A Quality Analysis Of Low Back Pain Videos On Youtube

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Abstract

Background: Most people face low back pain problems at least once in their lifetimes. With the advancing technology, people have been consulting the internet regarding their diagnoses more and more over the last 20 years. This study aims to evaluate the accuracy and reliability of YouTube videos on low back pain.

Methods: The keyword “Low Back Pain” was used in our search on YouTube. The first 50 videos to come up in the search results were evaluated using JAMA, DISCERN, and GQS scoring systems. The individual correlation of each video and the correlation between the aforementioned scoring systems were statistically analyzed.

Results: The average length of the 50 videos that were analyzed is 7,57 minutes (0,34 – 48,23 minutes), and the average daily view count of the videos is 331,14. Generally, video quality was found to be “poor”. On average, JAMA score was 1,64, DISCERN score was 1,63 and GQS score was 1,93. The most common videos found on the subject were those that were done by TV programs. And, videos by health information websites and by Hospitals / Doctors / Educational Institutions were, while still being below the threshold value, found to give higher quality information on the subject than the videos by other sources.

Conclusion: Videos on YouTube regarding low back pain are of low quality, and most are created by unreliable sources. Therefore, such YouTube videos should not be recommended as patient education tools on low back pain. An important step in disseminating correct medical information to the public would be to have a platform where the accuracy and quality of given medical information are evaluated by medical experts.

Background

Low back pain is one of the most frequently occurring types of medical problems. 65–80% of the people in the world report suffering from low back pain at least once in their lives [1–3]. In 90% cases, acute low back pain goes away within the first 6 weeks of its occurrence [4, 5]. However, 50% of the patients suffering from it report a relapse of the pain within the next 6 months of the relapse [1, 6].

An aetiological look into low back pain reveals that the most prominent underlying cause is mechanical factors. Mechanical low back pain is caused by obesity, cold temperatures, sedentary lifestyle, heavy labour, and trauma. Inflammations, infections, tumors and metabolic factors are some other causes of low back pain [7, 8].

Numerous web pages and online forums contain information on low back pain, which causes heavy losses in the economy and labour force. Many patients access YouTube in order to get more information regarding their pain and relevant treatment planning. YouTube is one of the biggest internet platforms with more than a billion users[9] and is the second most visited website after the search engine, Google [10]. When using YouTube as a source of information, one must evaluate the quality of the videos and take certain precautions in order to ensure the information they receive is accurate. In many previous studies, YouTube videos on health were found to be of low quality [9, 11].

This study is the first to evaluate YouTube videos based on the keyword “low back pain.” We aim to use 3 different scoring systems and evaluate the quality and reliability of YouTube videos on “low back pain.”

Methods

Search Strategy and Data Collection

Using the search engine on YouTube, the term “Low Back Pain” was searched online. The results were listed by “relevance”, the standard sorting option of the website. The search was conducted by A.Ö. on 11 February 2020, and the
first 50 videos that came up were recorded for the purpose of this study. No filters were used in the search. Data collected from the videos were as follows: Video length, upload date, daily view count, total view count, like and dislike count, number of comments, and source of the video. The videos were independently watched, ranked and turned into a database by two healthcare professionals (A.Ö. – 1st Researcher, O.B. – 2nd Researcher) and one non-medical researcher (M.Ö. – 3rd Researcher) using DISCERN, Journal of the American Medical Association (JAMA) and Global Quality Scale (GQS) scoring systems.

**Scoring Systems**

DISCERN is a questionnaire that evaluates the reliability and quality of a publication through 15 questions that can have answers ranging from 1 to 5 points [11]. According to DISCERN scoring system results, videos that have scores of 4 or higher are considered to be of “good” quality and can be trusted as useful sources of information on treatment options. Videos that have scores of 3 are considered to be of “moderate” quality. These, while being useful sources of information, do need additional support. And videos that have scored lower than 3 are considered to be of “low” quality and they cannot be considered as suitable sources of information on treatment options [9].

JAMA benchmarks provide a scale to qualitatively assess websites (and in our case, videos) using four standards: Authorship, attribution, disclosure, and currency. On this system, 4 is the highest score, and 1 is the lowest [12].

GQS is a 5-point scale that evaluates the quality, flow, and use of information present online. In this scale, 1 is considered “poor quality”, while 5 is considered “excellent quality” [13].

**Classification of Video Sources**

Videos were separated into 5 groups according to the sources by which they were uploaded: Source 1 - TV programs/News Programs, Source 2 - Hospital/Doctor/Educational Institution Posts, Source 3 - Health Information Websites, Source 4 - Profit-making Companies/Medical Advertisements, and Source 5 - Posts Made by Patients.

**Statistical Analysis**

Mean, Median, Standard Deviation, Variance Minimum, and Maximum values of the data were calculated. With the professionals working in this study having normal distribution, A one-way ANOVA test was used as a post-test to evaluate whether their scores differed. Also, as the evaluation score variances of score systems used in the study were homogenous, the Tukey HSD test was used as a post-test in order to see the differences between the tests. Video sources data were analyzed using chi-square and correlation (Spearman’s rho and Kruskal-Wallis Test.) In order to ensure the reliability of all scores, Cronbach’s Alpha coefficient was calculated.

**Ethics Committee**

Ethics committee approval is not required by the nature of the study.

**Results**

The average video length was 7,57 minutes (0,34-48,23 minutes), the average daily view count was 331,14 (min-max 3,02-5.653,48), the average total view count was 203.742,96 (min-max 1416-2.668.446). The average like and dislike counts were 1.560,70 (min-max 0-14.450) and 141,28 (min-max 0-185) respectively. And the average number of comments was 130,32 (min-max 0-2.425) (Table 1).
Researchers’ scores given through each of the three scoring systems were evaluated separately. In GQS scoring system, the average of the scores given by the 1st researcher was 1.94±0.89 (min-max 1.00-4.00), while the averages of the scores given by the 2nd and 3rd researchers were 1.74±0.89 (min-max 1.00-4.00) and 2.1±0.95 (min-max 1.00-4.00) respectively. As for the DISCERN scores, the averages were 1.61±0.29 (min-max 1.13-2.33) for the 1st researcher, 1.55±0.31 (min-max 1.13-2.33) for the 2nd researcher and 1.70±0.33 (min-max 1.13-2.46) for the 3rd researcher. And, in JAMA scores, the averages were 1.57±0.33 (min-max 1.00-2.50) for the 1st researcher, 1.61±0.29 (min-max 1.25-2.25) for the 2nd researcher and 1.74±0.30 (min-max 1.25-2.75) for the 3rd researcher (Table 2). Average scores for JAMA, DISCERN and GQS were found to be 1.64, 1.63 and 1.93 respectively. The reliability of scores given by the professionals in this study was found to be high (Cronbach’s Alpha = 0.879).

Looking at the GQS, DISCERN, and JAMA scores, it can be seen that the variances in total scores given by the researchers to the YouTube videos are homogenous (Table 3). Therefore, the Tukey HSD test was used as a post-test. According to the post-test results, DISCERN and JAMA score averages appear to be highly similar (p>0.05). However, there seems to be a significant difference between the scores of these two systems and GQS score averages (p<0.001) (Table 4).

Each subgroup of all the scoring systems was evaluated in order to see whether there were similarities among the answers given by the researchers. In this respect, researchers’ scores on YouTube videos based in GQS scoring system were evaluated. There were no significant differences between the answers in GQS (F(2,147)= 1.945, p>0.05); all subgroups had similar scores (Table 5). Evaluation of the subgroup scores in DISCERN scoring system also revealed no significant differences among the scores given by the researchers (F(2,147)= 2.916, p>0.05). Although there seemed to be 2 different viewpoints, scores given by the 3 researches were found to be similar (Table 6). However, the average scores given by the researchers in JAMA scoring system were found to differ from one another (F(2,447)= 4.160, p<0.05). Individual scores given by the researchers in JAMA were different from each other; therefore, in order to find out which researcher had different scores from the others, further testing was done. Results seem to indicate that while the scores of the 3rd and the 2nd researcher were close, the scores given by the 1st and the 2nd researchers seem to be even closer to each other (Table 7).

Looking at the sources of the videos, it was found that 60% of the videos were TV programs / News Programs, 16% were by Health Information Websites and 14% were Hospital / Doctor / Educational Institution Posts. The remaining 6% and 4% of the videos were Profit-making Companies / Medical Advertisements and Posts Made by Patients respectively (Table 8). A positive correlation was found between the video sources and GQS, DISCERN, and JAMA scores (r GQS-N=0.487; r DISCERN=0.492; r JAMA=0.442).

According to the averages of the scores in all 3 scoring systems, the most reliable videos appear to be Profit-making Companies / Medical Advertisements, those by Health Information Websites and Hospital / Doctor / Educational Institution Posts respectively.

Most videos contained information regarding the treatment of low back pain (66%). Of these videos, 22% mentioned medical and herbal treatment, 32% mentioned physiotherapy and exercises, and 12% mentioned surgical treatment.

**Discussion**

Access to information has greatly expanded with the advancing technology. Information is now easier to access than ever thanks to always being connected to the internet, especially on our mobile phones. And with the expanding use of technology and the internet in our lives, the number of people searching for information on medical issues online has
also increased. A study reported that 70% of all Canadians used the internet to get medical information and that many people in the country tried to get information online before going to a doctor [14, 15].

YouTube is a popular, open-access online video sharing platform[16, 17]. There are numerous videos on diagnosis, treatment, and precaution options for patients[18]. However, since there is no content control or global fact-checking, people might encounter misinformation or biased videos. There have been previous studies evaluating the reliability and accuracy of videos on illnesses with different epidemiologies[10, 18, 19]. However, there is no previous study that directly evaluates the reliability and accuracy of YouTube videos on “Low back pain”, a very common and serious public health concern.

A similar methodology to those used in other studies in the literature was employed in our evaluation of YouTube videos on “Low back pain” [18, 20–22]. Looking at previous studies regarding YouTube videos on spinal surgery related topics such as lumbar microdiscectomy [9], anterior cervical disectomy and fusion [11], and scoliosis [22], it can be seen that the video qualities were found to be “poor.” Gokcen and Gumussuyu’s study on videos related to lumbar discectomy reported a DISCERN score of 1.92 and a JAMA score of 1.7. As these scores were similar to the scores in our study, it was deduced that these low scores might not be topic related; they could rather indicate a broader pattern[9]. While there are no videos with a score higher than 3 in DISCERN terms in our study, there were some in other studies. In the study by ReFaey et al. evaluating YouTube videos on the topic of glioblastoma treatment, 22% of the videos received DISCERN scores of 3 or higher; however the majority of the videos were again found to be of lower quality [10]. There is information pollution on YouTube as there are videos with alternative medicine recommendations that have not been extensively studied, inaccurate suggestions of diagnosis and treatment methods, and inadequate data on when to use which method of treatment in a particular case. This information pollution is highly likely to cause problems for patients as it increases the chances of them encountering negative consequences. It is quite difficult for people to access accurate information in this gigantic pool of information.

Most videos evaluated in our study were posted people who were not medical professionals. Only 38% of the videos in our study were found to have been posted by medical professionals. In other studies, there are similar numbers: In Ovenden’s, 54% of the videos were posted by medical professionals, while, in Gokcen and Gumussuyu’s study, 48% of the videos were by medical professionals[9, 11]. Both such other studies and ours suggest that, while percentages might differ, the actual number or health-related videos posted by non-medical-related users are high. In these studies, videos created and/or posted by doctors were found to be of a higher quality and reliability when compared to other sources [18]. In our study, scores of 3 groups were found to have a positive correlation with each 3 scoring systems. Videos by Health Information Websites and videos posted by Hospitals / Doctors / Educational institutions, while still being below the threshold, were found to be of a higher quality than those by other sources. A study by Pew Research Centre reports that 75% of people do not pay attention to the source while watching a video [23]. The results of our study indicate this as well. Even though hospital/doctor videos have the highest average scores, they have one of the lowest view counts (an average of 112,97 a day per video.) Videos made by patients and videos sourced from TV programs have much higher view counts than this (563,77 and 386,11 a day per video, respectively.) There are studies indicating that these numbers are related to the fact that the videos by medical professionals are harder to understand for the general public [24]. In this respect, health professionals are advised to post videos that are plain in language and are in line with reliability and quality criteria based on objective scoring systems such as DISCERN, JAMA, or GQS.

DISCERN and JAMA yielded similar results to each other in the study by Gokcen and Gumussuyu[9]. In our study, scores given by the 3 researchers were homogenous and while scores based on DISCERN and JAMA were highly similar to each other, GQS scores were, on average, different from the aforementioned two (Table 4). Looking deeper into the scoring criteria in all 3 systems, it was seen that GQS had broader questions, while JAMA, and especially DISCERN, evaluated publications from a more academic perspective. In JAMA and DISCERN, detail questions regarding credentials of related
parties, references and sources, sponsorships, conflicts of interest, objectivity, differences in treatment options, expected responses to treatment or potential problems if the health problem in question was not treated led us to believe that these two scoring systems provided “more accurate results” for the purpose of our study. These scoring systems were separated into their subgroups in order to see if there were any differences of opinion. No difference was spotted in GQS (Table 5). While DISCERN created two different opinions, the difference between the two was not statistically significant (Table 6). However, JAMA yielded two different opinions, and the difference between the two was statistically significant (Table 7). The different opinions were deduced to stem from the fact that, while medical professionals agree on the answers of most questions, a non-medical professional might have a different opinion on the related topic. This can be observed in Table 7, where the first two researchers have similar opinions, and the 3rd researcher, while being close to those of the 2nd researcher, had different opinions. In the light of these findings, it was realized that doctors were able to filter through data within their own fields in more detail, while an out-of-field researcher could be prone to missing certain details. Therefore, it was deemed necessary to evaluate such online publications by a board made up of members specialized in the related field.

Filtering criteria in choosing the videos in the study are similar to those found in literature[22, 25]. “Low back pain” was used as the keyword in our search, and the first 50 videos to come up were evaluated. This process can be seen as some sort of filtering. However, as seen in literature[26], people searching for information online are usually thought to focus on the first results they find. It is also worth noting that a search with the same keywords can bring up different results on different dates. In order to overcome this obstacle, our researchers only evaluated videos that were posted on the same date. Our search was conducted in the Turkish language, and search results may vary in different languages. This is only a cross-sectional study that focuses on a limited amount of current data on YouTube.

An ideal YouTube video on health should explain causes of the pathology, treatment options, risks, and rewards in a balanced and objective manner, while also referring to relevant literature. Guidelines on creating medical content on the internet have been published before[27]. However, most of the current YouTube videos do not comply with these guidelines. Therefore, this study recommends that doctors inform their patients on the fact that YouTube is not a reliable source of information and that doctors should inform patients themselves on “Low back pain” in an understandable, yet detailed, manner.

Conclusions

With the advancing technology and ever-increasing online information sharing, more and more patients and patients’ relatives go online in order to obtain information on medical services. YouTube is one of the most frequently used information-sharing platforms online. Our study aims to evaluate YouTube videos on “Low back pain” has found that such videos have low quality and reliability. Quite what kind of an effect this situation has on the decision-making process of patients and on patient-doctor relations is yet unknown, however, it is imperative that patients watch up-to-date videos that are shared by medical professionals in order to get the most accurate information. In this respect, having a video sharing platform that evaluates the quality and accuracy of videos before making them public would be an important step forward in achieving accurate medical information flow.

Declarations

Ethics approval and consent to participate
Ethics committee approval is not required by the nature of the study.

Consent for publication
Not applicable

**Availability of data and materials**

Use of data and materials is appropriate

**Competing interests**

There is no conflict of interest. **The is no grant.**

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**Authors’ contributions**

Conception and design: MAÖ, OB

Acquisition of Data: MAÖ, ŞE

Analysis and interpretation of data: all authors.

Drafting the article: TS, AK

Critically revising the article: ATB, NC

Reviewed submitted version of manuscript: all authors.

Technical/ material support: OB.

Approved the final version of the manuscript on behalf of all authors: MAÖ

Statitical analysis: NC, ATB

Study supervision: OB

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Tables

Table 1: Descriptive Statistics

|                  | Video Length | Daily View Count Of The Videos | Total View Count | Like Count | Dislike Count | Number Of Comments |
|------------------|--------------|--------------------------------|------------------|------------|---------------|--------------------|
| N                | 50           | 50                             | 50               | 50         | 50            | 47                 |
| No Comment (Null)| 0            | 0                              | 0                | 0          | 0             | 3                  |
| Mean             | 7,5792       | 331,14965                      | 203742,96        | 1560,70    | 141,28        | 130,32             |
| Median           | 6,1100       | 78,51764                       | 63560,50         | 250,50     | 18,50         | 20,00              |
| Standard Deviation| 7,57787     | 820,046601                    | 403130,793       | 2882,373   | 299,870       | 374,625            |
| Variance         | 57,424       | 672476,429                     | 162514436132,978 | 8308075,480 | 89922,247     | 140343,657         |
| Minimum          | 1,34         | 3,029                          | 1416             | 0          | 0             | 0                  |
| Maximum          | 48,23        | 5653,487                       | 2668446          | 14450      | 1850          | 2425               |

Table 2: Total and individual points given by experts according to GQS, Discem and Jama scoring systems
|                | Experts | N  | Mean  | Standard Deviation | Standard Error | 95% Confidence Range For Average | Minimum | Maximum |
|----------------|---------|----|-------|--------------------|----------------|---------------------------------|---------|---------|
|                |         |    |       |                    |                | Lower Limit         | Upper Limit |        |        |
| GQS            | 1.      | 50 | 1,94000 |  .890081           | .125877       | 1,68704           | 2,19296 | 1,000 | 4,000 |
|                | 2.      | 50 | 1,74000 |  .899206           | .127167       | 1,48445           | 1,99555 | 1,000 | 4,000 |
|                | 3.      | 50 | 2,10000 |  .952976           | .134771       | 1,82917           | 2,37083 | 1,000 | 4,000 |
|                | Total   | 150| 1,92667 |  .920291           | .075141       | 1,77819           | 2,07515 | 1,000 | 4,000 |
| Discem         | 1.      | 50 | 1,6152  |  .29270            | .04139        | 1,5320            | 1,6984  | 1,13  | 2,33  |
|                | 2.      | 50 | 1,5578  |  .31134            | .04403        | 1,4693            | 1,6463  | 1,13  | 2,33  |
|                | 3.      | 50 | 1,7072  |  .33108            | .04682        | 1,6131            | 1,8013  | 1,13  | 2,46  |
|                | Total   | 150| 1,6267  |  .31609            | .02581        | 1,5757            | 1,6777  | 1,13  | 2,46  |
| Jama           | 1.      | 50 | 1,5750  |  .33598            | .04751        | 1,4795            | 1,6705  | 1,00  | 2,50  |
|                | 2.      | 50 | 1,6100  |  .29085            | .04113        | 1,5273            | 1,6927  | 1,25  | 2,25  |
|                | 3.      | 50 | 1,7450  |  .30510            | .04315        | 1,6583            | 1,8317  | 1,25  | 2,75  |
|                | Total   | 150| 1,6433  |  .31775            | .02594        | 1,5921            | 1,6946  | 1,00  | 2,75  |

**Table 3**: Comparison of total scores given by experts according to GQS, Discem and Jama scoring systems *
Table 4: Comparison of the total scores of experts according to the GQS, Discem and Jama ranking systems of Youtube videos *

| Scoring Systems | Mean | Standard Deviation | Standard Error | 95% Confidence Range For Average Lower Limit | Upper Limit | Min | Max |
|-----------------|------|--------------------|----------------|---------------------------------------------|-------------|-----|-----|
| GQS             | 1,9267 | 0,92029            | 0,07514        | 1,7782                                      | 2,0751      | 1,00 | 4,00 |
| Discem          | 1,6267 | 0,31609            | 0,02581        | 1,5757                                      | 1,6777      | 1,13 | 2,46 |
| Jama            | 1,6433 | 0,31775            | 0,02594        | 1,5921                                      | 1,6946      | 1,00 | 2,75 |
| Total           | 1,7322 | 0,60556            | 0,02855        | 1,6761                                      | 1,7883      | 1,00 | 4,00 |

* P = 0,200 for homogeneity

Table 5 : Sub-Groups of Expert Evaluations by GQS Scoring Systems *

| Evaluation | N     | Alpha For Sub Groups = 0.05 |
|------------|-------|-----------------------------|
| Expert     |       |                             |
| 2. Researcher | 50    | 1,74000                     |
| 1. Researcher | 50    | 1,94000                     |
| 3. Researcher | 50    | 2,10000                     |
| p           |       | 0,124                       |

* Tukey HSD

Table 6 : Sub-Groups of Expert Evaluations by Discern Scoring Systems *

| Comparison Of Total Scores Of Scoring Systems | Mean Difference (I-J) | Standard Error | P   | 95% Confidence Interval |
|----------------------------------------------|-----------------------|----------------|-----|-------------------------|
| GQS                                          | 0,29993(**)           | 0,06824        | 0,000 | 0,1395                  | 0,4604     |
| Discem                                      | 0,28333(**)           | 0,06824        | 0,000 | 0,1229                  | 0,4438     |
| Jama                                        | -0,29993(**)          | 0,06824        | 0,000 | -0,4604                 | -0,1395    |
| Discem                                      | -0,01660              | 0,06824        | 0,968 | -0,1771                 | 0,1439     |
| Jama                                        | -0,28333(**)          | 0,06824        | 0,000 | -0,4438                 | -0,1229    |
| Discem                                      | 0,01660               | 0,06824        | 0,968 | -0,1439                 | 0,1771     |

* Tukey HSD test

**Significance level p = 0.05
Table 7: Sub-Groups of Expert Evaluations by Jama Scoring Systems

| Evaluation | 1   | 2   | 3   |
|------------|-----|-----|-----|
| Expert     |     |     |     |
| 1. Researcher | 50  | 1,5750 |
| 2. Researcher | 50  | 1,6100 | 1,6100 |
| 3. Researcher | 50  | 1,7450 |
| P          | .629| .306|

* Tukey HSD

Tablo 8: Video sources

| Source                                                                 | N  |
|-----------------------------------------------------------------------|----|
| Tv Programs/News Programs                                              | 30 |
| Health Information Websites                                           | 8  |
| Hospital/Doctor/Educational Institution Posts                        | 7  |
| Profit-Making Companies/Medical Advertisements, And Source            | 3  |
| Posts Made By Patients                                                | 2  |
| Total                                                                 | 50 |