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YouTube as a source of information and education on ultrasound-guided dry needling

Mustafa Turgut Yildizgoren[1], Fatih Bagcier[2]

[1]Konya City Hospital, Department of Physical Medicine and Rehabilitation, Konya, [2]Basaksehir Cam and Sakura Hospital, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey

Abstract

Aim: This study aims to evaluate the educational quality of videos related to ultrasound guided dry needling (USDN). **Material and method:** This study was designed as a cross-sectional study. A video-based search was performed on the YouTube online video sharing platform (https://www.youtube.com/) using the English keywords "ultrasound guided dry needling" on May 10, 2023. The first 60 videos were analysed. **Result:** The first 60 videos were analyzed, and 32 videos that met the inclusion criteria were included in the study. The content of the videos mostly consisted of technical knowledge regarding Ultrasound Guided Dry Needling (USGDN) (56.3%) and information (43.84%). The total mean DISCERN score was 26.9 ± 12.0 (range 17 to 54). The total mean JAMA Score was 2.4 ± 0.7 (range 2 to 4). There was no significant differences between the groups, according to the DISCERN, and JAMAs scores (all $p>0.05$). The video with the highest DISCERN score belonged to The American Institute of Ultrasound in Medicine (AIUM) channel. **Conclusion:** There is a significant amount of content available on YouTube regarding USDN; however, unfortunately, most of the existing content is of low quality and carries the risk of misinformation. Healthcare professionals should be aware of the importance of health-related information on YouTube and strive to provide high-quality, accurate, and up-to-date content.

Keywords: ultrasound guided dry needling; YouTube; internet

Introduction

Dry needling (DN) is a specific treatment for myofascial pain syndromes wherein a needle is inserted into a painful site in the muscle called the myofascial trigger point (TrP). Ultrasound-guided dry needling (USDN) is a treatment method that has become increasingly popular in recent years and is used for various conditions such as myofascial pain syndromes, musculoskeletal disorders, and nerve compression syndromes. DN performed with ultrasound (US) guidance facilitates the direction of the needle towards the TrP and ensures that it reaches the correct point. Additionally, US imaging is used to prevent the needle from being placed in the wrong area. Furthermore, the results of needling performed with this method are better [1,2].

US is the most effective and fastest way to view the musculoskeletal system. It is possible to provide diagnostic service thanks to this portable, inexpensive equipment with real-time dynamic analysis. US offers several inherent advantages [3]. Being noninvasive, with a rapid scan time and without radiation makes it well accepted by physicians and patients. It allows contralateral examination and does not pose limitations due to metal artefacts, which can be problematic in magnetic resonance imaging. It allows evaluation by sonopalpation/auscultation by allowing the probe to be placed exactly on the position(s) specified by the patient as the painful area(s). The ability to visualize needles and target structures in real time makes it an ideal tool for the guided methods used in diagnosis and management [3-5].

In the last years, there has been an increasing use of web resources to seek medical information due to the

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Corresponding author: Mustafa Turgut Yildizgoren
Konya City Hospital, Department of Physical Medicine and Rehabilitation,
Konya, Türkiye
E mail: ftr.mustafaturgut@hotmail.com
Phone: +90 332 310 5000

easy and widespread access to the Internet [6]. Video-sharing platforms have become a significant source of visual information for health care providers. Among online resources, YouTube is one of the most popular websites, with over 1 billion users watching over 1 billion hours of video each day. There is also a high level of information posted by experts [7]. However, because YouTube does not question the credibility of video creators, information that is not appropriate (or lacks expertise) is often posted. As with many websites, the content on YouTube is not peer reviewed; therefore, registered users can, essentially, post any content they choose. As more medical professionals recognize the importance of YouTube as a source of medical information for the general public, the number of studies evaluating the quality of information found on YouTube is increasing. Due to dry needling under US guidance being a newly popular treatment method and the number of valid training courses for this practice being insufficient, there are many references to this treatment on YouTube, which is an easily accessible source of information [8,9].

This study aims to evaluate the educational quality of videos related to US guided dry needling (USDN) because an increasing number of videos addressing these procedures is now available on YouTube.

Materials and methods

This study was designed as a cross-sectional study. A video-based search was performed on the YouTube online video sharing platform (https://www.youtube.com/) using the English keywords "ultrasound guided dry needling" on May 10, 2023. The video search history was cleared before entering the keywords.

YouTube search

The most popular videos are on the first three pages, and previous researchers have shown that a significant proportion of internet users only view the first three pages of search results (20 videos per page) [10,11]. Therefore, the top 60 videos were analyzed, assuming viewers do not expand their search beyond the top three pages most of the time. For the study, 60 videos from the first three pages were listed for the "ultrasound guided dry needling" search term. Videos including injection techniques, commercial videos, videos recorded by patients, or educational videos were included in the evaluation. Duplicated videos and videos not in English were excluded. The search for videos was made based on the website's default settings in order of the proposed relevance. In case of discrepancies, the disputes were resolved by comparing the results.

Two independent physiatrists viewed and analyzed the videos. Both physiatrists were unaware of each other's evaluations.

Video features

The characteristics of the YouTube videos were recorded, including the length of each video, the number of views, likes and dislikes, the number of comments, the duration of the video, the upload date, and the number of days since upload. To evaluate the popularity of the videos, the like ratio ([likes/(likes+dislikes)]x100), view rate (number of views/days), and video power index [VPI; (like ratio x view rate/100)] were calculated and used. The profiles of the uploaders were also recorded and categorized into 7 categories: physician, non-physician health personnel, health-related websites, patients, educators, television (TV) programs, and independent users. All the videos were evaluated also according to the content in 1) injection technique, 2) information about the disease, 3) patient personal experience, 4) advertisement.

Video quality analysis

The quality assessment of the videos was performed using the Journal of the American Medical Association (JAMA) criteria and the DISCERN questionnaire score [12,13]. The JAMA scoring system is a well-known quality assessment tool that can be used to evaluate information obtained from health-related websites. It consists of four criteria (authorship, attribution, disclosure, currency), each with a possible score of 1, for a total possible score of 4. A score of four indicates the highest quality. The DISCERN questionnaire is developed to enable patients and information providers to judge the quality of information. It consists of 15 questions and a general quality rating. It has three parts, evaluating reliability (part 1), the quality of information on treatment options (part 2), and the overall quality of the information (part 3). The first part has 8 questions and the second part has 7 questions. Part 3 includes a general rating. Each question is scored on a 5-point (1-5) scale. If the quality criterion is fully met, it is scored 5, if not met at all, it is scored 1. If the criterion is partially met, it is scored between 2 and 4 according to the evaluator's opinion. The total DISCERN score is 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). Publicly available YouTube videos were analysed, and no human participants or animals were involved in the study; therefore, ethical approval is not required as in other similar YouTube studies.

Statistically analysis

SPSS (Statistical Package for Social Sciences) version 22.0 program was used for statistical analyses of the data (SPSS Inc., Chicago, IL). Descriptive statistical data

were presented as frequency (percentage), number, and mean±standard deviation (minimum-maximum). Continuous variables expressed as the mean or median were compared with the Kruskal-Wallis test. For all statistical tests, differences were considered statistically significant when $p<0.05$.

Results

The first 60 videos were analyzed, and 32 videos that met the inclusion criteria were included in the study. The study flowchart is given in Figure 1. The content of the videos mostly consisted of technical knowledge regarding Ultrasound Guided Dry Needling (USGDN) (56.3%) and information (43.84%). The source and content of the analyzed videos are presented in Table I. The total mean DISCERN score was 26.9 ± 12.0 (range 17 to 54). The total mean JAMA Score was 2.4 ± 0.7 (range 2 to 4). Mean time since upload (months), running time (seconds), views, like and dislike were respectively: 41.2 ± 32.4; 448 ± 1076; 6324.8 ± 9847.6; 54.5 ± 145.0; 0.

Table I. Characteristics and quality evaluations of YouTube

Characteristic	n (%)
Source	
Physician	6 (18.8)
Non-physician health personnel / Chiropractors / Physiotherapists	5 (15.6)
Health-related websites	21 (65.6)
Content	
Information	14 (43.8)
Technique	18 (56.3)

Table II. Descriptive data of the videos.

Video features	Mean ± SD	Min. – Max.
Run time (seconds)	448.0 ± 1076.0	5 - 5123
Time since upload (months)	41.2 ± 32.4	2 - 130
Views	6324.8 ± 9847.6	32 - 42818
Viewing rate	5.3 ± 6.2	0.03 – 23.31
Comments	2.9 ± 5.4	0 - 22
Like	54.5 ± 145.0	0 - 790
Dislike	0	0
Like ratio	100	100
VPI	173.6 ± 395.0	4.3 – 1978.1
DISCERN-reliability	16.9 ± 7.7	10 - 34
DISCERN-treatment	10.1 ± 4.5	7 - 20
DISCERN-quality	2.5 ± 0.7	2 – 4
DISCERN-total	26.9 ± 12.0	17 – 54
JAMA score	2.4 ± 0.7	2 - 5

VPI, video power index

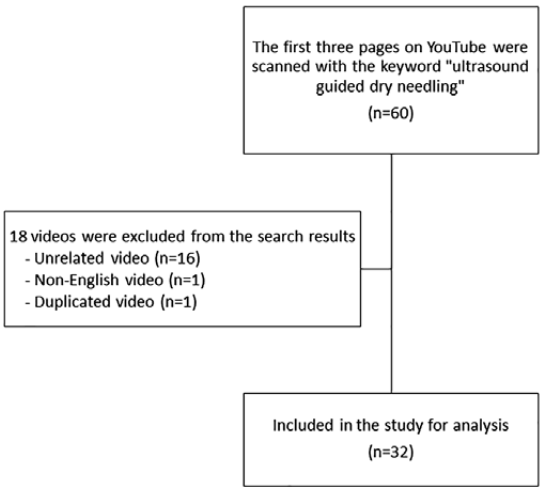


Fig 1. The study flowchart

The main characteristics of the USGDN-related analyzed videos are presented in Table II. There were no significant differences between the groups, according to the DISCERN, and JAMAs scores (all $p>0.05$) (Table III). According to the DISCERN classification, 59.4% of the videos were rated as "very poor," 18.8% as "poor," 18.8% as "fair," and 3.1% as "good." The video with the highest DISCERN score was produced on health-related websites. The video with the highest DISCERN score belonged to The American Institute of Ultrasound in Medicine (AIUM) channel. When the threshold value for the JAMA score was set as ≥3, it was observed that 28.1% of the videos met the quality criteria. Features of the DISCERN classification is given in Table IV.

Discussion

The internet has become a source of information on health for patients and their families with the advancement and widespread adoption of computing and technology in today's world.

In this study, the most commonly shared content in the videos was related to USDN, along with general information and injection techniques. Health-related websites were identified as the most frequent source of the videos (65.6%). The majority of the videos were of low quality, while the highest quality videos were shared by The American Institute of Ultrasound in Medicine (AIUM).

The most common video source was health-related websites and the videos uploaded by physicians which had the highest quality scores. According to the DISCERN ratings more than 78.2% of videos were classified as "very poor" and "poor". For JAMA score 28.1% were ≥3. Previous studies evaluating YouTube content and its quality related to various diseases have also yielded simi-

Table III. Value of the scores according to the source.

	Source			
	Physician (n=6)	**Non-physician health personnel (n=5)**	**Health-related Websites (n=21)**	**p value**
DISCERN-reliability	20.1 ± 6.9	10.8 ± 1.0	17.3 ± 8.2	0.112
DISCERN-treatment	10.0 ± 4.1	7.0 ± 0.0	10.8 ± 4.9	0.105
DISCERN-quality	2.6 ± 0.5	2.0 ± 0.0	2.5 ± 0.7	0.130
DISCERN-total	30.1 ± 10.6	17.8 ± 1.1	28.1 ± 13.0	0.111
JAMA score	2.1 ± 0.4	2.0 ± 0.0	2.5 ± 0.7	0.188

lar results to this study [14,15]. The open access nature of YouTube and the lack of a review process are believed to contribute to the low number of high-quality videos. Additionally, differences in video quality can also be attributed to variations in the sources of uploads. We found no videos classified as "excellent quality." When looking at YouTube videos, the main focus of the videos is on the effectiveness of the treatment. Generally, the safety aspect of the applied treatment is not adequately explained, possible side effects and possible complications are not mentioned, and the complexity of the anatomical structures is not considered. Encouraged by this, people try to apply these treatments and undesirable results can occur. US guidance plays an important role not only to "simply" detect trigger point, but also to "treat" it properly. For instance, the myofascial trigger point often requires multiple accurate perforations using back-and-forward movements of the needle in order to promote the drainage of extra fluids entrapped within its extracellular matrix and bound to the glycosaminoglycans. Similarly, US imaging allows real-time visual feedback of the local twitch response of the myofascial trigger point during the procedure. Receiving a local twitch response increases the effectiveness of the treatment. Such a delicate intervention requires the operator to have a variety of technical skills and a comprehensive cultural background in myofascial pain syndrome [16].

The first and only guideline study regarding the technique of dry needling under US guidance was published in 2021, according to the literature [17]. When examining the videos about USDN on YouTube, we observed that the content of these videos is inconsistent with the recommendations in medical guidelines. It can be demonstrated that the content of health-related videos can be potentially dangerous for people due to the easy accessibility of such information and the lack of regulation by any control mechanism. Therefore, clinicians should be knowledgeable about the quality and content of online health-related websites and produce video content within the framework of these quality standards.

Studies on the quality of YouTube videos have yielded different results. Uran et al reported that 5.4% of the videos on YouTube related to myofascial pain syndrome were of high quality [18]. Onder et al found that 48% of the videos on YouTube about osteoporosis were of high quality, and 8.8% of the videos on YouTube about fibromyalgia were of high quality [1920].

Table IV. Features of the DISCERN classification

DISCERN					
	Very poor	**Poor**	**Fair**	**Good**	**Excellent**
Physician	2	3	1	0	0
Non-physician health personnel	5	0	0	0	0
Health-related Websites	12	3	5	1	0

Results are presented as median (min–max). *Kruskal-Wallis test.

This study has some limitations. Being a dynamic video sharing platform with constantly updated content, YouTube represents a snapshot at a given time, making this study a cross-sectional analysis. Another limitation is that only English videos were analyzed. The study's scope is also restricted to evaluating YouTube videos, excluding other social media platforms. Additionally, the exclusion of other social media platforms and focusing solely on YouTube videos are also limitations of this study.

In **conclusion**, YouTube, is not only a popular website providing information and skills related to health but also an important source of information for USDN. There is a significant amount of content available on YouTube regarding USDN; however, unfortunately, most of the existing content is of low quality and carries the risk of misinformation. Healthcare professionals should be aware of the importance of health-related information on YouTube and strive to provide high-quality, accurate, and up-to-date content. The emphasis on the provision of evidence-based patient education materials by medical institutions also highlights the significance of actively recommending such materials.

Conflict of interest: none

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