



Is YouTube a quality source of information on sarcopenia?

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Key summary points

Aim To determine the quality and source groups of YouTube videos about sarcopenia knowledge.**Findings** The most qualified and reliable videos were from physicians and academic organizations.**Message** The professionals should consider posting videos for increasing awareness about sarcopenia.

Abstract

Background While sarcopenia is a prevalent disorder that affects muscle mass and quality, patients have limited knowledge of it. On the other hand, patients often use social media to obtain health-specific information. Therefore, the aim of this study was to investigate the YouTube videos about sarcopenia in terms of the knowledge value of what they present and to identify which of them can be considered as the quality sources of such information.

Methods The descriptive study included 53 videos retrieved by searching the keywords ‘sarcopenia’, ‘loss of muscle strength’, ‘sarcopenia treatment,’ ‘sarcopenia physiotherapy,’ and ‘sarcopenia rehabilitation’ on YouTube. The instructive characteristics of the videos were assessed with the Global Quality Scale, by which three quality groups were identified: poor-, moderate-, and high-quality videos. The DISCERN score was utilized to determine reliability. The sources of upload were identified as physicians, non-physician health personnel, health-related websites, universities and academic organizations, patients, and independent users. Finally, the lengths of videos, the number of views, likes, dislikes, and comments, and the DISCERN scores of the videos were compared using group comparisons.

Results The results suggested that there were 18 poor-quality, 16 moderate-quality, and 19 high-quality videos. Considering the sources of upload, physicians had the highest ratio in the high-quality group (83.3%). The lengths of videos and the DISCERN scores showed significant differences ($p < 0.01$). The numbers of views, likes, dislikes, and comments were similar in both quality and source groups.

Conclusion Most parts of the videos uploaded by physicians and academic organizations were included in the high-quality group. Overall, according to the results of the study, it can be asserted that high quality may be related to reliability. Furthermore, healthcare professionals and academics should consider using YouTube for increasing knowledge and raising awareness of patients about sarcopenia.

Keywords Sarcopenia · Social media · YouTube

Introduction

Sarcopenia is a generalized and progressive skeletal muscle disorder that is associated with an increased likelihood of adverse outcomes, including falls, physical disability, and mortality. The disease is characterized by low muscle strength, low muscle quantity or quality, and low physical performance [1]. The European Working Group on Sarcopenia in Older People (EWGSOP) announced a worldwide definition of the disease, and this definition fostered advances in identifying and caring for people at risk for or

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with sarcopenia [2]. In early 2018, the group (EWGSOP2) held another meeting to update the definition of sarcopenia. Consequently, the new guideline recommended emphasizing the importance of muscle quality and, based on such recommendations, the EWGSOP2 suggested healthcare providers, who treat people at risk for sarcopenia, to promote early diagnosis and treatment to prevent such adverse outcomes [1]. Sarcopenia is a significant health problem and expected to be increasingly prevalent in the next decades [3].

Nevertheless, even healthcare professionals lack sufficient knowledge of sarcopenia and its management [4]. Understanding the sarcopenia and raising awareness about it will result in better care and quality of life for geriatric populations.

About half of the adult population uses the internet to receive health-specific information [5]. YouTube has been assessed for several other diseases and medical operations so far, but not for sarcopenia [6–8]. Hence, the present study aimed at assessing the quality of YouTube videos about sarcopenia. In addition, it was aimed to define the sources of upload and assess the number of views, likes and dislikes of the videos in specified there sources.

Materials and methods

Procedure

The current study employs a descriptive research design. First, on June 11th, 2019, the videos were retrieved by searching each of the following keywords separately on YouTube (<https://youtube.com>): ‘sarcopenia,’ ‘sarcopenia treatment,’ ‘sarcopenia physiotherapy,’ ‘sarcopenia rehabilitation,’ and ‘loss of muscle strength’. Then each researcher evaluated only the videos on the first three pages of each search result since previous research indicates that most users only watch videos on the first three pages [9, 10]. Each page of the search results contained 20 videos; thus, the researchers viewed a total of 300 videos across three pages of the search results for each keyword. The videos uploaded in different languages other than English, having duplicate contents, or having problems related to picture or sound quality were excluded from the assessment. Finally, 53 videos remained to be included in the assessment procedure. The contents of these videos included sarcopenia’s etiology, diagnosis, pathophysiology, symptoms, clinical features, prevention, medical treatment, non-pharmacologic approaches to care, and rehabilitation.

Measures

The Global Quality Scale (GQS) was developed to assess the internet-based sources and used to evaluate the instructive

characteristics of the retrieved videos in this study. The GQS adopts a five-point Likert type scoring system: 1 = poor quality, poor flow, most information is missing, and not helpful for patients; 2 = generally poor, some information is given but of limited use to patients; 3 = moderate quality, some vital information is adequately discussed; 4 = good quality, good flow, the most relevant information is covered, useful for patients; 5 = excellent quality and flow, beneficial for patients. The videos rated with 4 or 5 were considered high-quality videos, those rated 3 were considered moderate-quality videos, and those with 1 or 2 were considered low-quality videos. The GQS has been used in some recent studies for the assessment of information quality on the internet [11].

Besides, a modified version of the DISCERN instrument was used to determine reliability [12]. The instrument includes five closed-ended questions: ‘Is the video clear, concise, and understandable?’, ‘Are valid sources cited?’, ‘Is the information provided balanced and unbiased?’, ‘Are additional sources of information listed for patient reference?’, and ‘Does the video address areas of controversy/uncertainty?’ One gets 1 point for ‘Yes’, but 0 points for ‘No.’

Since the upload dates of the videos were different from each other, views, likes, and dislikes were assessed using popularity assessment which is YouTube statistics revealing the popularity of the videos based on a calculation using the time passed since the upload date and the number of reactions of the viewers. The lengths of the videos were calculated in seconds. Each source of upload was also recorded and used as a grouping variable to determine whether there were differences in video quality by the source of upload. All measures were evaluated by the researchers who have studied sarcopenia before.

Statistical analysis

The IBM SPSS 25 was used for all statistical analyses. The data that showed a non-normal distribution were presented as median (minimum–maximum), number, and percentage. The distribution of the data was determined using the Shapiro–Wilk test. The comparison of the parameters between more than two groups was performed using the Kruskal–Wallis test. Cohen’s Kappa coefficient was used to determine the inter-rater agreement of the two independent researchers. The significance level was adopted as $p < 0.05$.

Results

Among the total of 300 videos, the videos with off-topic, duplicate contents, a language other than English, and audiovisual problems were eliminated and the remaining 53 videos were included in the evaluation procedure.

According to the GQS, there were 18 poor-quality, 16 moderate-quality, 19 high-quality videos. Then the sources of upload were identified as physicians, non-physician health personnel, health-related websites, universities and academic organizations, patients, and independent users, but it was discovered that there was no video uploaded by patients. While physicians had the highest ratio as the source of upload in the high-quality group (83.3%), the percentage of other groups was less than 50% in this group. The quality between sources was significant ($p < 0.025$) (Table 1). The links of high-quality videos are given in Table 2. The videos of similar sources of the

upload had similar numbers of views, likes, dislikes and comments ($p = 0.52$, $p = 0.67$, $p = 0.17$, $p = 0.74$, respectively). DISCERN score was different between sources of upload ($p = 0.01$) (Table 3). Moreover, the lengths and the DISCERN scores were significantly different in the three quality groups ($p = 0.001$ and $p < 0.001$, respectively). It was discovered that as the quality increased, the lengths of the videos also increased, as well as the DISCERN scores. However, the number of views, comments, likes, and dislikes per day among the groups remained similar ($p = 0.08$, 0.71 , 0.83 , 0.50 respectively) (Table 4). Finally, κ was calculated as 85% for the inter-rater reliability.

Table 1 The Global Quality Scale assessment according to the sources of upload

	Low quality	Intermediate quality	High quality	Total
Physician	0 (0)	1 (16.7%)	5 (83.3%)	6
Non-physician health personnel	5 (41.7%)	4 (33.3%)	3 (25%)	12
Health-related website	5 (45.5%)	4 (36.4%)	2 (18.2%)	11
University/professional organization/association	3 (16.7%)	7 (38.9%)	8 (44.4%)	18
Independent user	5 (83.3%)	0 (0)	1 (16.7%)	6
Patients	0 (0)	0 (0)	0 (0)	0

Table 2 The links of high-quality videos

https://www.youtube.com/watch?v=wJBqBDZoSvQ
https://www.youtube.com/watch?v=4LhH3scPGao
https://www.youtube.com/watch?v=dXAUxUi477U
https://www.youtube.com/watch?v=MTIvSAGiG3g
https://www.youtube.com/watch?v=t9wJ1ywLfog
https://www.youtube.com/channel/UCeVnXHV6mywfrbRH3UHZXtw
https://www.youtube.com/watch?v=ZD9QI2fbHoo
https://www.youtube.com/watch?v=xHCFB72HQ7M
https://www.youtube.com/watch?v=h5WzpDfH5K8
https://www.youtube.com/watch?v=N3JpAFg9JsY
https://www.youtube.com/watch?v=8FhBY1xN7C8
https://www.youtube.com/watch?v=LkXwfTsqQgQ
https://www.youtube.com/watch?v=XopU9Oi94P4
https://www.youtube.com/watch?v=5f36xWUH9hk
https://www.youtube.com/watch?v=1_MXKahAtAo
https://www.youtube.com/watch?v=q1FIDIErlmA
https://www.youtube.com/watch?v=4ZtGlfo0RA
https://www.youtube.com/watch?v=2FEMVsZT714
https://www.youtube.com/watch?v=20Kq10y8Zic

Table 3 The parameters of videos according to source groups and comparison with Kruskal–Wallis test

Source of upload	Duration	Views	Likes	Dislikes	Comments	DISCERN score
Physician	523 (160–2306)	1802.5 (137–11,422)	61.5 (1–618)	1.5 (0–4)	22 (0–85)	4 (4–5)
Non-physician health personnel	378 (115–2059)	1144 (62–12,440)	13 (0–509)	1 (0–5)	2 (0–36)	3 (1–5)
Health-related website	613 (45–2117)	2715 (87–8835)	21 (0–186)	2 (0–4)	0 (0–20)	2 (1–5)
University/professional organization/association	730 (61–6806)	1646 (43–289,020)	13 (0–2800)	0 (0–92)	0 (0–101)	4 (1–5)
Independent user	717.5 (92–1762)	153.5 (45–513,055)	2 (0–14,000)	0 (0–420)	0 (0–1974)	2 (1–4)

Table 4 The parameters of videos according to quality group comparison with Kruskal–Wallis test

Quality	Duration	DISCERNscore	Views per day	Likes per day	Dislikes per day	Comments per day
Low ($n = 18$)	319 (45–1741)	2 (1–2)	1.8 (0.1–181.3)	0.01 (0–20.5)	0 (0–0.6)	0 (0–1)
Intermediate ($n = 16$)	431 (61–2059)	3 (1–4)	2.78 (0.3–15.72)	0.02 (0.001–0.72)	0 (0–0.1)	0.01 (0–0.3)
High ($n = 19$)	1386 (160–6806)	4 (4–5)	0.6 (0.1–752.3)	0.02 (0–9.8)	0 (0–0.1)	0 (0–2.9)

Discussion

This study assessed the videos in terms of the quality of information given for sarcopenia and found there were almost the same numbers of poor-, moderate-, and high-quality videos. It was also found that physicians and academic organizations uploaded higher quality videos.

Social media may help people obtain accurate information, different from the past [13]. Accordingly, YouTube, as a social media platform, has become a popular, open-access video-sharing website, which also includes instructive and informative videos about diseases and medical conditions [14]. On the other hand, sarcopenia is a severe problem worldwide in older patients and raising awareness about it is crucial for its management. A recent study has reported that although older adults are willing to prevent and get the treatment of sarcopenia, they have limited knowledge of it [15].

The literature shows that sources of upload are diverse and the quality of the videos varies. Tolu et al. [16] reported that universities, physicians, and professional organizations shared high-quality videos about self-administration subcutaneous drug injections. Erdem et al. [17] assessed videos about kyphosis and reported that the videos uploaded by academics had the highest quality. Similarly, the present study revealed that the videos uploaded by academics and physicians videos had relatively higher quality while independent users shared mostly poor-quality videos. Besides, high quality was found to have an association with a high DISCERN score. Kocyigit and Akaltun [8] have recently reported the reliability of YouTube videos about secukinumab, which is similar to ours.

YouTube is a dynamic social media platform, and users can leave comments on the videos freely and express their feelings as ‘likes’ and ‘dislikes.’ Various studies have revealed controversial results with ‘likes’ and ‘dislikes’ to the videos. Singh et al. [18] reported that there was no significant correlation between the number of views and likes per day and content, accuracy, and comprehensiveness. On the contrary, many studies reported that useful videos had significantly higher numbers of views and likes per day [16, 19].

The length of a video may be an important attribute for covering all the relevant information about the content. Our findings revealed that the longer a video was, the higher the quality it had. However, many studies did not support such a

finding. These studies reported that there was no relationship between quality and video length [8, 16].

Although some studies reported that patients shared an increasing number of social media posts, there was no video uploaded by them in our study, which may be related to patient characteristics, such as old age, frequency of being online, etc., [8, 20].

On the other hand, the present study has several limitations. First, the sample size was small, and the videos were produced only in the English language. Second, the instruments were subjective and might be influenced by the researchers’ perspectives. Finally, YouTube constantly refreshes the videos, comments, and interactions; thus, our sample was limited to the videos retrieved on the retrieval date. However, to the best of our knowledge, this study is the first one investigating the quality of YouTube videos about sarcopenia. Further studies are needed to clarify the effects of YouTube videos on the knowledge level of people about sarcopenia.

In conclusion, many millions of videos having diverse quality are uploaded to YouTube every day. Notably, most parts of the videos uploaded by physicians and academic organizations can be considered in the high-quality group. On the other hand, the quality attribute is independent of reactions to the videos, such as likes and comments. Overall, we suggest that YouTube may be a useful information source and healthcare professionals and academics should consider using YouTube for increasing knowledge and raising awareness of people about sarcopenia because being knowledgeable about sarcopenia will be favorable for the management and prevention of it.

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Compliance with ethical standards

Conflict of interest The authors declare there is no conflict of interest regarding the publication of this study.

Ethical approval By researching the keywords on YouTube, public and open-access videos were evaluated. Not applicable.

Informed consent Not applicable.

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