



ORIGINAL ARTICLE

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YouTube as a source of information on coccydynia

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Abstract

In recent years, the use of YouTube for obtaining medical information has increased. In this article, we aimed to determine the usefulness, quality, and reliability of YouTube videos on coccydynia. Coccydynia and "coccyx pain" were searched for on YouTube on October 2, 2022. The study comprised 80 of the 120 videos that were discovered as a consequence of the search and met the inclusion criteria. The videos' videometric properties were noted. Depending on whether the content utilized information from evidence-based scientific sources, the videos were separated into two groups: useful and misleading. The measure popularity, the Video Power Index (VPI) was applied. To measure reliability, the modified DISCERN (mDISCERN) was applied. To evaluate quality, the Global Quality Score (GQS) was applied. This study found that 28.7% of the video sources were from physicians and 73.8% of the videos were classified as useful, while 26.2% were classified as misleading. Videos posted by doctors and academic institutions/professional organizations were all in the useful group, while all videos uploaded by independent users and patients were in the misleading group. The useful videos had higher VPI, GQS, and mDISCERN scores, indicating that videos posted by healthcare professionals and academic institutions were more reliable and of higher quality than those from patients and independent users. The significant number of the coccydynia-related YouTube videos were reliable, useful, and of high quality. Healthcare providers should be aware of the value of YouTube's health-related content and maintain high-quality content.

Keywords: YouTube, coccydynia, video

Introduction

The most caudal section of the spine, the coccyx often consisting of 4 segments. Coccydynia describes the pain that occurs in the coccygeal region, especially when sitting. It accounts for 1% of spinal pain disorders [1]. The underlying etiological factors of coccydynia include musculoskeletal pathologies, infection, malignancy and obesity. [2].

In many cases, the disease is self-limiting, and no treatment is needed, but in some cases, the pain is severe and interferes with daily life. Treatment mainly includes avoiding factors that

increase pain (sitting), use of cushions, medical treatments, and injections. In very few cases, patients require amputation of the coccyx [3].

The usage of the Internet to get disease knowledge has increased in recent years. A study showed that half of American people use the Internet to seek medical knowledge [4]. YouTube is a popular video website in the world, enabling users to upload and watch videos for free. Due to its ease of use and access, it is frequently used to seek medical information. YouTube is an important resource for patient education and sharing disease information. However, there is no algorithm to measure the reliability and

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quality of the videos shared. Therefore, there is a concern that health-related videos containing misleading information may pose a serious threat to public health [5]. In recent years, the number of articles analyzing the reliability and quality of videos related to various diseases has increased in the literature as health professionals have realized the importance of YouTube as an important source of information for the public [6]. As far as we have investigated, there is no publication in the literature evaluating the content, reliability and quality of YouTube videos on coccydynia. Therefore, in our study, we investigated to evaluate whether videos on coccydynia contain scientifically accurate information, as well as their reliability and quality.

Material and Methods

The data was collected from videos on YouTube, a public video sharing platform, on 2 October 2022. Google Chrome history was cleared before searching so that search results were not influenced by previous online activity. 'Coccydynia' and 'coccyx pain' were used as keywords. Each keyword was searched by typing into the YouTube search engine. No filtering was used to mimic the search pattern of the users during the search. Research has revealed that the majority of viewers only watch videos that appear on the first three pages [6,7]. Therefore, videos from the first 3 pages of the search results for each keyword were saved for further analysis. Since each page contains 20 videos, a total of 120 videos, 60 videos for each keyword, were saved for further analysis. Only English videos were analysed in the study. Videos without English language, advertisement videos, duplicate videos, music videos, silent videos, and videos irrelevant to the study topic were excluded. After excluding the videos that met the exclusion criteria, the remaining 80 videos were included in the study.

All videos were analyzed by two independent physiatrists (C.U and E.U) in different settings to avoid bias. Any differences in assessment between the two authors were re-evaluated together and resolved by reaching a consensus.

Video Parameters

For every video, we recorded a set of metrics such as the duration of the video in minutes, the elapsed time since the video's upload in days, the total number of views, the average views per day since the video was uploaded, the total likes, the average likes per day since the video was uploaded, the average dislikes per day since the video was uploaded, and the total number of comments. In our study, we categorized video resources into physicians, nonphysician healthcare personnel (therapists, physiotherapists, etc.), academic institutions/professional organizations, health-related websites, patients, and independent users, as used in similar studies [8,9].

Analysis of Videos

To evaluate the popularity, VPI developed by Erdem et al. was used. VPI, which has been used in many studies, is calculated as $VPI = (\times 100 / [\text{number of likes} + \text{number of dislikes}]) \times (\text{number of}$

views/number of days since upload)/100 [8,10,11].

To evaluate quality, GQS is a tool created by Bernard et al. [12]. It uses a 5-point scale to measure the quality, fluency, and usability of videos. The scale ranges from 1 (very poor) to 5 (excellent), with higher ratings shows good quality. The GQS has been used in several studies to assess the quality of video [11,13].

The mDISCERN scale was used to assess the reliability of videos, which was adapted from the original DISCERN scale created by Charnock et al. for use with YouTube videos by Signh et al. [14,15]. mDISCERN is a 5-point assessment tool that investigates the purposes, reliability, bias, additional sources and uncertainty of information sources. This scale consists of 5 questions. Questions are answered yes/no and each yes is scored 1 point, with higher scores indicating higher reliability.

The videos were evaluated according to their usefulness and divided into 2 groups as useful and misleading. Based on previous studies, if it contains scientifically accurate information about the disease in terms of clinical findings, diagnosis, treatment and prevention, it is considered useful or if it contains at least one non-scientific information, it is considered misleading [16,17].

As used in previous studies, videos were categorized as target audiences as patients and healthcare professionals [11,18]. Videos that used mostly medical terms, such as congress presentations, were considered health professionals as the target audience. The patients were considered the target audience for videos with content such as exercise and medical recommendations, where medical terms related to the disease were not used.

Statistical Analysis

The data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0 for Windows. Continuous variables were examined for normality using the Shapiro-Wilk test. In descriptive statistics, median values (with minimum and maximum ranges) were used to present continuous data and frequencies and percentages were used for nominal data because they did not conform to normal distribution. The Mann-Whitney U test was used to compare differences between two groups and Kruskal Wallis test (with Mann-Whitney U) was used to determine statistical significance between groups. For nominal variables, the significance of differences was analyzed using chi-squared and Fisher's exact tests. Results with a p-value of less than 0.05 were considered statistically significant.

Results

80 videos were included and analysed. Most of the video sources (n=23, 28.7%) were from physicians. The median (min-max) popularity (VPI) score was 11.25 (0.10-1230.0). Median (min-max) mDISCERN and GQS scores were 4.0 (1.0-5.0) and 4.0 (1.0-5.0), respectively (Table 1).

Videos were grouped as useful (n=59, 73.8%) and misleading (n=21, 26.2%) according to their usefulness (Table 2).

The number of likes, views, comments, popularity scores

(VPI) of useful videos were statistically higher than misleading videos ($p=0.012$, $p=0.003$, $p=0.002$, $p=0.001$ and $p=0.001$, respectively). When compared in terms of reliability and quality, useful videos were of significantly higher quality ($p=0.001$ for GQS and mDISCERN).

Table 1. Videometric characteristics of the videos

	n=80
Source n(%)	
Physician	23 (28.7)
Nonphysician healthcare personnel	16 (20)
Academic Institutions/Professional Organizations	15 (18.8)
Health Related Websites	10 (12.5)
Patient	6 (7.5)
Independent User	10 (12.5)
Video duration median (min-max)	6.32 (2.13-55.0)
The median number of views (min.-max)	8901.0 (145.0-1028000.0)
Median time since upload (days) (min-max)	873.0 (32.0-4410.0)
The median number of likes (min-max)	123.05(1.0-20000.0)
The median number of dislikes (min-max)	0.0 (0.0-25.0)
The median number of comments (min-max)	15.5 (0.0-1200.0)
Median daily views (min-max)	11.25 (0.10-1230.0)
Median daily likes (min-max)	0.18 (0.0-24.90)
Median daily dislike (min-max)	0.0 (0.0-0.01)
Median VPI (min-max)	11.25 (0.10-1230.0)
Median GQS (min-max)	4.0 (1.0-5.0)
Median mDISCERN (min-max)	4.0/1.0-5.0)
Usefulness n(%)	
Useful	59 (73.8)
Misleading	21 (26.2)
Target audience n(%)	
Healthcare professional	16 (20)
Patient	64 (80)

min: minimum; max: maximum; global quality scale; mDISCERN: modified DISCERN; VPI: video power index

The mDISCERN and GQS scores of videos made by independent users and patients were lower than videos produced by physicians, non-physician health professionals, academic institutions and health-related websites ($p=0.001$ for all), while

there was no difference between patients and independent users ($p=0.458$, $p=0.343$, respectively) (Table 3).

There was no statistically difference among the mDISCERN and GQS scores of physicians, non-physician health professionals and academic institutions ($p>0.05$).

The health-related websites scores were lower for physicians ($p=0.001$, $p=0.002$) than for academic organisations ($p=0.001$, $p=0.001$, respectively), but similar to the mDISCERN and GKS scores of non-physician health professional videos ($p=0.934$, $p=0.646$, respectively).

The target audience of most of the videos ($n=64$, 80%) was patients.

Table 2. Comparison of the characteristics of videos according to usefulness

	Useful (n=59)	Misleading (n=21)	P
Source n(%)			
Physician	23 (39.0)	0	
Nonphysician healthcare personnel	13 (22.0)	3 (14.3)	
Academic Institutions/Professional Organizations	15 (25.4)	0	
Health Related Websites	8 (13.6)	2 (9.5)	
Patient	0	6 (28.6)	
Independent User	0	10 (47.6)	
Median video duration (min-max)	6.5 (2.13-55.0)	6.3 (2.24-19.17)	0.548
The median number of views (min-max)	23373.0 (145.0-1028000.0)	2457.0 (194.0-171269.0)	0.012
Median time since upload (days) (min-max)	805.0 (32.0-4410.0)	1058.0 (346.0-3587.0)	0.020
The median number of likes (min-max)	231.0 (3.0-20000.0)	24.0 (1.0-2500.0)	0.003
The median number of dislikes (min-max)	0.0 (0.0-2.0)	2.0 (0.0-25.0)	0.001
The median number of comments (min-max)	27.0 (0.0-1200.0)	3.0 (0.0-222.0)	0.002
The median number of daily views (min-max)	33.4 (0.11-1230.0)	2.15 (0.10-326.80)	0.001
Median daily likes (min-max)	0.39 (0.0-24.90)	0.02 (0.0-3.04)	0.001
Median daily dislike (min-max)	0.0 (0.0-0.01)	0.001 (0.0-0.01)	0.001
Median VPI (min-max)	33.4 (0.11-1230.0)	1.96 (0.10-325.10)	0.001
Median GQS (min-max)	5.0 (3.0-5.0)	2.0 (1.0-3.0)	0.001
Median mDISCERN (min-max)	5.0 (3.0-5.0)	1.0 (1.0-2.0)	0.001
Target audience n(%)			
Healthcare professional	16 (27.1)	0	0.008
Patient	43 (72.9)	21 (100)	

min: minimum; max: maximum; global quality scale; mDISCERN: modified DISCERN; VPI: video power index

Table 3. Comparison of the reliability and quality characteristics of videos by source

	Physician (n=23)	Nonphysician HP (n=16)	Academic institution/professional organization (n=15)	Health-related website (n=10)	Patient (n=6)	Independent user (n=10)	P
mDISCERN*	5.0 (4.0-5.0)	4.0 (1.0-5.0)	5.0 (4.0-5.0)	3.5 (2.0-5.0)	1.0 (1.0-1.0)	1.0 (1.0-2.0)	0.001
GQS*	5.0 (4.0-5.0)	4.0 (2.0-5.0)	5.0 (4.0-5.0)	4.0 (3.0-4.0)	2.0 (1.0-2.0)	1.0 (1.0-2.0)	0.001

*: median (min-max) min: minimum; max: maximum; global quality score; mDISCERN: modified DISCERN; VPI: video power index

Discussion

In our study, videos on coccydynia were evaluated for usefulness, reliability, and quality. The main finding of this study was that most of the coccydynia-related videos on YouTube were useful, reliable and of high quality. In addition, all videos uploaded by doctors and academic institutions were useful and of high quality, while all videos uploaded by patients and independent users were misleading videos.

Our study found that physicians were the most of video sources (28.7%), with patients and independent users accounting for fewer sources than healthcare professionals. Other research studies that have analyzed at videos on YouTube related to fibromyalgia, gout, and psoriatic arthritis have also noted similar results [8,9,16]. Additionally, our study found that videos from physicians and non-physician healthcare professionals, professional organizations /academic institutions and health-related websites had higher quality and reliability compared to videos from patients and independent users. Studies on the reliability and quality of videos on Behçet's disease and gout have also shown that videos uploaded by healthcare professionals are more trustworthy and of higher quality [13,16]. Therefore, the video source is a significant factor in determining the quality of the content. Research has shown that internet users tend to trust videos uploaded by healthcare professionals more ; however, a study by Rice found that most users do not check the video source when searching for health-related information [20,21]. As a result, it is crucial for healthcare professionals and medicine organizations to instruct patients to verify the source of videos when searching for information about their medical conditions online.

Although YouTube is an essential source of health information, it is not without risks. We can say that uploaded videos about health may pose a threat to public health if they do not pass the preliminary review. During the COVID-19 pandemic, it has been shown that disinformation videos about vaccines negatively affect public health [22]. In our research, a large proportion of the videos analyzed (73.8%) were found to be scientifically valid and informative. Different results were obtained in studies on various diseases in the literature. For example, Mueller et al. investigated YouTube videos on psoriasis and found that 63% of the videos reported misleading information [5]. Singh et al. and Kumar et al. analyzed videos on rheumatoid arthritis and hypertension, respectively, and showed that most of the videos contained scientifically accurate information, similar to our study [15,23]. This difference in the literature may be related to the disease investigated and the incidence of the disease. To illustrate, we think that internet users may be more exposed to videos containing misleading information on various diseases where alternative or herbal treatment options that lack evidence-based studies are popular. In our study, all videos posted by doctors and professional organizations/academic institutions contained medically accurate information. In contrast, all videos

posted by patients and independent users contained misleading information. It is not surprising that healthcare professionals upload videos that contain more accurate and useful information, similar to our results [8,11].

In our study, video engagement parameters such as views, daily likes, and VPI of videos containing medically accurate and useful information were significantly higher than videos containing misleading information. This situation is pleasing for internet users who are looking for medical information about coccydynia because videos with high video engagement are shown more frequently and on the first pages of recommendations according to the YouTube algorithm. However, different outcomes have been reported in the literature in terms of video interaction metrics. In a study in which Moon et al. analyzed YouTube videos about COVID-19, it was reported that videos containing useful information, similar to our study, had higher video engagement scores[24] In the literature, there are studies showing that there is no difference between videos containing useful and misleading information in terms of video interaction parameters [8,25]. In a study examining YouTube videos about dialysis, it was reported that videos containing misleading information had higher video engagement parameters [26] Considering this difference, video engagement metrics such as likes, dislikes, views, and comments will be insufficient in regard to showing videos are high quality and reliable. It can be suggested that since most YouTube users are not health experts, they cannot be objective when evaluating the health-related videos they watch, so parameters such as likes and dislikes will vary. Moreover, the number of subscribers to the video resource is one of the factors affecting video engagement.

In this study, the mDISCERN and GQS scores of the videos in the useful group were significantly higher than those in the group containing misleading information. This result is not surprising since most of the videos uploaded by healthcare professionals as video sources are in the useful group. The results similar to our study have been reported in the literature [17,24].

Limitations

The daily change in the parameters of YouTube videos used in our study and the fact that only English language videos were analyzed are major limitations. This may not capture all relevant information, as patients may search for symptoms related to coccyx pain using different terms such as "hip pain" or "lower back pain".

Conclusion

Our study suggests that the most of YouTube videos on coccydynia provide medically accurate and beneficial information. However, as YouTube is a constantly changing site, new videos are added regularly, and the unavailability of objective criteria for assessing the reliability and quality of these videos suggests that these findings may be subject to change over time. It is therefore essential for doctors and organizations to direct patients to credible sources for information about this condition.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical approval

Human and animal data were not used in the study. Since the data were obtained from YouTube, where public videos are available, no ethics committee approval was obtained, as in similar studies [11,13,16].

Authorship Contributions

Concept: CU, EU, Design: CU, Data Collectin or Processing: CU, EU, Analysis or interpretation: CU Literature Review: CU, EU Wrote the Paper: C.U.

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