

Evaluation of the quality and reliability of YouTube videos related to hallux rigidus

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ABSTRACT

Aims: This study aims to evaluate the scientific accuracy, informational value, and content quality of YouTube videos about hallux rigidus, marking the first study to assess videos on this topic.

Methods: Two systematic searches were conducted by two orthopedic surgeons using the YouTube search bar with the keywords "hallux rigidus" and "hallux limitus." Each video was evaluated based on the following features: title, content, source, duration (seconds), number of views, number of days since upload, view ratio (views/time since upload), number of likes, number of dislikes, like ratio (likes×100/likes+dislikes), and Video Power Index (VPI).

Results: A total of 50 videos meeting the inclusion criteria were evaluated. Among these, 39 (78%) were uploaded by healthcare professionals. Despite this, 25 videos (50%) were categorized as low quality according to the DISCERN score, and 33 videos (66%) were classified as low quality based on the YouTube hallux rigidus score. The DISCERN and JAMA scores demonstrated a statistically significant relationship with the video source ($p<0.001$). Videos created by physicians had significantly higher DISCERN and JAMA scores compared to those created by non-physician healthcare professionals ($p=0.015$, $p=0.01$). Similarly, videos by non-physician healthcare professionals scored significantly higher than those prepared by patients or for advertisement purposes ($p=0.031$, $p=0.026$). Additionally, videos uploaded more than three years ago had a significantly higher like rate compared to more recent videos ($p<0.001$).

Conclusion: The use of platforms such as YouTube for health-related information is increasing. However, the overall quality of videos about hallux rigidus remains low, underscoring the need for higher-quality content to better support public health outcomes.

Keywords: Hallux rigidus, hallux limitus, Youtube, video, quality

INTRODUCTION

Hallux rigidus is a progressive form of arthritis that causes pain and restricted movement in the big toe joint, significantly impairing patients' quality of life.¹⁻³ With the increasing digitalization of health information, platforms such as YouTube have considerable potential to contribute to public health by reaching large audiences.^{1,2} However, research indicates that the quality of information in YouTube videos is generally low to moderate and often includes incomplete or misleading content, which may influence patients' health decisions.^{6,7} Hallux rigidus is a progressive form of arthritis that causes pain and limited movement in the big toe joint, significantly impairing patients' quality of life by restricting their daily activities. Raising awareness about the diagnosis and treatment of this condition is critical for promoting early intervention and encouraging individual self-care.³⁻⁵

With the increasing digitalisation of health information, platforms such as YouTube hold significant potential to contribute to public health by reaching large audiences. Today, YouTube is one of the largest media-sharing platforms, with over 30 million daily active users and 1 billion monthly active users.^{1,2} However, the accuracy and reliability of health-related content on this platform are often questioned. Research indicates that the informational quality of YouTube videos is generally low to moderate and frequently includes incomplete or misleading content that may influence patients' health decisions.^{6,7} These concerns became more apparent during global health crises, such as the COVID-19 pandemic, where the quality of information on the platform was under increased scrutiny.⁸ A high-quality video on hallux rigidus should provide a comprehensive overview of the condition,

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including its description, symptoms, available treatment options and associated risks, rehabilitation protocols, and prognosis. Additionally, the content should be grounded in credible and evidence-based sources.⁹

To date, no study in the literature has assessed the scientific accuracy and quality of YouTube videos related to hallux rigidus. Therefore, this study aims to evaluate the scientific accuracy, informational value, and content quality of hallux rigidus-related videos available on YouTube.

METHODS

Ethics committee approval was not required for this study. All procedures were carried out in accordance with the ethical rules and the principles.

Two systematic searches were conducted by two orthopaedic surgeons using the YouTube search bar. The searches were performed on 8 September 2024 via a web browser without any saved history or cookies, using the keywords “hallux rigidus” and “hallux limitus”. Videos were filtered solely based on relevance. Videos that were not in English, lacked audio and/or video, were shorter than one minute, or were repetitive were excluded from the study. Data were obtained by analysing the first 50 videos that met these inclusion criteria.

The videos were categorised by source into four groups: physician, non-physician healthcare professional, patient, and advertisement. Each video was evaluated for the following features: title, content, duration (in seconds), number of views, days since upload, view rate (number of views/time since upload), number of likes, number of dislikes, like rate [$\text{likes} \times 100 / (\text{likes} + \text{dislikes})$], and Video Power Index (VPI).¹⁰

The accuracy and reliability of the video information were assessed using the Journal of the American Medical Association (JAMA) score, while the DISCERN score was used to evaluate video quality and content.¹¹ Additionally, video quality and content were evaluated using the newly developed YouTube hallux rigidus score (YHR), based on previous studies.⁹ Video quality was categorised as follows: excellent (13-16), good (9-12), fair (5-8), and poor (0-4) (Table 1). The measurement and evaluation was carried out by two surgeons.

Statistical Analysis

Statistical analyses were performed using SPSS version 25.0. Descriptive statistics were presented as median (minimum–maximum) for continuous variables and frequency (percentage) for categorical variables. The Shapiro-Wilk test was used to evaluate data distribution. Non-parametric tests were employed for variables that did not meet the assumption of normality.

Group comparisons were conducted using the Kruskal-Wallis test, and pairwise comparisons were performed using the Mann-Whitney U test when significant differences were identified. Correlations between continuous variables were assessed using Spearman’s rank correlation coefficient. A significance level of $p < 0.05$ was considered statistically significant.

Category	Score
Anatomy	1 point
Timing	1 point
Age	1 point
Gender	1 point
Associated pathology	1 point
Clinical diagnosis	1 point
Radiological diagnosis	1 point
Differential diagnosis	1 point
Conservative treatment	1 point
Surgical indications	1 point
Surgical contraindications	1 point
Surgical techniques	1 point
Implant type and description	1 point
Additional procedures	1 point
Immobilization detail description	1 point
Complication	1 point
TOTAL	16 point

RESULTS

In this study, 50 videos meeting the inclusion criteria were evaluated. Of the uploaded videos, 21 (42%) were from physicians, 18 (36%) were from non-physician healthcare professionals, 2 (4%) were from patients, and 9 (18%) were uploaded for advertising purposes.

In the evaluation of the DISCERN score, 8 (16%) videos were classified as having very poor quality, 17 (34%) as poor, 12 (24%) as fair, 9 (18%) as good, and 4 (8%) as excellent. In the YHR score evaluation, 33 (66%) videos were rated as poor, 12 (24%) as fair, 2 (4%) as good, and 3 (6%) as excellent. Descriptive information about the videos is given in Table 2.

	Minimum	Maximum	Median
Video duration (min)	1	34.5	3.8
Number of views	132	900000	14000
View ratio	0,5	357	95
Number of likes	1	16000	125
Number of dislikes	0	457	75
Like ratio	57	100	99
Video Power Index	0,5	346	12
DISCERN	18	72	38
JAMA	0	4	3
Halluks rigidus score	0	16	4

Video duration, number of views, number of likes, number of dislikes, view rate, like rate, Video Power Index (VPI), DISCERN score, and JAMA score were evaluated based on video sources. Among these parameters, only the DISCERN score and JAMA score showed a statistically significant

relationship with the video source ($p < 0.001$). In pairwise comparisons, physician-generated videos had significantly higher DISCERN and JAMA scores compared to videos created by non-physician healthcare professionals ($p = 0.015$, $p = 0.01$, respectively). Similarly, videos from non-physician healthcare professionals had significantly higher DISCERN and JAMA scores than videos prepared by patients or for advertisement purposes ($p = 0.031$, $p = 0.026$, respectively).

In the correlation analysis between variables, video duration was significantly correlated with the number of likes, view rate, VPI, and DISCERN score ($p = 0.001$, $p = 0.011$, $p = 0.011$, and $p = 0.01$, respectively). Additionally, a strong statistical correlation was found between the DISCERN score and the JAMA score ($p < 0.0001$).

Videos were also evaluated based on their upload time (uploaded more than three years ago versus uploaded within the last three years). Of the 50 videos, 24 (48%) were uploaded more than three years ago, while 26 (52%) were uploaded within the last three years. Videos uploaded more than three years ago had a statistically significantly higher like rate compared to more recent videos ($p < 0.001$). However, no significant differences were found between the two groups regarding VPI, DISCERN score, YHR score or JAMA score ($p > 0.05$).

DISCUSSION

This study represents the first to examine the content quality of YouTube videos related to hallux rigidus disease. Consistent with findings from the literature, we observed that the overall quality of videos was generally low.¹² A significant portion of the videos (58%) was uploaded by non-physicians. However, our analysis revealed that the quality of videos produced by physicians and non-physician healthcare professionals was significantly higher compared to other sources ($p < 0.001$). Interestingly, the video source did not have a significant impact on the number of views or likes. The average YHR score was notably low, with a maximum of 16 and a mean of 3.8.

In a study by Uzun et al.⁹ evaluating YouTube videos on hallux valgus surgery, it was similarly concluded that video quality was poor. Similarly, Kunze et al.¹³ found low-quality content in YouTube videos related to rotator cuff tears. The low quality of videos may stem from the fact that many are uploaded by non-healthcare professionals who lack sufficient expertise, and there is no standard evaluation process for these videos. Our study found that physician-generated videos were of the highest quality, followed by those created by non-physician healthcare professionals. Videos uploaded by patients or for advertisement purposes were significantly lower in quality ($p < 0.001$). Similar findings in the literature confirm that physician-generated video content tends to be of higher quality.¹⁴ In a high-quality video, information regarding the definition of the disease and its symptoms, conservative and surgical treatment options, physiotherapy process, disease progression, and potential complications should be provided based on the existing literature. Health professionals should take these criteria into account when uploading videos. When uploading videos to these platforms, they should undergo

review and approval by a supervisory board before being published.

Given the widespread use of the internet for health information, with studies showing that individuals in North America access online health information at least once a month, it is crucial to encourage physicians and non-physician healthcare professionals to produce reliable content.¹⁵ While patients may prefer videos reflecting other patients' experiences, they may also be misled, as evidenced by the inability to differentiate between high- and low-quality information. This misinformation can negatively impact disease management or compliance with treatment after visiting a healthcare institution. Healthcare professionals should assess whether patients have been misinformed during consultations and provide appropriate guidance.

Our study also found that videos uploaded more than three years ago had a statistically higher like rate compared to more recent videos ($p < 0.001$). This may be attributed to improvements in video quality over time. Although previous studies reported that lower-quality videos tend to attract more views, we did not observe a significant relationship between content quality and viewing rates.¹⁶ Contrary to the literature, our study noted a higher frequency of general information and exercise-related videos about hallux rigidus, with fewer videos discussing surgical treatment and prognosis. This lack of content on surgical treatment may deter patients from considering surgery, even though it is recommended for advanced cases by physicians.

The mean YHR score in our study was 3.48 out of 16. In comparison, Kunze et al.¹³ reported a mean score of 2.3 out of 5 in a specific scoring system for PCL injuries, while MacLeod et al.¹⁷ found a score of 3.1 out of 16 in a similar system for hip arthritis. Our findings align with the literature, suggesting that YouTube health-related videos often score poorly in specific evaluation systems.

In contrast to Uzun et al.,⁹ who found no correlation between video duration and quality scores, our study observed a significant correlation between video duration and metrics such as the number of likes, view rate, Video Power Index, and DISCERN score ($p < 0.01$). This suggests that shorter videos may provide insufficient information, leading to lower quality scores. Additionally, patients may find it difficult to obtain the necessary information from shorter videos, negatively impacting their engagement metrics such as VPI, view rate, and number of likes. Thus, we propose that health-related videos should be of sufficient length to adequately cover essential information.

Limitations

The primary limitation of this study is that it only examined videos on YouTube and may have reached different results if conducted at another time or on different platforms. Video quality may vary across platforms. However, as a cross-sectional study, our research utilized an instantaneous search model and focused on YouTube, one of the most widely used platforms. The limitations of the study also encompassed restricting the analysis to videos in English, evaluating only

the first 50 results, and utilizing only “hallux rigidus” and “hallux limitus” as search terms. However, previous studies have shown that patients often engage with the first videos they encounter. A key strength of this study is the use of three different scoring systems DISCERN, JAMA, and YHR which enhances the robustness of the findings.

CONCLUSION

The use of platforms such as YouTube for health-related information is increasing daily. However, the overall quality of videos about hallux rigidus remains low. Physicians and non-physician healthcare professionals should be encouraged to produce higher-quality content to ensure patients have access to accurate and reliable information. Additionally, patients should be cautioned about the potential for misleading or inaccurate videos. Implementing a pre-evaluation process for health-related videos on YouTube and similar platforms may help improve the quality and reliability of the content. This study is the first to specifically assess the quality of YouTube videos related to hallux rigidus. We believe that further research in orthopaedics and other medical disciplines will contribute to the enhancement of video content quality and the overall trustworthiness of online health information.

ETHICAL DECLARATIONS

Ethics Committee Approval

Ethics committee approval was not required for this study.

Informed Consent

Since the study was conducted without the participation of any living being, no written consent form was obtained.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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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.

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