Original Article

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The Information Quality of Youtube Videos on Amputee Rehabilitation

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Abstract

Aim: People with disabilities use YouTube as a tool to educate themselves about the rehabilitation process. The aim of the present study was to examine the reliability, quality, and content of YouTube videos for amputee rehabilitation.

Methods: In the present cross-sectional study, videos related to amputee rehabilitation in the last three years were included. Journal of American Medical Association (JAMA) benchmarks, the modified Discern tool, and the Global Quality Scale (GQS) were used. The name, length, source, date of upload, likes or dislikes, and number of views of videos were noted.

Results: Seventy videos were included. Five videos (7.1%) were about the upper extremity, forty-five (64.3%) were about the lower extremity, and twenty (28.6%) were about both upper and lower extremity amputations. Regarding the number of likes and dislikes, total/daily views, and duration of videos, they were not statistically significant. There was a significant difference between the two uploaded profiles (medical, n=55, and non-medical, n=15) ($p>0.05$). However, medical professionals had considerably higher GQS, JAMA, and mDISCERN ($p=0.020$, $p=0.006$, and 0.008). Journal of American Medical Association, GQS, and mDISCERN showed positive correlations with likes, dislikes, length, and views ($p<0.05$).

Conclusion: The quality of amputee rehabilitation videos was found to be moderate. There is a need for up-to-date videos prepared by preventive health professionals against possible complications, patient education, prosthetics, stump care, and pain.

Keywords: Education, internet, amputee, and rehabilitation.

Introduction

A rare disease that places a heavy burden on the healthcare system is limb amputation (1). Every year, over 185,000 amputations occur in the United States (2). Amputation is a major life-altering event that has a profound impact on an individual's extreme quality of life, mortality, function, mobility, and mental health (3). Rehabilitation strives to reduce the individual's disability caused by amputation along with the financial costs associated with health and social care (4).

Numerous social and economic factors affect health, and it is well-recognized that those who are poorer than average have lower health results (5). To reverse this trend and improve outcomes for those in disadvantaged groups, both on the National Health Service and globally, healthcare inequities must be addressed (6). The literature has also documented health inequities linked to the availability of inpatient rehabilitation for amputees. Dillingham and Pezzin (7) highlighted the variety of amputees in acute hospitals. This circumstance has a regional component. Spyrou and Minns Lowe (8) explored the disparities in healthcare services for amputees in both inpatient and outpatient rehabilitation institutions and the diversity of rehabilitation treatment between facilities.

Since more people have access to Internet resources, it is likely that online videos will reach those whose healthcare needs have not been adequately met (9,10). Users can find, watch, and share videos on the well-known online video platform YouTube. Opportunities for self-education were greatly enhanced with the launch of free online

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video sharing via the YouTube network in 2005. People with disabilities are using YouTube as a tool to manage their physical duties and become more independent. A site with such a large audience offers the chance to show videos that empower people with impairments (11).

It is important to remember that, like with any rehabilitation process, every sort of information platform has value and should be taken into consideration when working to enhance and standardize amputee therapy. In that case, the purpose of the present study was to show the quality, reliability, and content of YouTube videos for amputees.

Materials and Methods

Study Design

Amputee rehabilitation videos were searched on the video-sharing site YouTube. Searches in the YouTube database have been performed in the last 3 years by two researchers who are physical medicine and rehabilitation specialists. The search was conducted on December 10, 2022. The website was queried using the term: amputee rehabilitation. Short videos (up to 60 seconds long), videos longer than three hours, and videos that did not have English voiceovers or subtitles were excluded from the search results. This study, which was conducted by evaluating only YouTube videos and excluding any animal or human participants, does not require ethics committee approval (12).

Video Assessment

The length of the videos, the upload date, the uploaded profiles, the number of likes and dislikes, and the daily and total number of views were noted. Uploaded profiles were evaluated as medical professionals (doctors, physiotherapists, orthotic prosthesis specialists, and non-medical professionals (patients,health-related websites, professional organizations/associations, independent users, and others). According to the scope of the video, it was classified as patient, professional, or both. Video contents were defined according to the following titles: "upper extremity/lower extremity, patient history, information, pain, exercise, walking training, stump care, prosthesis types, and prosthesis care".

The educational quality of the videos was determined using the Global Quality Scale (GQS), rated from 1 to 5. Global Quality Scale was designed as a tool for evaluating internet-based data. Scored from 1 to 5: 1 denotes poor quality, 2 denotes generally poor quality, 3 denotes moderate quality, 4 denotes good quality, and 5 denotes excellent quality (13-15).

Reliability assessment was performed using the modified DISCERN tool (mDT). If the video is short, clear, and understandable, it has reliable sourcing status and balanced, unbiased information content. The mDT included five yes-or-no questions. Yes is scored as 1, and no as 0. High scores showed great reliability (16,17).

The Journal of the American Medical Association (JAMA) benchmarking criteria were used to evaluate the quality of the information in amputee rehabilitation videos. Each of the "source, authorship, currency, and disclosure" criteria in JAMA is scored between 0-4 (18). ≤2 scores are defined as "poor reliability," whereas ≥3 scores are defined as "excellent reliability". The JAMA score was evaluated by two independent individuals. In the presence of inconsistency in scoring among researchers, a joint decision was made by discussing.

Statistical Analysis

Data analysis was performed using SPSS v. 23.0 (MacOs, IBM Corp., Armonk, NY, USA). The Shapiro-Wilk test was used for distributing variables. For the descriptive statistics, mean (standard deviation), minimum and maximum values, and percentages were presented. To compare the quantitative data, the independent samples t-test was preferred, and the Chi-square test was used to compare the categorical data. The Bonferonni-Corrected Wilcoxon-signed ranks test was applied for intra-group comparisons of repeated measurements in the two groups when a significant difference was discovered in the intra-group analysis. The Kruskal-Wallis test was applied for intergroup comparisons. When a difference was discovered to be considerable, the Boferonni-Corrected Mann-Whitney U test was applied. Statistical significance was determined by p-values less than 0.05 and a confidence interval of 95%. Also, for the analysis using the Bonferonni adjustment, the level of statistical significance was established at $p<0.0167$. According to the distribution of variables, Spearman or Pearson correlation analysis was chosen for correlating quantitative data (a correlation coefficient <0.25=little or no relationship, 0.26-0.49=fair relationship, 0.50-0.69=moderate, 0.7-0.89=high, and >0.9=excellent relationship). To evaluate the interobserver agreement, the kappa coefficient was applied.

Results

Seventy videos of amputee rehabilitation from ninety-four videos were included in this study. Five videos (7.1%) were about upper extremity amputation, forty-five (64.3%) were about lower extremity amputation, and twenty (28.6%) were about both upper and lower extremity amputations. When the videos were analyzed according to content, 40 (57.1%) were about exercise and mobility, and 30 (42.9%) were about stump care and prosthetics. When the videos were analyzed according to type, 12 (17.1%) were about patients' stories, and 58

(82.9%) were informative videos (Table 1). Cohen's kappa score for interobserver agreement was 0.717, 0.822, and 0.881 for the JAMA, GQS, and mDISCERN, respectively.

When the uploaders of the videos were split into two groups-medical professionals (n=55) and non-medical professionals (n=15), there was no noticeable difference. There was no difference between the two groups in terms of the number of likes and dislikes, total and daily views, or video duration. However, it was discovered that medical professionals had considerably higher GQS, JAMA, and mDISCERN instrument scores (p=0.020, p=0.006, and 0.008, respectively) (Table 2).

In addition to evaluating the technical aspects of videos, the reliability and quality scores were compared. Journal of American Medical Association and the number of dislikes (p<0.001, r=0.546), JAMA and video duration (p<0.001, r=0.570), GQS and the number of dislikes (p<0.001, r=0.604), GQS and video duration (p<0.001, r=0.669), and DISCERN and the number of dislikes (p<0.001, r=0.536), DISCERN, and video duration (p<0.001, r=0.608) all showed moderate correlations. The correlation analysis of other data is shown in Table 3.

There was a significant difference between the three educational quality levels when the data were evaluated according to the degree of educational quality, as indicated by the mDISCERN (p<0.001) and JAMA scores (p<0.005). A significant difference between low and high education quality levels was also discovered between the number of dislikes (p<0.001), total views (p=0.003), and video duration (p<0.001) (Table 4).

Discussion

In the digital age, people use online resources more frequently to make health decisions. One of the most popular video-sharing platforms, YouTube, has many videos on the etiopathogenesis, therapy, and prevention of numerous diseases (19). Users of the website can access free video content from YouTube but there are no checks in place to ensure that the videos are reliable and accurate. In this study, we looked into the dependability, quality, and content of YouTube videos about amputee rehabilitation. The study deemed the YouTube videos regarding amputee recovery to be of moderate quality. Videos made by medical professionals in particular were judged to be more reliable and valuable. Regarding likes, dislikes, and total views, there was no difference between producers of medical and non-medical content; however, there was a correlation between the number of likes and mDISCERN scores. Like, dislike, video duration, and total views were found to be important among low- to high-quality videos when the videos were categorized according to their quality level. This implies that when analyzing YouTube videos about amputee rehabilitation, the views matter as much as the number of likes.

High-quality videos, as predicted, had higher mDISCERN, GQS, and JAMA scores than medium-quality

Table 1. Technical characteristics of the videos

	Mean±SD	n (%)
Likes	137.2±326.9	-
Dislikes	4.5±12.9	-
Number of total views	12812.9±30617.4	-
Duration (minute)	1091.8±1669.8	-
Like ratio	88.8 ±29.9	-
Uploaded Medical professionals Non-medical professionals	-	 55 (78.6%) 15 (21.4%)
Extremity Upper Lower Upper & Lower	-	 5 (7.1%) 45 (64.3%) 20 (28.6%)
Content of the videos Exercise & mobility Stump care & prosthetics	-	 40 (57.1%) 30 (42.9%)
Type of videos Patients' story Informative videos	-	 12 (17.1%) 58 (82.9%)
The population addressed Training of professionals Training of patients Both	-	 13 (18.6%) 30 (42.9%) 27 (38.6%)

Min: minimum, max: maximum, SD: standard deviation

videos, indicating that they were more likely to be instructive than deceptive. The helpful videos were much longer than the misleading ones. This was associated with longer videos containing enough data, and having time to convey the data to viewers. It was noted in earlier investigations that patient experience videos were longer than 40 minutes, but in contrast, in this study, no significant time difference was found between videos produced by medical professionals and videos produced by nonmedical professionals (20).

Overall, amputee videos under performed in data or discussions such as stump and prosthesis care, prosthesis types, preservation, and secondary complications. In 17.1% of the videos, there was a patient experience. The majority of the videos did not identify the information source or any supporting material, and many did not state the date that the data used in their broadcasts was created.

Research on well-known YouTube videos on pulmonary rehabilitation for chronic obstructive pulmonary disease showed them to be dependable, which is consistent with the study's finding; however, they are biased and of low content quality (21). In a study on YouTube videos used in stroke rehabilitation, it was discovered that the video quality and accuracy of the videos were satisfactory. This demonstrates that, despite being a helpful resource for patients to learn about stroke, YouTube still has some restrictions. About 50% of the videos discussed how a treatment worked, but few discussed the pros, downsides, dangers, and potential outcomes of each treatment as well as what may occur if none was used (22).

While spinal cord stimulation (SCS) videos offer helpful information, they generally do a poor job of mentioning or addressing the hazards connected with SCS (23). The reliability and quality of YouTube videos on various topics have been studied in the literature. Regarding YouTube video quality, the findings are conflicting. The level of quality differs widely depending on the topics of the videos (24-27).

Table 2. Inter-group analysis of the data according to the uploader profile

95% CI for difference						
						p-value
		Mean±SD	Mean difference	Lower bound	Upper bound	
Number of likes	Medical Prof. Non-medical Prof.	155.1±358.5 71.5±158.3	83.6	-43.3	210.5	0.852
Number of dislikes	Medical Prof. Non-medical Prof.	5.3±14.3 1.3±4.2	4.0	-3.4	11.5	0.226
Number of total views	Medical Prof. Non-medical Prof.	14602.8±33379.7 6250.1±16241.6	8352.7	-4014.7	20720.1	0.704
Duration of the videos (min)	Medical Prof. Non-medical Prof.	1135.7±1789.3 931.0±1165.0	204.7	-578.9	988.2	0.731
mDISCERN instrument	Medical Prof. Non-medical Prof.	2.9±1.6 1.8±1.0	0.6	0.3	1.9	0.008*
JAMA score	Medical Prof. Non-medical Prof.	2.8±0.9 2.3±0.7	0.6	0.2	1.1	0.006*
GQS	Medical Prof. Non-medical Prof.	3.2±1.4 2.5±1.1	0.9	0.1	1.0	0.020*

mDISCERN: modified DISCERN-reliability tool, JAMA: Journal of the American Medical Association, GQS: Global Quality Score SD: Standard deviation, Prof: Professional, *p<0.05 is considered as significant for the Independent Samples t-test

Table 3. Examination of the correlations between JAMA, GQS, DISCERN and video characteristics

		JAMA	GQS	DISCERN
Like	r p	0.377 0.001	0.457 <0.001	0.330 0.005
Dislike	r p	0.546 <0.001	0.604 <0.001	0.536 <0.001
Video duration	r p	0.570 <0.001	0.669 <0.001	0.608 <0.001
Number of views	r p	0.382 0.001	0.446 <0.001	0.381 0.001

*p<0.05 is considered as significant for Spearman correlation test, r: correlation coefficient mDISCERN: modified DISCERN- reliability tool, JAMA: Journal of American Medical Association, GQS: Global Quality Score

Table 4. Comparison of the video parameters between the low, medium, and high educational quality groups

Educational quality	DISCERN Mean ± SD	JAMA Mean ± SD	Like Mean ± SD	Dislike Mean ± SD	Total number of views mean ± SD	The length of videos Mean ± SD	Content (n) (exerc/ stump care)	Population addressed (n) Patient/ prof./both	Uploade r profile (n) Med./ non-med.
Low (n=29)	1.4±1.0	1.8±0.6	17.9±36.3	0.1±0.7	1444.3±2522.4	231.2±420.2	13/16	24/0/5	21/8
Medium (n=12)	2.8±0.8	2.9±0.6	16.0±28.1	0.7±2.0	2155.9±3740.9	1092.2±1538.4	6/6	5.04.2003	8/4
High (n=29)	4.1±0.9	3.4±0.6	306.7±459.2	10.4±18.5	28591.2±43102.7	1952.3±2056.9	21/8	1/9/19	26/3
p-value	<0.001[a]*	<0.001[a]*	0.001[a]*	<0.001[a]*	0.006[a]*	<0.001[a]*	0.090[c]	<0.001[c]*	0.151[c]
p[b]-value	Low-med: <0.001** Low-high: <0.001** Med-high: <0.001**	Low-med: <0.001** Low-high: <0.001** Med-high: 0.013**	Low-med: 0.832 Low-high: 0.001** Med-high: 0.007**	Low-med: 0.524 Low-high: <0.001** Med-high: 0.049	Low-med: 0.989 Low-high: 0.003** Med-high: 0.027	Low-med: 0.005** Low-high: <0.001** Med-high: 0.042			

[a]Kruskal-Wallis test, [b]Bonferonni-corrected Mann-Whitney U test, [c]Chi-square test. *p<0.05 is considered as significant, **p<0.0167 is considered as significant for post-hoc analysis
mDISCERN: Modified DISCERN- reliability tool, JAMA: Journal of American Medical Association, SD: Standard deviation, Exerc: exercise, Prof.: professional, Med: medical professional, Non-med: nonmedical professional

It is essential to give patients accurate, unbiased information so they can make informed decisions about their medical care. The fact that professional education videos are of higher quality than patient education videos suggests that the video content lacks sufficient and high-quality data for patient education on amputee rehabilitation. These findings are in line with past research examining medical information on YouTube, which shows a lack of informative, high-quality videos (28,29). It can also be used as a way for YouTube to better deal with process management and the impact it can have on human health for amputees and their family members. However, YouTube should be viewed as a heterogeneous collection of videos that are of high, medium, and low quality. To guarantee that the patient receives the right healthcare, healthcare professionals, such as doctors and therapists, must evaluate the video's relevance and quality before recommending it to a patient.

Spyrou and Minns Lowe (8) state in their first qualitative study of various amputee rehabilitation models that it raises concerns about existing healthcare inequalities. Within the scope of amputee rehabilitation, YouTube data can enable patients to evaluate the rehabilitation approaches they take and raise awareness of new treatment approaches. For this reason, we think that up-to-date, accurate, and rich content videos should be included more on social media platforms.

Gardiner et al. (30) analyzed the gait patterns of transfemoral amputee patients by obtaining them from YouTube videos. They demonstrated that gathering an amputee's gait sample from YouTube videos gave outcomes similar to published data from carefully controlled laboratory trials. This study may provide new insights that inspire other researchers to investigate the most effective methods to use this resource by demonstrating how readily available data from the Internet can be used in various ways (30).

Study Limitations

The use of only English or English-subtitled videos is one of the study's limitations. Another limitation is that although amputee videos are evaluated with JAMA in terms of reliability, the JAMA score may not be exactly compatible with the academic accuracy and level of evidence of the information presented (31). Also, search results with the words "amputee rehabilitation" may have missed other videos with similar content. Despite these issues, we believe that this study is valuable for providing the informational quality of 70 videos on amputee rehabilitation. The use of mDISCERN, a test tool for evaluating the reliability of video sources, is one of our study's strengths.

Even though the videos were selected based on data from only one day, the fact that it is a study evaluating the time interval of the last three years is among the strengths of this study. To the best of our knowledge, this study is also the first to assess social media content linked to amputee rehabilitation. Future research should assess how amputee rehabilitation information is disseminated through other social media platforms and think about how to make videos from reputable sources such as medical professionals, professional organizations, and other professionals more visible. Social media companies may think about developing a video credibility score based on currently unavailable verified media quality metrics.

Conclusion

YouTube videos about amputee rehabilitation are of moderate quality, and videos uploaded by medical professionals and prepared for professional training are of higher quality. Professionals must focus more on uploading thorough, high-quality videos for informational reasons because of YouTube's advantage of being easily accessible and its disadvantage of being vulnerable to low-quality material. Additionally, there is a need for up-to-date and qualified videos on patient education, types of prosthesis, prosthesis and stump care, pain, sports, and secondary complications that may develop.

Ethics

Ethics Committee Approval: This study, which was conducted by evaluating only YouTube videos and did not include any animal or human participants, does not require ethics committee approval, similar to studies in the literature.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: C.M.C., M.D.K., Design: C.M.C., Data Collection or Processing: C.M.C., M.D.K., Analysis or Interpretation: M.D.K., Literature Search: C.M.C., Writing: C.M.C.

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