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ORIGINAL ARTICLE

YouTube as a source of patient information for ankylosing spondylitis exercises

Burhan Fatih Kocyigit[1] · Vedat Nacitarhan[1] · Tuba Tulay Koca[1] · Ejder Berk[1]

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Abstract

Introduction/objectives Ankylosing spondylitis (AS) is a rheumatic disorder characterized by structural impairments and postural deformities which restrict daily life activities. Nonpharmacologic methods, particularly exercise therapies, play a key role in the treatment. Obtaining online health-related information has become increasingly popular. We aimed to assess the quality of the most viewed YouTube videos on AS exercises.

Method We searched for the key words "ankylosing spondylitis exercise," "ankylosing spondylitis rehabilitation," "ankylosing spondylitis physical therapy," and "ankylosing spondylitis physiotherapy" on YouTube on October 10th, 2018. The educational quality of YouTube videos was evaluated according to the Global Quality Scale, and three groups were formed: high quality, intermediate, and low quality. Video parameters were compared between the groups.

Results Of the 56 videos evaluated, 48.2% ($n = 27$) were of high quality, 17.9% ($n = 10$) were of intermediate quality, and 33.9% ($n = 19$) were of low quality. When video parameters compared among the groups, no significant differences were found in the number of views per day, likes per day, and comments per day ($p > 0.05$). Significant differences were found in the number of dislikes per day and DISCERN scores between the groups ($p = 0.02$, $p < 0.001$, respectively).

Conclusions YouTube can be considered as an important source of high-quality videos. Nearly half of the videos were of high quality. Physicians should inform patients about the importance of video resources during the use of YouTube and should guide patients to the accurate sources of information.

Keywords Ankylosing spondylitis · Exercise · Physical therapy · Physiotherapy · Rehabilitation · YouTube

Introduction

Ankylosing spondylitis (AS) is a disorder in the group of inflammatory rheumatic diseases associated with chronic pain, fatigue, decreased physical activity, and impaired quality of life [1]. Inflammation, which is responsible for the clinical manifestations of the disease, affects the axial skeleton, sacroiliac and peripheral joints, and may cause ankylosis and postural changes [2]. Pharmacologic and nonpharmacologic treatment options are available to alleviate the symptoms of the disease, reduce the disease progression, and prevent or treat complications [3]. Exercises and rehabilitation strategies have an important place among nonpharmacologic treatment methods in AS. Exercises including aerobic, cardiorespiratory, stretching, mobility, and balance programs prevent stiffness and postural changes, decrease pain levels, improve balance, and ameliorate cardiorespiratory function [4].

The Internet has become an important source of information in parallel with the increase in its use in society. Obtaining online health information has become increasingly popular and people often use the Internet as a source of health information. Amante et al. [5] reported that almost half of American adults used the Internet as a tool to obtain health-related information. YouTube is a popular video sharing site, which is widely used around the world that allows users to share and watch videos. YouTube should be considered an effective tool for the acquisition and dissemination of health-related information due to its wide and free video content. YouTube can be a tool for educating patients or a source of information on patients' health issues. However, there are concerns about the quality and content of the videos on this

✉ Burhan Fatih Kocyigit
bfk2701@hotmail.com

[1] Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Turkey

platform. YouTube can be used for advertising purposes or to share anecdotal information. There are limited mechanisms to control the content, information quality, and accuracy of shared videos. Therefore, there are doubts on the reliability of the sources and the risk of providing misleading information [6, 7]. In a systemic review that analyzed 18 studies, YouTube was found to contain videos describing high-quality information, as well as conflicting and misleading information [8].

There is a lack of studies evaluating the quality of YouTube videos about AS exercises. The primary aim of this study was to assess the quality of the most viewed English language YouTube videos on AS exercises. The secondary aim was to evaluate the video sources in terms of quality. The final aim was to compare the number of views, likes, dislikes, and comments among the high-quality, intermediate, and low-quality videos.

Material and methods

This was a descriptive study. The keywords "ankylosing spondylitis exercise," "ankylosing spondylitis rehabilitation," "ankylosing spondylitis physical therapy," and "ankylosing spondylitis physiotherapy" were used for searching videos on YouTube (www.youtube.com) on October 10th, 2018. Separately, for each keyword, the English language videos on the first three pages (60 videos in total) were assessed by two researchers experienced in AS exercises. Studies show that a large percentage of users examine videos on the first three pages of the query results [9]. Therefore, we considered that evaluating the first three pages would cover most YouTube users. The YouTube videos were searched according to the number of views. Thus, the most viewed videos were displayed on the top. A total of 240 videos were evaluated by two researchers. Off-topic videos, duplicate videos, videos in a language other than English, and videos with inappropriate audio were excluded from the study. Following the exclusion criteria, 56 videos remained.

Assessment of quality

The educational quality of YouTube videos was reviewed by two independent researchers (BFK, TTK) according to the Global Quality Scale (GQS). The GQS is a scale designed as an assessment tool for Internet resources. The GQS is a five-point scale in which the lowest score is 1 and the highest score is 5. Researchers evaluate the flow, ease of use, and quality of videos with this scale. If a video score is 4 or 5 points, it is considered high quality, 3 points is considered as intermediate quality, and 1 or 2 points is considered low quality [10] (Table 1). If there was a discrepancy between the video scoring of the two researchers, the video was evaluated and finalized by a third independent researcher (EB).

Table 1 Global quality scale

1. Poor quality, poor flow, most information missing, not helpful for patients
2. Generally poor, some information given but of limited use to patients
3. Moderate quality, some important information is adequately discussed
4. Good quality good flow, most relevant information is covered, useful for patients
5. Excellent quality and excellent flow, very useful for patients

Assessment of reliability

The reliability of the YouTube videos was assessed using the modified DISCERN tool. This is a five-point assessment tool that was originally created by Charnock et al. [11]. DISCERN includes five questions and each question is answered as yes or no. Each yes answer is evaluated as 1 point; the maximum score is 5 (Table 2).

Video parameters

The video length, the date of upload, the number of views, likes, dislikes, and comments were recorded for each video. The total number of views, likes, dislikes, and comments were divided by the total number of days on YouTube. Thus, values per day were obtained.

Sources of the videos

The sources of the videos were divided into eight categories: (1) trainer, (2) physician, (3) health-related website, (4) academic, (5) university/professional organization/association, (6) nonphysician health personnel, (7) patient, and (8) independent user.

Ethics statement

This study does not include any human participants or animals. Videos that were available to everyone were evaluated for this study. Therefore, ethics committee approval was not required. Similar studies in the literature followed the same path [12–14].

Table 2 DISCERN reliability tool

1. Is the video clear, concise, and understandable?
2. Are valid sources cited? (from valid studies, physiatrists, or rheumatologists)
3. Is the information provided balanced and unbiased?
4. Are additional sources of information listed for patient reference?
5. Does the video address areas of controversy/uncertainty?

Statistical analysis

The Statistical Package for the Social Sciences version 20.0 package program (SPSS Inc., Chicago, IL, USA) was used to analyze the data. Median (minimum-maximum), number, and percentage were used to express descriptive data. The Shapiro-Wilk test was used to evaluate the distribution of the data. Categorical variables were compared using the chi-square test and continuous variables were compared using the Kruskal-Wallis test. The agreement between two researchers was assessed using the kappa coefficient. p values less than 0.05 were considered significant.

Results

Of the 240 videos, 99 duplicate videos, 43 off-topic videos, 39 videos in a language other than English, and 3 videos with inappropriate audio were excluded from the study. A total of 56 videos were analyzed. The general features of the videos including the video length, number of views, likes, dislikes, and comments are summarized in Table 3.

Of the 56 videos evaluated, 48.2% ($n = 27$) were of high quality, 17.9 ($n = 10$) were of intermediate quality, and 33.9% ($n = 19$) were of low quality according to the GQS. When the distribution of high-quality videos according to sources was performed, it was revealed that 100.0% ($n = 2$) of the videos from academics were of high quality, and 80% ($n = 4$) of the videos from nonphysician health personnel, 72.7% ($n = 16$) of the videos from universities/professional organizations/associations, 50.0% ($n = 3$) of the videos from physicians, and 28.6% ($n = 2$) of videos from trainers were of high quality. No videos from health-related websites, patients, and independent users were of high quality. On the other side, 100.0% ($n = 6$) of the videos from health-related websites were of low quality, and 75.0% ($n = 3$) of videos from independent users, 71.4% ($n = 5$) of videos from trainers, 50.0% ($n = 2$) of videos from patients, 33.3% ($n = 2$) of videos from physicians, and 20.0% ($n = 1$) of videos from nonphysician health personnel were of low quality. No videos sourced by academics or universities/professional organizations/associations were of low quality (Table 4).

Table 3 General features of the videos

Video features	Median (min–max)
Duration (s)	248 (27–5460)
Number of views	6969.50 (542–1,385,326)
Number of likes	32.50 (0–6500)
Number of dislikes	2.50 (0–160)
Number of comments	2 (0–286)

When the parameters of the videos compared among the high-quality, intermediate, and low-quality groups, no significant differences were found in the number of views per day, likes per day, and comments per day ($p > 0.05$). Significant differences were found in the number of dislikes per day and DISCERN scores between the groups ($p = 0.02$, $p < 0.001$, respectively) (Table 5).

The kappa score, which shows the inter-reviewer agreement of this this study, was 0.79.

Discussion

The Internet is being increasingly used as an important source of health-related information, particularly in chronic diseases. More than half of the North Americans with access to the Internet use it at least once a month as a source of health-related information. However, more than three quarters of these consumers are concerned about the reliability of the information, and almost half of them consider they cannot trust all of the information obtained from the Internet [15, 16]. YouTube, one of the most preferred video-sharing sites by users, contains a large number of videos about the etiopathogenesis, prevention, diagnosis, and treatment choices of various diseases. YouTube presents free video content to consumers, but lacks a control mechanism for the quality, content, and accuracy of the videos. Anyone who has membership of YouTube can upload videos and this may trigger the spread of incorrect, poor quality, or biased information. Keelan et al. [17] evaluated the quality of immunization-related videos on YouTube and published the first study about the assessment of YouTube videos in 2007. This study was followed by researches conducted on various different diseases evaluating the quality of YouTube videos [8]. Nevertheless, the quality of YouTube videos regarding AS exercises has not yet been evaluated. Therefore, we assessed AS exercise videos available on YouTube and asked the questions indicated below:

- What is the information quality of English language videos concerning AS exercises?
- Which resources have uploaded more videos?
- Which resources have uploaded high-quality videos?
- Is there a difference in terms of the number of views, likes, dislikes, and comments between high-quality, intermediate and low-quality videos?

Of the videos assessed, 48.2% ($n = 27$) were of high quality, 17.9 ($n = 10$) were of intermediate quality, and 33.9% ($n = 19$) were of low quality according to the GQS. Researchers have reported different high-quality or useful video ratios in studies conducted on various diseases. Similar to our results, Tolu et al. [12], Singh et al. [18], and Gark et al. [19] reported

Table 4 Categorization of the videos according to sources, *n* (%)

Source	Low quality	Intermediate quality	High quality	Total
Trainer	5 (71.4)	0 (0)	2 (28.6)	7
Physician	2 (33.3)	1 (16.7)	3 (50)	6
Health-related website	6 (100)	0 (0)	0 (0)	6
Academic	0 (0)	0 (0)	2 (100)	2
University/professional organization/association	0 (0)	6 (27.3)	16 (72.7)	22
Nonphysician health personnel	1 (20)	0 (0)	4 (80)	5
Patient	2 (50)	2 (50)	0 (0)	4
Independent user	3 (75)	1 (25)	0 (0)	4

n, number; %, percentage

that about 50% of videos were useful. On the contrary, Rittberg et al. [9], Nason et al. [20], and Koller et al. [21] reported the most useful or high-quality video ratios were 19.6%, 18.4%, and 2%, respectively. There may be various reasons for the conflicting results in the abovementioned studies. Researchers evaluated YouTube videos about different diseases or conditions such as subcutaneous anti-tumor necrosis factor agent injections, rheumatoid arthritis, dialysis, methotrexate self-injection technique, urethral catheterization, and bariatric surgery. As a result of the absence of objective criteria, the assessment of YouTube videos is subjective. Furthermore, the number of videos evaluated in the studies is different.

When the highest quality and low-quality videos were evaluated according to the sources, the primary sources of high-quality videos were academics, nonphysician health personnel, universities/professional organizations/associations, and physicians. Low-quality videos were mainly sourced from health-related websites, independent users, trainers, and patients. Consistent with our results, researchers reported that high-quality videos were mainly sourced by healthcare professionals or organizations and primary sources of low-quality videos were medical advertisements, for-profit organizations, and independent users [18, 22, 23]. Our results reveal the importance of taking into account the video sources when using YouTube as a source of health-related information. Academics, universities, professional organizations, associations, and healthcare professionals should be supported and motivated to produce high-quality and useful videos providing accurate, informative, and unbiased health-related information. Health care professionals should emphasize the importance of video sources in receiving health-related information from social networks and websites. Additionally, patients should be informed and educated in this regard.

The number of views is the most important indicator of the popularity of videos shared on YouTube. Consumers who watch videos on YouTube can click the "like" or "dislike" button according to their ratings and can comment under the videos. We obtained these data from YouTube. In line with previous studies, no significant difference was detected in terms of the number of views, likes, and comments per day between the groups [24]. Significant differences were found in the number of dislikes per day and DISCERN scores between the groups. Our results show that high-quality videos are also more reliable videos. We consider that the number of views per day, number of likes per day, and the number of comments per day are not predictors of high-quality videos. Additionally, our results suggest that Internet users may be having trouble assessing the quality of YouTube videos.

This study has several limitations. We evaluated video quality according to the GQS which is a subjective tool. Additionally, we examined the videos in a single snapshot. This method is contrary to the structure of YouTube. YouTube has a dynamic structure, new videos are constantly added, viewed, commented upon, liked, and disliked. We searched for videos only in the English language. Geographic location and previous Internet activity may influence the search results.

Table 5 Comparison of the video parameters between the low-quality, intermediate and high-quality groups

Video quality	DISCERN score[b] median (min-max)	View per day[b] median (min–max)	Like per day[b] median (min–max)	Dislike per day[c] median (min–max)	Comment per day[b] median (min–max)
Low	1 (0–3)	10.13 (0.21–381.26)	0.05 (0–6.08)	0 (0–0.42)	0.01 (0–1.71)
Intermediate	2.50 (2–4)	5.24 (0.92–72.25)	0.04 (0–0.53)	0 (0–0.02)	0 (0–0.03)
High	3 (2–5)	3.28 (0.38–378.50)	0.27 (0–1.68)	0 (0–0.05)	0 (0–0.20)

[a] $p < 0.001$, [b] $p > 0.05$, [c] $p < 0.05$

Conclusions

Exercise therapies are the cornerstone of the treatment of AS. Visual materials and videos help to learn the accurate exercise methods. YouTube can be considered as an important source of high-quality videos for AS exercises. Nearly half of the videos we reviewed were of high quality. However, it should be noted that the remainder also contained misleading information. Therefore, YouTube should be accepted as a mixed pool with high-quality, intermediate, and low-quality videos. Health care professionals should inform patients about the importance of video sources by the use of YouTube. Academics, professional organizations, universities, associations, and healthcare professionals should provide videos to websites to ensure that internet users can access more reliable, useful, and high-quality health-related information.

Compliance with ethical standards

This study does not include any human participants or animals. Videos that were available to everyone were evaluated for this study. Therefore, ethics committee approval was not required.

Disclosures None.

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