

Assessment of YouTube Videos on Frozen Shoulder: A Quality Analysis Using DISCERN and JAMA Scoring Systems

DISCERN ve JAMA Puanlama Sistemleri Kullanılarak YouTube Videolarının Donuk Omuz Üzerine Güvenilirliğinin Değerlendirilmesi

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ABSTRACT

ABSTRACT Frozen shoulder, characterized by synovial inflammation and joint capsule fibrosis, impacts shoulder mobility and comfort. With the rise of online health information seekers, assessing the credibility of YouTube videos on frozen shoulder is crucial. This study aims to explore potential differences between physician and non-physician contributors by assessing the quality of Youtube videos using the DISCERN and JAMA scoring systems.

Methods: The first 50 YouTube videos found by searching with the word "Frozen shoulder" were examined; Short, repetitive titles and non-English content were not included in the study. Videos were categorized by content type, uploader, and key metrics of the videos were recorded. Two observers independently scored the videos using DISCERN and JAMA systems. Statistical analysis was performed, including Mann-Whitney tests and Spearman correlation..

Results: While 45 of the 50 videos contained real images, 5 were animations. Physiotherapists were the most contributing group (40%), and 60% of the videos contained general information about frozen shoulder. Considering the average DISCERN and JAMA scores, videos were mostly rated poor in quality. No statistically significant differences were found between the videos uploaded by physicians and non-physicians. Observer agreement was excellent.

Conclusion: Internet users searching for information about frozen shoulder face difficulties in distinguishing reliable content. Healthcare professionals should share videos with accurate information and direct patients to reliable online resources.

Key Words: frozen shoulder, adhesive capsulitis, patient education, information, youtube

ÖZ

Amaç: Donuk omuz, sinoviyal iltihap ve eklem kapsül fibrozisinden kaynaklandığı düşünülen, omuz hareketini ve konforunu etkileyen bir durumdur. İnternet üzerinde sağlık bilgisi arayanların sayısının artmasıyla birlikte, YouTube videolarının donuk omuz üzerine güvenilirliğinin değerlendirilmesi önemli bir durum olmuştur. Bu çalışma, DISCERN ve JAMA puanlama sistemlerini kullanarak Youtube videolarının kalitesini değerlendirerek, doktor ve doktor olmayan katkı sahipleri arasındaki potansiyel farkları keşfetmeyi amaçlamaktadır.

Yöntem: "Frozen shoulder" kelimesi ile arama yapılarak bulunan ilk 50 YouTube videosu incelendi; kısa, tekrarlayan başlıklar ve İngilizce olmayan içerikler çalışmaya dahil edilmedi. Videolar içerik türüne, yükleyiciye göre kategorize edildi ve videoların temel özellikleri kaydedildi. İki gözlemci, videoları DISCERN ve JAMA sistemleri kullanarak bağımsız olarak puanladı. Mann-Whitney testleri ve Spearman korelasyonu da dahil olmak üzere istatistiksel analiz yapıldı.

Bulgular: 50 videonun 45'i gerçek görüntüler içerirken, 5'i animasyondur. Fizyoterapistler en çok katkı sağlayan gruptu (%40), ve videoların %60'ı donuk omuzla ilgili genel bilgiler içermekteydi. Ortalama DISCERN ve JAMA puanları dikkate alındığında, videolar çoğunlukla kalite açısından zayıf olarak değerlendirildi. Doktor ve doktor olmayan kullanıcıların yükledikleri videolar arasında istatistiksel olarak anlamlı farklar bulunamadı. Videoları değerlendiren gözlemciler arasındaki ilişki mükemmeldi.

Sonuç: Donuk omuz hakkında bilgi arayan internet kullanıcıları, güvenilir içeriği ayırt etme konusunda zorluklarla karşılaşmaktadır. Sağlık profesyonelleri doğru bilgiler içeren videoları paylaşmalı ve hastaları güvenilir çevrimiçi kaynaklara yönlendirmelidir.

Anahtar Kelimeler: Donuk omuz, adeziv kapsülit, hasta eğitimi, bilgi, Youtube

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Introduction

A frozen shoulder is thought to result from synovial inflammation and subsequent joint capsule fibrosis. It is characterized by discomfort and should decline the ability to move the shoulder [1]. The exact incidence and prevalence of frozen shoulder are not established; however, multiple authors have reported a general occurrence of 2-5% in the population, primarily affecting individuals aged between 40 and 60, with a higher prevalence in women. [2]. Long-term shoulder immobilization due to trauma and surgery, along with systemic diseases like diabetes, hyperthyroidism, hypothyroidism, cardiovascular disease, or Parkinson's disease, elevates the risk for certain patients [3]. Patients complain of limited movement on the affected side, pain and inability to sleep when a load is placed on the same side [4].

Engaging in online searches for health-related information has become commonplace among individuals. Findings from studies indicate that a substantial percentage, up to 79%, of Internet users in the United States are involved in researching health-related information [5]. Patients turn to the internet to learn more about medical conditions, medications, and treatments. Low-quality and untrustworthy information can be found in medical information sources on the general Internet and online social networks [6].

When reviewing the literature, it is concluded that the reliability of Youtube content on health-related topics needs to be questioned in many aspects. Frozen shoulder, which presents with sinovial inflammation and joint capsule fibrosis, reducing joint range of motion and affecting patient comfort, is an important condition encountered in Orthopedics and Traumatology practice. The approach of doctors and other healthcare professionals to frozen shoulder varies. When looking at videos on this topic on Youtube, it is possible to come across numerous contents uploaded by experts in various fields or individual accounts. However, the issue of patients accessing accurate and reliable information through Youtube content is debatable. This study aims to assess the credibility of videos posted on the YouTube sharing platform by evaluating Frozen Shoulder disease according to

the Discern and Jama scoring system.

Materials and Methods

A search for "Frozen shoulder" was initiated by entering the term into the YouTube search bar (YouTube, www.youtube.com YouTube LLC, San Bruno, CA, USA) at 25/11/2023. The first 50 videos whose titles have the term "frozen shoulder" were evaluated. Exclusion criteria involved videos shorter than 30 seconds, repetitive content, advertisements, and those presented in languages other than English. The study's approach systematically categorizes videos into subgroups, considering factors like the type of image, uploaders, and content categories such as general information, non-surgical treatment, exercise training, and massage. Uploaders were categorized as physicians, chiropractors, physical therapists, and health and hospital channels. Important metrics were recorded, such as the number of views, the date of upload, the number of comments, the number of likes, the number of dislikes, and the duration of each video. The formula used to calculate the Video Power Index (VPI) values—which represent the popularity of the videos—was $[(\text{like count}/\text{dislike count} + \text{like count}) \times 100]$ [7].

The DISCERN tool, designed by employees of Oxford University and the British Library, is valuable for assessing the quality of health-related videos on YouTube. The DISCERN tool utilizes a 5-point scale for scoring each of its 15 questions, contributing to total scores ranging from 15 to 75 points, indicating the information's quality. DISCERN's questions have two sections. The DISCERN tool is structured with its first section (questions 1-8) focused on assessing the publication's reliability. The second section of the DISCERN tool, comprising questions 9 to 15, assesses the treatment options' relevance. The classification system for DISCERN scores is as follows: scores between 63 and 75 points are labeled as 'excellent', 51 to 62 as 'good', 39 to 50 as 'average', 28 to 38 as 'poor', and scores below 28 are considered 'very poor'. A higher score indicates a higher quality of information [8] (Table 1). The JAMA scoring system is a scale that includes four criteria—Authorship, Attribution, Disclosure, and Currency—assigning 1 point to

each, summing up to 4 points [9] (Table 2).

Table 1: Discern Scoring System

Section	Questions	No	Partly			Yes
Reliability of the publication	1.Explicit aims	1	2	3	4	5
	2.Aims achieved	1	2	3	4	5
	3.Relevance to patients	1	2	3	4	5
	4.Source of information	1	2	3	4	5
	5.Currency(data) of information	1	2	3	4	5
	6.Bias and balance	1	2	3	4	5
	7.Additional sources of information	1	2	3	4	5
	8.Reference to areas of uncertainty	1	2	3	4	5
Quality of information on treatment choices	9.How treatment works	1	2	3	4	5
	10.Benefits of treatment	1	2	3	4	5
	11.Risk of treatment	1	2	3	4	5
	12.No treatment options	1	2	3	4	5
	13.Quality of life	1	2	3	4	5
	14.Other treatment options	1	2	3	4	5
	15.Shared decision making	1	2	3	4	5

Table 2: Jama Scoring System

Jama Scoring System		Rating	
Section		Yes	No
Authorship	Authors and contributors, their affiliations, and relevant credentials should be provided	1	0
Attribution	References and sources for all content should be listed clearly, and all relevant copyright information should be noted	1	0
Disclosure	Website "ownership" should be prominently and fully disclosed, as should any sponsorship, advertising, underwriting, commercial funding arrangements or support, or potential conflicts of interest	1	0
Currency	Dates when content was posted and updated should be indicated	1	0

To determine the mean Daily view count, the total view count recorded by observers during video evaluation was divided by the days between the viewing date and the video's upload date on YouTube. The same group of observers watched

each video simultaneously, independently recording the scores for JAMA (Journal of the American Medical Association) and DISCERN (Quality Criteria for Consumer Health Information). An average score was then calculated. (First observer's DISCERN score + second observer's DISCERN score) / 2 is the mean DISCERN score. The mean JAMA score equals the sum of the first and second observer's scores divided by two.

Approval for the study was granted by the Institutional Ethics Committee (decision no: B.30.2.ODM.0.20.08/447 dated:23.06.2022). The authors read the Helsinki Declaration and approved ethical obligations for the study.

Statistical Analysis

The study data underwent analysis using the SPSS 26.0 statistical package program, and results were expressed in numbers, percentages, mean \pm standard deviation, median, minimum, and maximum values. Based on the normality test results, the Mann-Whitney non-parametric test was used to compare the mean DISCERN and JAMA scores between the physicians and non-physicians. The association between DISCERN and JAMA scores was evaluated using Spearman correlation analysis, which classified correlation coefficients as weak (r : 0-0.24), moderate (r : 0.25-0.49), strong (r : 0.50-0.74), and very strong (r : 0.75-1.0). Interobserver agreement was evaluated with Cronbach's α , where values <0.5 were deemed unacceptable, $0.5 \leq \alpha < 0.6$ as poor, $0.6 \leq \alpha < 0.7$ as acceptable, and $0.7 \leq \alpha < 0.9$ as excellent. Statistically significant differences were determined at $p < 0.05$.

Results

45 of 50 videos contained real images, and 5 videos were in animation form. The number of videos shared by a physician amounted to 8, whereas those shared by a physical therapist totaled 20. When video contents were analyzed, 30 videos were about general information (60%), and 12 videos were about exercise training (24%) (Table 3) (Figure 1).

Among the shared videos, the most extended video was 32 minutes and 44 seconds, while the shortest video was 30 seconds. The video

with the highest number of clicks was viewed 1,890,000 times, and the duration of the video was 25 minutes and 38 seconds. Looking at the date of sharing, the most recent post is from 1 month ago, and the oldest post was made in 2014. Video lengths, views, time since uploading, daily views, comments, likes, dislikes, and Video Power Index (VPI) values are all listed in Table 4. The distribution of video features by uploaders is displayed in Table 5.

Table 3: General features of the videos

General features of the videos		
	n	%
Image type		
Real	45	90.0
Animation	5	10.0
Uploaders		
Physician	8	16.0
Health channel	7	14.0
Chiropractor	5	10.0
Physical therapist	20	40.0
Fitness coach	3	6.0
Hospital channel	7	14.0
Video content		
General information	30	60.0
Non-Surgical treatment	3	6.0
Exercise training	12	24.0
Massage	5	10.0

Table 4: Parameters of videos

Variables	Mean±Standard Deviation	Median (Minimum-Maximum)
Video length (minutes)	7.18±7.32	4.40(0.3-32.44)
View count	260280±405298	66223(1906-1890000)
Time since video upload(days)	1268±842	1116(31-3297)
View count (daily)	15745±75772	143.94(2.66-433256)
Comment count	180±346	61.5(0-2186)
Like count	4372±6459	1741(16-34585)
Dislike count	178±379	31.5(0-2300)
VPI (Video Power Index) (%)	95±5	97.04(79.07-100)

The potential differences between the physicians and non-physicians were evaluated by analyzing the values of the DISCERN, JAMA, and Video Power Index (VPI) assigned by the observers.

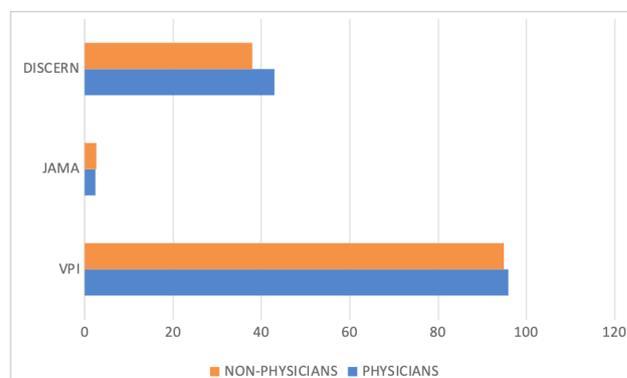
There was no statistically significant difference found between the two groups for the average VPI, JAMA, and DISCERN values for videos that a doctor shared ($p > 0.05$).

Table 5: Distribution of the video features according to the uploaders

	Number of videos	Video Length (minutes)	Mean		
			Like	Dislike	Comment
Physician	8	7.74 ±2.89	3040 ±1494	33 ±15	83 ±29
Physical Therapist	20	2.05 ±0.48	978 ±758	89 ±66	51 ±42
Fitness Coach	3	1.61	4747 ±1289	156 ±60	202 ±53
Health Channel	7	11.24 ±3.90	5677 ±4827	127 ±95	321 ±310
Hospital Channel	7	4.91±3.66	8159 ±2273	401 ±99	204 ±88
Chiropractor	5	8.95±2.25	5654 ±2157	557 ±441	220±109

Upon examination of DISCERN scores using Spearman correlation analysis, a highly robust and statistically significant correlation was observed ($r: 0.921, p < 0.001$), indicating excellent agreement between the two observers (Cronbach $\alpha = 0.998$). Similarly, the Spearman correlation analysis for JAMA scores revealed a strong and statistically significant correlation ($r: 0.493, p < 0.001$), with an excellent level of agreement between the two observers (Cronbach $\alpha = 0.938$). Both DISCERN and JAMA scores demonstrated high consistency and agreement between the evaluators.

Table 6: Comparison of DISCERN, JAMA and VPI values in non-physicians and physicians groups



The initial observer assigned a DISCERN score of 44.25±3.77 to the videos, while the second observer scored 43.50±3.56. Regarding JAMA scores, the

first observer awarded a score of 3 ± 0.18 , whereas the second observer's assessment yielded a score of 2.37 ± 0.32 . By looking at the mean DISCERN scores by two observers, it was discovered that the quality of the videos was very poor in 6% (n=3), poor in 46% (n=23), average in 32% (n=16), and good in 16% (n=8) (Figure 2).

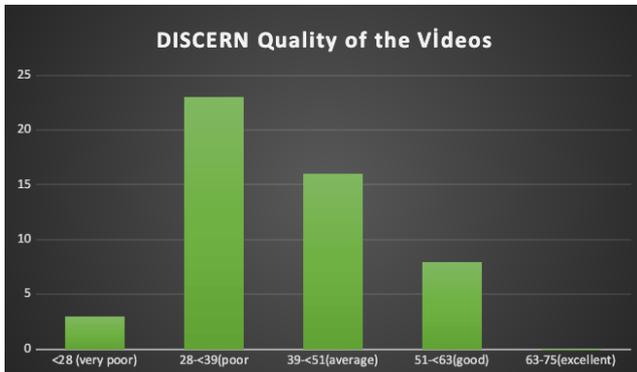


Figure 1: Distribution of the video publishers

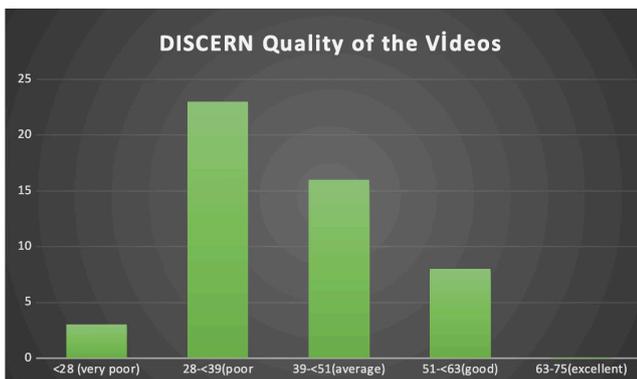


Figure 2: Distribution of quality of the videos according to the DISCERN scoring system

Discussion

This study highlights the challenge patients encounter in distinguishing between reliable and potentially misleading medical information on YouTube, particularly regarding frozen shoulder conditions. Frozen shoulders are a common problem in general orthopedic practice. Frozen shoulders affect 2.4 out of every 1000 person-years, or 2% of the general population [10]. When the patient has severe shoulder pain, which has been present for over a month, and stiffness of the shoulder joint, we could suspect a frozen shoulder [11]. Operative intervention, such as manipulation under anesthesia or arthroscopic capsular release, could be required in a small group of patients [12].

As of October 2023, there were 5.3 billion active internet users worldwide, which amounted to 65.7 percent of the global population, and 4.95 billion of these people were social media users [13]. Numerous patients—mostly younger men—use the Internet to look up orthopedic information in bulk. According to Burrus et al.'s research, 64.7% of patients who had access to the Internet did so specifically to look up orthopedic information [14]. The most popular website on the internet for finding information with videos is YouTube. Nonetheless, there has been discussion in the literature regarding the validity and accuracy of the health-related information found online [15]. The orthopedic videos available on YouTube often don't need an editorial process, contributing to concerns about the information's reliability. Therefore, the accessibility of reliable and accurate information about their medical conditions remains limited for Internet users. Understanding and evaluating YouTube resources is paramount for orthopedic surgeons, as it equips them with the necessary information to educate and assist patients in navigating the complexities of their disease management.

Among the 50 videos analyzed in our study, a notable 10% (n=5) were animated, while the majority, constituting 90% (n=45), featured real images. The animated videos were sourced from various contributors, including a physician (n=1), physical therapists (n=3), and a health channel (n=1). Non-physician contributors uploaded most videos under examination (n=42, 84%). The distribution of the 50 videos revealed that physical therapists were the most frequent contributors, sharing 40% of the content, followed by health channels (14%), hospital channels (14%), chiropractors (10%), and fitness coaches (6%). Physicians uploaded eight videos. In a separate study focussing on rotator cuff tears and involving 50 videos, 72% were shared by non-physicians, highlighting the substantial influence of non-medical sources in the dissemination of this specific orthopedic condition. Additionally, 16% of the videos were animated, with health channels being a common source for such animations [7]. Consistent with the literature, the mean video length in this study was identified as 7.18 minutes, aligning with the range observed in earlier research, where mean video durations were reported to fall between 6.59

and 7.56 minutes. [7,16].

Diverse scoring systems, as highlighted in the literature, serve the purpose of evaluating the quality and accuracy of online videos (17). The DISCERN and JAMA scoring systems, commonly featured in the literature, were chosen for our study to maintain comparability with established research practices in evaluating video content. The mean Video Power Index was $95 \pm 5\%$. The quality of the videos was mainly in the 'poor' category. The values for the Video Power Index (VPI), JAMA, and DISCERN that observers assigned were compared between the physician and non-physician groups to evaluate any potential variations. The average DISCERN, JAMA, and VPI values in the videos that a doctor shared did not show a statistically significant difference between the two groups ($p > 0.05$). Previous studies have demonstrated a disparity, highlighting that medical information shared by physicians tends to be superior to that provided by non-physicians [18]. This comparison raises the possibility that doctors' videos aren't of high enough quality.

The most common video content was about general information ($n=30$, 60%). Of the 50 videos evaluated, 3 (6%) included non-surgical treatment, 12 (24%) included exercise training, and 5 (10%) were about massage. In another study about rotator cuff tears, non-surgical information was featured in the content of forty-three of the evaluated videos [7]. This result may be thought to the patients who want to understand the definition of a frozen shoulder and which situations indicate a frozen shoulder. Health professionals should upload accurate and reliable videos and show the correct sources of the information. This way, patients can find the correct way on social media platforms.

This study has some limitations. Initially, our evaluation was limited to the first 50 videos with titles containing 'frozen shoulder', preventing us from analyzing the entirety of Youtube videos on this subject. Another limiting factor of the study is that it only focused on videos on the YouTube platform, more detailed studies covering video content on Google can be planned. We could not evaluate the association between comments, like count, dislike counts, and the video's length, view

count, and quality. DISCERN and JAMA scoring systems, which were common in the literature, were used to evaluate the quality of the videos.

Conclusion

This study highlights patients' difficulty distinguishing between trustworthy and potentially misleading medical information on YouTube, particularly regarding frozen shoulders. Significantly, the patients want to know the frozen shoulder clinic features. We believe that social media platforms become much more important to patients' behavior about health, and health professionals should use the Internet to guide patients to accurate medical information. Further studies about orthopedics and other medical fields will contribute to the quality and reliability of health-related video content.

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