



Quality Assessment of YouTube Videos on Avascular Necrosis of the Femoral Head: An Analysis of Content, Reliability, and Educational Value

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Abstract

Aim: Videos related to avascular necrosis of the femoral head are no exception, and so the aim of this study is to evaluate the educational quality of YouTube videos on this topic.

Material and Method: A standardized video search was performed on YouTube using the terms “avascular necrosis of the hip”, “osteonecrosis of the hip” and “avascular necrosis of the femoral head”. The top 50 videos were then analyzed, and the characteristics and content of the videos were recorded. The Journal of American Medical Association criteria, The DISCERN score, The Global Quality Score and the new YouTube ‘Avascular Necrosis of the Femoral Head Score’ were all used to assess the reliability and accuracy of the videos.

Results: The median video duration of the 50 videos was 10.85±19.17 minutes. The median number of views was 10,866 (range 221 to 278,174). According to the video content, 60% of the videos contained information about the disease, 10% were about patient experience, and the remaining 30% related to surgical technique or approach. Physicians were the primary uploader on YouTube for this topic. The rate of low-quality videos was determined as following according to the different evaluative systems: 68% according to the newly defined YouTube Avascular Necrosis of the Femoral Head Score, 60% according to the DISCERN score, and 56% according to The Global Quality Score. The Journal of the American Medical Association, The Global Quality Score, and DISCERN score were significantly correlated with video duration, while the New YouTube Avascular Necrosis of the Femoral Head Score was significantly correlated with video duration, time since upload, number of views, and like rate.

Conclusion: Most of the popular YouTube videos about avascular necrosis are of a low quality.

Keywords: YouTube, avascular necrosis, femoral head, social media

INTRODUCTION

Avascular necrosis (AVN) of the hip is a major orthopaedic problem which is characterized by tissue death caused by reduced or complete cessation of blood flow to the femoral head (1). This condition usually affects young and active individuals and can lead to possibly serious problems of restricted mobility, severe pain, and loss of function (1,2).

Although the pathogenesis of AVN of the hip is not fully understood, several risk factors, such as corticosteroid use, alcohol abuse, trauma, rheumatologic diseases, as well as some genetic factors, are thought to play a role in the occurrence of this condition and the development of AVN. However, in many cases, the exact cause cannot

be determined and the development of AVN can be said to have a complex etiology (2,3).

Internet and social media platforms have provided access to an extensive range of information (4). One valuable source is the popular video-based platform, YouTube, which has more than one billion users, representing one third of all Internet users (5). Patients have increasingly turned to YouTube in recent years to learn about their medical conditions and treatment options (6).

However, many of the health-related posts on YouTube have not been expertly reviewed and do not contain author or source information. This means that because the platform is open access, some videos do not have a

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scientific basis or contain false information. Users can therefore experience real difficulty in accessing accurate information, especially on health-related issues (7-10).

Although there are studies in the literature which investigate the quality of videos on YouTube on topics such as Anterior cruciate ligament injury (11), hallux valgus (12), and hip arthroscopy (13), no study has been located which evaluates the quality of videos related to avascular necrosis of the femoral head. The aim of this study is therefore to fulfil this perceived need by evaluating the quality of YouTube videos on femoral head AVN. The working hypothesis is that there are low quality YouTube videos on this topic.

MATERIAL AND METHOD

Before conducting the research, approval was obtained from the local ethics committee (IRB No: 1209). On December 1, 2022, a standard video search was performed using Google Chrome, but without a personal YouTube account, using the terms "avascular necrosis of the hip", "osteonecrosis of the hip" and "avascular necrosis of the femoral head". Videos in English with a primary topic of avascular necrosis of the femoral head were included in the search, while repetitive videos that contained only audio or video, videos with a language other than English, and videos not related to AVN of the femoral head, were excluded. Only one of the repetitive videos was included in the study, and no restriction was placed on video duration. After the exclusion criteria had been applied, the 50 most popular videos were analyzed.

All of the videos in the study were listed by title, upload time, video duration, time since video upload, number of likes, number of dislikes, number of views, video source, content type, and view ratio (the number of views/times since video upload). The videos' origin and uploaders were classified into distinct categories; 1: academic (affiliated with research institutions, universities, or colleges), 2: physician, 3: other healthcare professionals (excluding licensed physicians), 4: exercise trainers, 5: medical sources (content or animations from healthcare websites), 6: patients, and 7: commercially produced videos. The content was categorized based on its focus; 1: exercise training, 2: providing information about diseases, 3: sharing patient experiences, 4: detailing surgical techniques or approaches, 5: discussing non-surgical management options, and 6: advertising.

Criteria listed in The Journal of the American Medical Association (JAMA) were used for the reliability and accuracy of the videos (14). The DISCERN score was used to assess educational quality (10,12,14), and The Global Quality Score (GQS) (15,16) was employed to obtain a newly defined YouTube femoral head avascular necrosis score (FHAVNS). This value was produced with consideration of the current YouTube scores previously available in the literature (12,15-17). In the 14-parameter scoring system, video quality was categorized as being (0-4) poor, (5-8) fair, (8-11) good, or (12-14) excellent (Table 1). The scoring systems used for video reliability and quality were evaluated by two different observers and the average was recorded.

Table 1. Femoral Head Avascular Necrosis Score (FHAVNS) parameters

Patient profile	Point
Disease description	1
Symptoms	1
Epidemiology/affected patient group	1
Risk factors	1
Pathophysiology	1
Physician assessment	
Examination findings	1
Differential diagnosis	1
X-ray findings	1
MR findings	1
Staging	1
Treatment	
Conservative treatment	1
Surgical treatment	1
Complications of surgical treatment	1
Prognosis	1
Total	14 points

Statistical Analysis

The data IBM SPSS 22 program was used for evaluation, with mean, median values and categorical data, percentage (%) and frequency values all being considered. Conformity of the numerical data to normal distribution was ensured by the Shapiro-Wilk test, while the Spearman test was used to determine correlation in the numerical data. A correlation coefficient ranges from -1 to 1, with -1 suggesting the strongest opposite relationship, 0 indicating no relationship, and 1 signifying the strongest direct relationship.

The 'interclass correlation coefficient' (ICC) value for agreement between two observers was used to assess video quality (95% CI (confident interval)). The strength of an ICC is typically measured on a scale of 0 to 1, where 0 indicates no agreement and 1 indicates perfect agreement.

RESULTS

The mean video duration was 10.85±19.17 minutes (range, 0.32-99.52 minutes). The median number of views was 10,866 (range 221-278,174), the median view rate was 7.81 (range 0.10-1618.55), the median time since upload was 1141 (range 20-4123) days, the median number of likes was 78.50 (range 1-1300), the median number of dislikes was 3 (range 0-54) and the median like rate was 96.80 (range 87.17-100). The JAMA median value was 2 (range 1-2.5), the DISCERN median value was 40.5 (range 16-73.5), the GQS median value was 2.25 (range 1-4.5) and the FBAVNS median value was 6 (range 1-13.5).

When classified according to video sources, 3 (6%) academic, 23 (46%) physician, 22 (44%) medical, 1 (2%) patient, 1 (2%) commercial videos were determined. When classified according to video content, there were 30 (60%) information about the disease, 5 (10%) about patient experience, and 15 (30%) about surgical technique or

approach videos.

Inter-observer agreement was assessed as being good for JAMA and excellent for GQS, DISCERN score and FHAVNS (Table 2). According to FHAVNS, 14 (28%) of the videos were very poor, 20 (40%) were fair, 9 (18%) were good, and 7 (14%) were excellent; according to DISCERN score 11(22%) were very poor, 19 (38%) were poor, 13 (26%) were fair, 6 (12%) were good, and 2 (4%) were excellent. According to GQS, 56% of the videos scored 2 or less and

were evaluated as being low quality. There were significant correlations between GQS and JAMA, DISCERN and JAMA, DISCERN and GQS, FHAVNS and JAMA, FHAVNS and DISCERN, and FHAVNS and GQS (Table 3).

Scores for JAMA, GQS, and DISCERN criteria were significantly correlated with the duration of the videos. FHAVNS score, on the other hand, exhibited significant correlations with multiple factors: video duration, time since upload, rate of likes, and number of views (Table 4).

Table 2. Inter-Observer Agreement for JAMA, GQS, DISCERN Score, and FHAVNS

	Observer	Mean	SD	Median	Min.	Max.	ICC (95% CI)
JAMA	1	1.92	0.488	2.00	1	3	0.856 (0.739-0.919)
	2	1.82	0.388	2.00	1	2	
GQS	1	2.54	1.054	2.50	1	5	0.966 (0.932-0.982)
	2	2.40	0.990	2.00	1	4	
DISCERN	1	40.92	15.890	41.00	16	75	0.984 (0.877-0.995)
	2	38.96	15.191	39.50	16	72	
FHAVNS	1	6.80	3.574	6.00	1	14	0.996 (0.992-0.997)
	2	6.78	3.448	6.00	1	13	

JAMA: The Journal of the American Medical Association benchmark criteria, GQS: The Global Quality Score, FHAVNS: Femoral Head Avascular Necrosis Score, In terms of intraclass correlation coefficient; an ICC (95% CI) of <0.500 is considered poor, 0.500 to 0.750 moderate, 0.750 to 0.900 good, and >0.900 as excellent

Table 3. Correlation Analysis of GQS, JAMA, DISCERN, and FHAVNS

Criteria		JAMA	GQS	DISCERN
GQS	r	0.480		
	p	<0.001		
DISCERN	r	0.535	0.947	
	p	<0.001	<0.001	
FHAVNS	r	0.369	0.868	0.905
	p	0.008	<0.001	<0.001

JAMA: The Journal of the American Medical Association benchmark criteria, GQS: The Global Quality Score, FHAVNS: Femoral Head Avascular Necrosis Score, In the Spearman correlation test, r values of 0.00-0.19 indicates very weak correlation, 0.20-0.39 weak correlation, 0.40-0.59 moderate correlation, 0.60-0.79 strong correlation, and 0.80-1.0 very strong correlation. Negative values indicate reverse correlation

Table 4. Correlation of JAMA, GQS, DISCERN scores with video duration and FHAVNS with video duration, time since upload, rate of likes, and number of views

		JAMA	GQS	DISCERN	FHAVNS
Length of video	r	0.287	0.516	0.565	0.466
	p	0.043	<0.001	<0.001	0.001
Number of views	r	0.136	-0.148	-0.147	-0.422
	p	0.345	0.305	0.308	0.002
Time elapsed after loading	r	-0.33	-0.233	-0.261	-0.380
	p	0.822	0.103	0.067	0.006
Viewing rate	r	0.171	-0.035	-0.030	-0.235
	p	0.235	0.811	0.835	0.101
Number of dislikes	r	0.198	-0.210	-0.054	-0.267
	p	0.168	0.884	0.711	0.061
Rate of likes	r	-0.101	0.134	0.160	0.293
	p	0.486	0.352	0.267	0.039

JAMA: The Journal of the American Medical Association benchmark criteria, GQS: The Global Quality Score, FHAVNS: Femoral Head Avascular Necrosis Score, In the Spearman correlation test, r values 0.00-0.19 indicates very weak correlation, 0.20-0.39 weak correlation, 0.40-0.59 moderate correlation, 0.60-0.79 strong correlation, and 0.80-1.0 very strong correlation correlation. Negative values indicate reverse correlation

DISCUSSION

The most important finding of this study is that videos about femoral head AVN on YouTube are, according to all of the scoring systems, of a low quality and are therefore of concern in terms of credibility. This result is consistent with other studies in the literature (14,18-20). One of the reasons for this poor result may be that only 3% of the located videos are academic. It is therefore suggested that academic publications should not only be produced as a result of meetings and congresses, but that academic staff should provide more video content on YouTube and similar platforms. This would ensure that patients were provided with better quality and safer information.

Some studies in the literature found that videos containing surgical methods are not preferred by patients and have low educational value (11,21). Yüce A. et al. observed a high rate of surgical method videos in their study and concluded that videos containing surgical methods may not be of interest to patients since the target audience of the videos is orthopedic surgeons, not patients (14). In this study, 30% of the videos described surgical method. Since such videos are difficult for patients to understand, and the content of these videos is usually concerned with only one surgical method, such videos may not provide quality information about the disease and other treatment options to patients and may therefore be considered of a low quality.

Various studies in the literature employ a wide range of scoring systems designed to evaluate video quality (11,12,22,23). The system developed and used in this study for this purpose was FHAVNS. Significant correlation with other scoring systems, and excellent agreement between observers, indicate that this scoring system is less influenced by personal interpretations in the assessment of video quality. In future studies, FHAVNS may help researchers to create their own scoring systems.

Celik H. et al. showed that video duration was positively correlated with DISCERN, JAMA score and their own scoring system RCSS (rotator cuff specific score) (19). Mert A. et al. also demonstrated a positive correlation with video duration in JAMA, DISCERN and GQS (24). In this study, in line with the literature, video duration was positively correlated with JAMA score, GQS, DISCERN and FHAVNS. In addition, FHAVNS was negatively correlated with the time since the video was uploaded and the number of views, and positively correlated with the like rate. This may be due to the fact that more recent videos contain more comprehensive information than older videos. Specific video characteristics of the nature of the video content might be more time-sensitive and experience a sharp decline in views and engagement after their initial popularity wanes. In addition, the fact that these videos have been on YouTube for a shorter time than other videos may explain the negative correlation between the number of views and their quality. It is also expected that the like rate increases with the quality of the video.

Limitations of this study include the fact that only English-language videos were evaluated and only videos available on the YouTube platform were considered. It should also be noted that the scoring systems used to evaluate the videos has a subjective component. However, this particular limitation is considered to have a minimal effect due to the high inter-observer agreement.

CONCLUSION

It was concluded that the videos on YouTube about FHAVN are of low quality. Dissemination of incomplete information via such videos may cause confusion among FHAVN patients. Moreover, the incomplete information that patients will learn from these sites may have a negative effect on the trust relationship between the patient and the physician, as well as being a possible cause of disruption in the treatment process. It may therefore be an option in the preparation of video content to obtain consultancy services from academic staff. This should lead to the creation of more comprehensive videos, instead of merely descriptions of surgical techniques. Patients should also be directed to such higher quality content.

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