Bonferroni adjustment was performed, videos uploaded by physicians had higher scores of DISCERN reliability, DISCERN quality, and DISCERN total compared to non-physician health personnel ($p<0.05$). Videos uploaded by physicians also had significantly higher JAMA scores compared to non-physician health personnel ($p=0.04$) and health-related websites ($p=0.003$).

Table 1. Scales used for assessment of quality of videos on dry needling

		Question		Score (1-5)
DISCERN	**Section 1**	1	Are the aims clear?	
		2	Does it achieve its aims?	
		3	Is it relevant?	
		4	Is it clear what sources of information were used to compile the publication (other than the author or producer)?	
		5	Is it clear when the information used or reported in the publication was produced?	
		6	Is it balanced and unbiased?	
		7	Does it provide details of additional sources of support and information?	
		8	Does it refer to areas of uncertainty?	
	Section 2	9	Does it describe how each treatment works?	
		10	Does it describe the benefits of each treatment?	
		11	Does it describe the risks of each treatment?	
		12	Does it describe what would happen if no treatment is used?	
		13	Does it describe how the treatment choices affect overall quality of life?	
		14	Is it clear that there may be more than one possible treatment choice?	
		15	Does it provide support for shared decision making?	
	Section 3	16	Based on the answers to all of these questions, rate the overall quality of the publication as a source of information about treatment choices	
		Question		1 point per question
JAMA		1	Authorship (authors, contributors, affiliations, and credentials)	
		2	Attribution (references and sources used for the content and copyright information)	
		3	Disclosures (ownership, sponsorship, advertising, commercial funding and potential conflicts of interests)	
		4	Currency (dates of posted and updated information)	

Table 2. Baseline descriptive statistics of videos on dry needling (n=100)

		Number (%)
Source of upload	Physician	27 (27)
	Nphp	42 (42)
	Academic institution/professional organizations	10 (10)
	Health related websites	21 (21)
		Number (%)
Content of video*	Introduction	10 (10)
	Demonstration	53 (53)
	Indications	20 (20)
	Mentioning introduction, demonstration, indications and complications	17 (17)
		Mean (SD), min-max
Detailed features of videos	Video duration (min)	8.5 (18.5), 0.65-122.3
	Time since upload (days)	1312.1 (818.8), 26-3150
	Number of views	85339 (238752), 85-1717649
	View ratio	59.2 (158.1), 0.11-973
	Number of comments	18.2 (31.4), 0-217
	Number of likes	405.6 (1484.1), 0-11000
	Number of dislikes	21.9 (49.8), 0-376
	Like ratio	92.9 (5.5), 75-100
	VPI	56.1 (151.9), 0.11-965.7
	DISCERN	35.3 (15.4), 15-75
	JAMA score	1.9 (0.8), 0-4

N: number, nphp: non-physician health personnel, VPI: Video Power Index, JAMA: Journal of American Medical Association, SD: standard deviation, min-max: minimum-maximum, *Each video may contain more than one subject.

Table 3. Assessment of video quality according to the source of upload [results are presented as median (min-max)]

	Physician	Nphp	Academic institution/ professional organizations	Health related websites	P-value
DISCERN reliability	23 (11-40)	16 (8-40)	19.5 (11-40)	19 (9-27)	0.040
DISCERN treatment	14 (7-35)	10 (7-35)	13 (7-35)	13 (7-24)	0.077
DISCERN quality	3 (1-5)	2 (1-5)	2 (1-5)	2 (1-4)	0.023
DISCERN total	39 (19-75)	26 (15-75)	31.5 (20-75)	32 (16-51)	0.037
JAMA score	2 (1-4)	2 (0-4)	2 (1-4)	1.5 (1-2)	0.002

Min-max: minimum-maximum; JAMA: Journal of the American Medical Association; Nphp: non-physician health personnel, Values in bold were significant.

There was a strong correlation between total score of DISCERN and reliability subgroup of DISCERN (rho=0.97, p<0.0001), treatment subgroup of DISCERN (rho=0.94, p<0.0001), quality subgroup of DISCERN (0.93, p<0.0001), and JAMA (rho=0.57, p<0.0001). There was no statistically significant correlation between DISCERN scores and audience interaction parameters, such as number of views, number of subscribers, view ratio, number of comments, number of likes/dislikes, and VPI. The duration of videos had a significant moderate correlation with DISCERN reliability (rho=0.43, p<0.0001), DISCERN treatment (rho=0.42, p<0.0001), DISCERN quality (rho=0.49, p<0.0001), DISCERN total score (rho=0.45, p<0001), and JAMA score (rho=0.40, p<0.0001).

Discussion

This study aimed to evaluate the content and quality of YouTube videos on dry needling. Demonstration and indications of dry needling were the most popular content uploaded. The mean DISCERN and JAMA scores were 35.3 and 1.9, respectively. The majority of videos were very low and low quality. Most of the videos were uploaded by non-physician health personnel, mainly physiotherapists, and physicians. The videos uploaded by physicians had higher quality scores compared to non-physician health personnel. As the duration of videos increase, DISCERN and JAMA scores increase; in other words, the quality of the videos increases.

The Internet is an important and popular source of health-related information. Dry-needling is an invasive procedure that causes a tendency for patients to seek online information before or after the procedure. Since the quality of online information is variable and unchecked, this may lead patients to obtain misleading information and can impact the patient-healthcare provider relationship. Watching videos related to the procedure could increase or decrease patient anxiety, according to previous studies [15, 16]. On the other hand, patients can take an active role in the decision about the treatment if they obtain accurate and reliable information [17]. Health-care providers should be aware of the content of YouTube videos on dry needling in order to guide their patients properly.

In the literature, there were studies evaluating the quality and reliability of YouTube videos as a source of information for patients [11, 18-20]. In our study, most of the videos were uploaded by physicians and non-physician health personnel. Non-

physician health personnel were composed mainly of physiotherapists, because dry needling is performed by physicians and other non-physician health personnel like physiotherapists and osteopaths. Similarly, Bagcier et al., who evaluated the quality of YouTube videos on knee osteoarthritis exercises found that the vast majority of the videos were uploaded by non-physician health personnel [18]. As dry needling is an invasive procedure, it is not surprising that the content of most of the videos were about the demonstration of dry needling. More than 50% of the videos were of low quality according to the DISCERN tool. Previous studies also showed that YouTube videos on several topics such as fibromyalgia, kyphosis and rotator cuff tears were of low quality, in line with the current study [11, 19, 20]. It is more difficult to accurately inform and guide patients who have acquired misleading information. The patients can have a preconception, especially about invasive procedures in clinics. Therefore, it is sometimes challenging to break these prejudices.

DISCERN reliability, DISCERN quality, DISCERN total, and JAMA scores were significantly higher in videos that were uploaded by physicians compared to non-physician health personnel. In the literature, several studies showed that videos uploaded by physicians and academic institutions were of high quality [11, 21, 22]. We also found that as the duration of videos increases, their quality increases, similar to the study by Ozsoy-Unubol et al. [11]. As expected, the subject can be explained clearly and extensively with longer videos. On the other hand, viewers can lose interest while watching videos of longer duration [11].

Like previous YouTube studies, we had similar limitations. Only English-language videos were analyzed, meaning that we could not analyze videos in other languages that may represent the entire population of YouTube videos. The analysis was performed as a snapshot; that is, we performed the analysis at a single time point. YouTube is constantly updated, and its content is changing. Also, YouTube lists videos by relevance, which may also affect the results. On the other hand, all videos were analyzed by two independent physical medicine and rehabilitation specialists, who showed almost perfect agreement.

Conclusion

Before or after an invasive procedure like dry needling patients tend to gather information by using the Internet, especially YouTube. As the quality of YouTube videos is variable, it can be challenging to convince patients by countering misleading information. Physicians, non-physician health personnel, and academic institutions should be aware of this issue, and they should upload high-quality, reliable videos with relevant references and state their conflict of interest to prevent patients from obtaining misleading information.

Author contributions

All authors contributed to the study conception and design. All authors read and approved the final manuscript.

Conflict of interest

The authors declare that they have no conflict of interest.

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Ethical approval

This is a cross-sectional study that included no human or animal participants, so ethical approval was not required and consent was waived.

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