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Quality and content analysis of tarsal tunnel syndrome videos on YouTube

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ABSTRACT

Aims: In this study, we aimed to evaluate the quality and reliability of the first 50 videos on YouTube, which is a reliable source for sharing medical information, about tarsal tunnel syndrome (TTS), which is difficult to diagnose with low prevalence and which prompts patients to look for information.

Methods: To evaluate the first 50 TTS videos on YouTube, the source, upload date, number of views, and like-dislike parameters were selected for analysis. The content was assessed following the Journal of the American Medical Association (JAMA) criteria, the Global Quality Score (GQS), and the DISCERN scale.

Results: In the parameters used in the quality and relevance analysis of the videos, the GQS mean score was 3.70, the JAMA mean score was 1.12, and the DISCERN mean score was 45.82. There was no significant relation between the number of views, the days since the video was uploaded to the internet until the review, the number of likes and dislikes, the like rates, the video power index, JAMA, DISCERN, and GQS. There was a positive correlation between GQS, JAMA, and DISCERN.

Conclusion: This study revealed that the quality, content, and reliability of available videos in the tarsal tunnel are moderate. We have emphasized the importance of improving the content and quality of the videos so that patients can access more beneficial information.

Keywords: Tarsal tunnel syndrome, YouTube, GQS, JAMA, DISCERN

INTRODUCTION

The internet is now people's first source of information because of the quick advancement of technology, the ease of access to devices like computers, tablets, and phones, the extensive usage of the internet, and the length of time people spend on social media. YouTube, a platform comprised entirely of videos, has more than 2.6 billion active users every month. More than a quarter of the world's population uses YouTube at least once a month.[1] YouTube is also one of the first online resources that patients turn to for information about their condition.[2]

The tarsal tunnel is a narrow fibro-osseous area that lies behind and below the medial malleolus. It is bounded anteriorly by the medial malleolus and laterally by the posterior talus and calcaneus. It is anchored to the bone by the flexor retinaculum, which extends from the medial malleolus to the medial calcaneus and prevents medial displacement of its contents.[3] Tarsal tunnel syndrome (TTS) is a compressive peripheral neuropathy of the posterior tibial nerve and its branches within the tarsal tunnel below the flexor retinaculum.[4] TTS is much rarer than other entrapment neuropathies.[5] It can be observed idiopathically or due to thickening of the retinaculum, hematoma, or iatrogenic nerve damage; tendinopathy or tenosynovitis; the presence of multiple muscles such as the accessory soleus, peroneocalcaneus internus, or accessory flexor digitorum muscle; bone or joint disorders; or due to secondary reasons such as tumors or cysts, venous aneurysm, or twisting of the tibial artery.[6] The diagnosis of TTS is difficult to make, the Tinel's test can be performed even though it has low specificity, direct radiographs can be used to exclude bone pathologies, and ultrasonography or magnetic resonance imaging can be used because the tarsal tunnel is superficial.[7,8] Conservative treatments such as reduced activity, ice pack application, physical therapy such as ultrasound or iontophoresis, neuromodulatory and anti-inflammatory drugs, corticosteroid injections and orthosis, and surgical treatments can be applied.[8]

As it is not a common disease and there are some challenges in diagnosis, patients may have to search online for their complaints more often. This study aimed to reveal the adequacy and quality of videos about the tarsal tunnel on the YouTube social media platform, which has not been previously done.

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METHODS

The study was approved by the Niğde Ömer Halisdemir University Clinical Researches Ethics Committee (Date: 07.03.2024, Decision No: 2024/04-22). All production was carried out in accordance with the ethical rules and principles of the Declaration of Helsinki.

As of January 7, 2023, we included the first 50 videos most relevant to tarsal tunnel syndrome by typing "tarsal tunnel syndrome" into the YouTube search engine, on the condition that the video is in English. The first 50 most relevant videos were picked without applying any filters when searching for videos. Given the general characteristics of the videos and their reflection of users' viewing tendencies, the top 50 videos were deemed sufficient for the purposes of this study. We did not include if videos had promotional content, if the same video was reposted on a different link, if the same video was shortened, and if the video was not in English. The videos included in the study were independently viewed and evaluated separately by a neurologist (DI) and an orthopedist (MA).

The length of the videos included in the study, upload dates, number of likes and dislikes, sources of uploading to social media, number of views, content, and whether the production method included animation were recorded. The sources that posted the video on social media were categorized as doctors, physiotherapists, and podologists. Video content was categorized into surgical techniques and approaches, condition-specific information, diagnostic testing, exercise education, commercial product education, patients' symptoms, patient experience, and surgical, and non-surgical treatments and imaging videos. The DISCERN scale, Global Quality Score (GQS), and Journal of American Medical Association (JAMA) Score were used to assess the relevance and quality of the videos. The video power index was used to assess the popularity of the videos.

Journal of the American Medical Association (JAMA)

The JAMA Score, which is used to assess the reliability and accuracy of basic medical information on websites, mainly consists of four criteria. As shown in Table 1, authorship, attribution, disclosure, and currency criteria are evaluated between 0 and 4 points, with 1 point for each.

Global Quality Score (GQS)

As shown in Table 2, the Global Quality Scoring System assigns a score between 1 and 4 to the factors that include the adequacy of the information in the video content, general information flow, accessibility of information, and the patient utility level. The higher the score, the higher the quality.

Table 2. Global Quality Score[10]

Score	Global Quality Score
1	Poor quality, poor flow of the site, most information missing, not at all useful for patients
2	Generally poor quality and poor flow, some information is listed, but many important topics are missing of very limited use to patients
3	Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients
4	Good quality and generally good flow, most of the relevant information is listed, but some topics are not covered, useful for patients
5	Excellent quality and excellent flow, very useful for patients

DISCERN

The DISCERN scoring system, consisting of a total of 15 questions, assesses the reliability and relevance of the video and the quality of the treatment options. The first 8 questions assess the reliability of the video, the next 6 questions assess the details of the treatment options; and question 15 assesses the overall quality of the video, as shown in Table 3. Each question is scored between 1 and 5. A score of 63-75 is excellent, 51-62 is good, 39-50 is fair, 27-38 is poor, and 16-26 is very poor.

Statistical analysis

Descriptive statistics related to the data obtained from the research are presented as mean and standard deviation for numerical variables and frequency and percentage analysis for categorical variables. The normal distribution test of GQS, JAMA, and DISCERN scores was performed with Kolmogorov-Smirnov and Shapiro-Wilk tests. The data were not compatible with the normal distribution ($p < 0.05$). Spearman correlation analysis was employed to examine the relation between numerical variables. In addition, the Mann-Whitney U test was employed for categorical variables with two groups, and the Kruskal-Wallis test was employed for categorical variables with three or more groups in the analysis of GQS, JAMA, and DISCERN scores according to categorical variables. We used the Statistical Package for Social Sciences version 26.0 (IBM Corp.; Armonk, NY, USA) software for the statistical analysis, which was done at 95% so that a confidence interval of 0.05% was obtained.

Table 1. Journal of the American Medical Association criteria[9]

Description	Criterion
Author and contributor credentials and their affiliations should be provided	Authorship
All copyright information should be clearly listed, and references and sources for content should be stated	Attribution
The initial date of posted content and dates of subsequent updates to content should be provided	Currency
Conflicts of interest, funding, sponsorship, advertising, support, and video ownership should be fully disclosed	Disclosure

Table 3. DISCERN Scoring[11]	
Section 1-Is the publication reliable?	**Section 2-How good is the quality of the information?**
1.Are the aims clear?	9. Does it describe how each treatment works?
2.Does it achieve its aims?	10. Does it describe the benefits of each treatment?
3. Is it relevant?	11. Does it describe the risks of each treatment?
4. Is it clear what sources of information were used to compile the publication?	12. Does it describe what would happen if no treatment was used?
5. Is it clear what sources of information are used in the publication?	13. Does it describe how the treatment choices affect the overall quality of life?
6. Is it balanced and unbiased?	14. Is it clear that there may be more than one possible treatment choice?
7. Does it provide details of additional sources of support and information?	15. Does it provide support for shared decision-making?
8. Does it refer to areas of uncertainty?	**Section 3-Overall rating of the publication?**
	15. Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices

RESULTS

The average length of the 50 videos included in the study was 362.12 (min 15, max 1415) seconds. As shown in Table 4, When analyzing the number of views of the videos, it was found that the least-watched video received 156 views, while the most-watched video received 258150 views, and the average number of views was 37570.96. When the videos were analyzed according to the number of likes, it was found that the average number of likes was 500.06 (min 0, max 8200). When the number of dislikes was analyzed, it was found that the average number of dislikes was 43.65 (min. 0, max. 1600). The video with the most likes was also the one with the most dislikes. The average number of days since the videos were uploaded to the internet until the study date was calculated as 1758.38 (min 52, max 4794) days. The like ratio of the videos was evaluated at 145.51 likes. When the videos were evaluated in terms of video power index, the highest video power index was calculated as 8883.70, the lowest as 0.04, and the average as 240.90. When the videos were analyzed in terms of viewership, it was found that the average viewership rate was 50.82. While 15 (30%) of the videos had animation, 35 (70%) of the videos did not.

Table 4. General features of videos			
	Minimum	**Maximum**	**Mean**
Length(s)	15	1415	362.12
Number of views	156	258150	37570.96
Number of likes	0	8200	500.06
Dislikes	0	1600	43.65
Number of days since the upload	52	4794	1758.38
Like rate	100	1700	145.51
View rate	0.04	1190.7	50.82
Video power index	0.04	8883.70	240.9

Upon analysis of the video providers, it was found that 19 (38%) of the videos were uploaded by doctors, 14 (28%) by physiotherapists, 12 (24%) by podiatrists, and 5 (10%) by unidentified individuals. When the contents of the evaluated videos were analyzed, it was found that 31 (62%) videos contained information on symptoms, 29 (58%) videos on non-surgical treatment, 5 (10%) videos on surgical techniques and approaches, 37 (74%) videos on condition-specific information, 12 (24%) videos on exercise training, 15 (30%) videos on diagnostic tests, and 7 (14%) videos on imaging.

The mean scores of the parameters, GQS, JAMA, and DISCERN, used in the quality and relevance analysis of the videos were 3.70±0.91, 1.12±0.85, and 45.82±14.55, respectively. Only 3 videos were rated excellent in the GQS assessment with a score of 5.

There is no statistically significant relation between the number of views, the number of days since the videos were uploaded to the internet, the number of views, the number of likes and dislikes, liking rates, and the video power index, and JAMA, DISCERN, and GQS. There is a statistically significant correlation between JAMA (r=.31, p<.05), DISCERN (r=.67, p<.01), GQS (r=.55, p<.01) and video duration.

There was no difference between GQS, JAMA, and DISCERN scores when videos were uploaded by healthcare professionals (physicians and physiotherapists) or others (podiatrists and unidentified individuals).

A statistically significant positive relation and a moderate correlation were found between GQS and JAMA (r=.42, p<.01). A statistically significant, positive relation and a very high correlation were found between GQS and DISCERN (r=.73, p<.01). A statistically significant, positive relation and a moderate correlation were found between JAMA and DISCERN (r=.44, p<.01).

When we compared the top five most watched videos with other videos, GQS and DISCERN were higher in the top five videos, while JAMA was lower, as shown in Figure 1. The common feature of the first five videos with the highest video power index was the mention of non-surgical treatment methods.

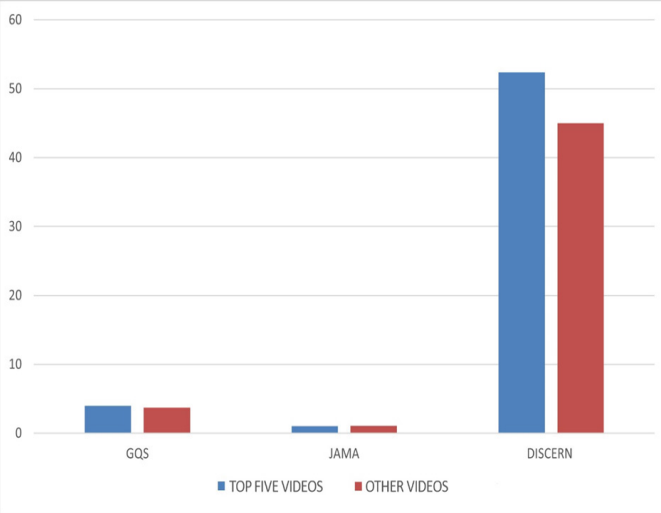

Figure. Comparison of GQS, JAMA, and DISCERN values of the top five videos with the highest views and other videos

DISCUSSION

This study aimed to monitor and analyze the top 50 most relevant videos uploaded on YouTube about tarsal tunnel syndrome, which people frequently use to seek answers to their health questions, and to evaluate these videos in terms of adequacy, quality, and relevance. Of the parameters used in the quality and relevance analysis of the videos, GQS was determined to be of medium quality, the JAMA mean score was low, and the DISCERN scale was medium. GQS, JAMA, and DISCERN values were correlated.

The DISCERN, JAMA, and GQS parameters used to evaluate the videos in different aspects such as content, relevance to treatment, quality, accuracy, and reliability were moderate, low, and medium, respectively. In a study on carpal tunnel syndrome (CTS), which is also an entrapment neuropathy, the videos were inadequate and of low quality according to the DISCERN scale and GQS, and in a study on cubital tunnel syndrome, the videos were found to be inadequate and poor.[12,13] DISCERN and GQS were higher in TTS videos compared to the study on CTS, while JAMA was lower [12]. In the cubital tunnel syndrome study, videos were inadequate and poor, while TTS videos were of medium adequacy.[13] Özdemir et al.[14] found that videos uploaded by medical professionals were of higher quality. Health professionals also upload TTS videos, which may be related to their high GQS and DISCERN scores.

In previous medical YouTube video studies, no statistically significant relation was detected between JAMA, DISCERN, and GQS and the average number of views, number of likes, like rates, and video power index of all videos, and no relation was found in our study.[12,15]

While the average number of views of carpal tunnel videos was 150977.4 in the Mert et al.[12] study, it was 37570.96 in our study. This could indicate a lower prevalence and awareness of the disease. We were unable to locate any studies examining the quality of anterior interosseus syndrome videos on social media, a condition with a lower prevalence than TTS.

The average GQS, JAMA and DISCERN values of the first five videos were above average; the number of views and likes was also above average, and the number of dislikes was similar to the average. Four of the first five videos were uploaded by physiotherapists, while one was uploaded by a doctor. The common feature of all five videos was that they described the disease, and four of them helped with diagnosis.

When the literature was reviewed, a correlation was found between video uploaders and video quality in Singh et al.'s[16] study on rheumatoid arthritis, but not in Mert et al.'s[12] study on CTS. In our study, no correlation was found between video quality and videos uploaded by doctors, physiotherapists, or podologists.

In a study of 60 videos by Goyal et al.,[17] 47 videos had at least one statement that could reinforce common misconceptions about CTS, while our study did not find such a thing. We attributed this to the fact that the videos were uploaded by professionals.

As stated by Özdemir et al.[14] in their study, surgical treatments were shown in some videos in our study, but there was no information about obtaining permission from the patient or compliance with the 1964 Declaration of Helsinki or other similar ethical standards. The need to pay more attention to ethical issues can be brought to the attention of the relevant platform.

Most of the information in the videos that were a part of our study came from uncited sources. Although videos mention treatment options, there are very few videos on treatment outcomes and quality of life. This can reduce motivation for treatment, even if people access the videos. In a study conducted by Underhill et al.[18] in Canada, it was found that more than one-third of those who applied to the hospital for health problems discussed the information they came across during their internet searches with their doctors. The scarcity of videos about the side effects of treatments and which treatment is best for whom may increase the likelihood of refusing the treatment recommended by the doctor.

Limitations

Our study's limitations include the possibility that the video content and order would have changed by the time it was published, the exclusion of non-English language videos, and the fact that the operation videos were viewed by a non-surgical doctor.

CONCLUSION

Since no similar study on tarsal tunnel syndrome videos has previously been conducted, this study is valuable in terms of contributing to the improvement of the reliability and quality of these videos as a source of information. Although scientific publications or manuals are used primarily for education in the medical field, YouTube is also used as a source of information for people who are not healthcare professionals. The absence of quality and content control mechanisms on YouTube could potentially mislead and poorly inform patients, as well as violate ethical principles. More specialized

platforms or control mechanisms for health videos need to be developed.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the Niğde Ömer Halisdemir University Ethics Committee (Date: 07.03.2024, Decision No: 2024/04-22).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. https://www.globalmediainsight.com/blog/youtube-users-statistics/#:~:text=Monthly%20Active%20Users%20on%20YouTube, Monthly%20active%20users&text=YouTube%20has%20more%20than%202.6,world%20have%20access%20to%20YouTube
2. Kunze KN, Krivicich LM, Verma NN, et al. Quality of online video resources concerning patient education for the meniscus: a YouTube-based quality-control study. *J Arthroscop Related Surg.* 2020;36(1):p.233-238. doi:10.1016/j.arthro.2019.07.033
3. Kiel J, Kaiser K. Tarsal tunnel syndrome. Treasure Island (FL): StatPearls Publishing; 2024 Jan.
4. Hong CH, Lee HS, Lee WS, et al. Tarsal tunnel syndrome caused by posterior facet talocalcaneal coalition: a case report. *Medicine.* 2020;99(26):e20893. doi:10.1097/MD.0000000000020893
5. Khedr EM, Fawi G, Abbas MAA, et al. Prevalence of common types of compression neuropathies in Qena Governorate/Egypt: a population-based survey. *Neuroepidemiology.* 2016;46(4):253-260. doi:10.1159/000444641
6. de Souza Reis Soares O, Duarte ML, Brasseur JL. Tarsal tunnel syndrome: an ultrasound pictorial review. *J Ultrasound Med.* 2022;41(5):p.1247-1272. doi:10.1002/jum.15793
7. Hong CH, Lee YK, Won SH, et al. Tarsal tunnel syndrome caused by an uncommon ossicle of the talus: a case report. *Medicine.* 2018;97(25):e11008. doi:10.1097/MD.0000000000011008
8. Samarawickrama D, Therimadasamy AK, Chan YC, et al. Nerve ultrasound in electrophysiologically verified tarsal tunnel syndrome. *Muscle Nerve.* 2016;53(6):p.906-912. https://doi.org/10.1002/mus.24963. doi:10.1002/mus.24963
9. Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the internet: caveant lector et viewor-let the reader and viewer beware. *Jama.* 1997;277(15):p.1244-1245.
10. Erdem MN, Karaca S. Evaluating the accuracy and quality of the information in kyphosis videos shared on YouTube. *Spine.* 2018;43(22):p.E1334-E1339. doi:10.1097/BRS. 0000000000002691
11. Charnock D, Shepperd S, Needham G, et al. DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. *J Epidemiol Community Health.* 1999;53(2):p.105-111. doi:10.1136/jech.53.2.105
12. Mert A, Bozgeyik B. Quality and content analysis of carpal tunnel videos on YouTube. *Indian J Orthop.* 2022;56(1):p.73-78. doi:10.1007/s43465-021-00430-5
13. Lama CJ, Hartnett DA, Donnelly JC, et al. YouTube as a source of patient information for cubital tunnel syndrome: an analysis of video reliability, quality, and content. *HAND.* 2023;15589447231151428. doi:10.1177/15589447231151428
14. Özdemir O, Diren F, Boyalı O, et al. Metric evaluation of reliability and transparency of the videos about carpal tunnel syndrome surgery in the online platforms: assessment of YouTube videos' content. *Neurospine.* 2021;18(2):p.363. doi:10.14245/ns.2142030.015
15. Sampson M, Cumber J, Li C, et al. A systematic review of methods for studying consumer health YouTube videos, with implications for systematic reviews. *Peer J.* 2013;1:e147. doi:10.7717/peerj.147
16. Singh AG, Singh S, Singh PP. YouTube for information on rheumatoid arthritis-a wake-up call? *J Rheumatol.* 2012;39(5):p.899-903.
17. Goyal R, Mercado AE, Ring D, et al. Most YouTube videos about carpal tunnel syndrome have the potential to reinforce misconceptions. *Clinic Orthop Related Res.* 2021;479(10):2296-2302. doi:10.1097/CORR.0000000000001773
18. Underhill C, McKeown L. Getting a second opinion: health information and the Internet. *Health Rep.* 2008;19(1):p.65-69.