

Analysis of the Accuracy and Quality of Information in YouTube Videos on Shoulder Dislocations and Reduction

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Abstract

Aim: Shoulder instability is common in emergency departments. Various social media platforms provide health-related information, including YouTube. This study aimed to confirm the validity and quality of information in YouTube videos on shoulder dislocations/reduction using validated tools.

Materials and Methods: A search was conducted on <https://www.youtube.com/> on February 1, 2023, using keywords “shoulder dislocations” and “shoulder reductions.” Videos uploaded in the previous year were listed, and information on video features, sources, and target audiences was recorded. Quality, reliability, and accuracy were independently evaluated by emergency medicine specialists using the Journal of American Medical Association (JAMA) score, DISCERN score, and Global Quality Score (GQS). Correlation analysis was performed between the video features, GQS, JAMA, and DISCERN scores.

Results: A total of 103 videos were included, with a combined length of 37,298 s and 519,685 views. Academic institution-associated videos constituted 6.8%, whereas videos for physicians accounted for 55.3%. DISCERN scores for videos targeting physicians were higher than those for patients, but no significant differences were observed in GQS and JAMA scores ($p=0.007$, $p=0.440$, and $p=0.455$, respectively).

Conclusions: YouTube, although frequently used for information, does not provide highly reliable information on shoulder dislocations/reductions.

Keywords: Emergency medicine, shoulder dislocations, shoulder reduction, social media, YouTube

Introduction

Shoulder instability is common in emergency departments the emergency department and orthopedic clinic (1,2). The incidence of shoulder dislocation in the general population in North America and Europe varies from 12.3 to 26.2 per 100,000 people per year (3). With the expansion of smartphones and internet use, it is a fact that, regardless of the method applied in the emergency department, patients search for information on procedures online. Baker et al. (4) determined in their 2010 study that 30% of patients in the elective spine polyclinic group used the internet to search for information about their illnesses. Except for elective situations, in emergencies, including acute

appendicitis and cholecystitis, regardless of the period between diagnosis and treatment, patients probably use the internet to find more information about their diseases (5). The increasing use of web resources to access medical information because of due to increased access to the Internet also supports this situation (6). Many social media platforms on the Internet present information on health. One such platform is undoubtedly YouTube, which embodies several free videos and is one of the main video-sharing sites (<http://www.youtube.com>). On YouTube, a free-access access platform, users can make comments on uploaded videos, like or dislike them, and express their opinions (7). Videos uploaded on YouTube do not go through any editorial processes and might not include information on many content owners or their origin.



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Users do not have information on the validity or reliability of sources and might be exposed to misleading advertisements (8).

The educational aspect of YouTube videos for some emergency and orthopedic diseases and their treatment has been evaluated in many studies. Another point that is as important as easy access to information is to reach the right information. The aim of our study is to determine the quality of videos related to shoulder dislocations/reduction on YouTube.

Materials and Methods

Study Design and Data Collection

On February 1, 2023, a search was conducted on <https://www.youtube.com/> using shoulder dislocations and shoulder reductions keywords and listed videos uploaded in the last year. Videos unrelated to shoulder dislocations, in languages other than English, and those that have commercial/advertorial purposes are left outside the study.

All videos included in the evaluation are publicly accessible on the social media website (YouTube.com), and there are no human or animal participants in the study. Therefore, although ethical board approval is not necessary, the study protocol was approved by the Bandırma Onyedü Eylül University Faculty of Medicine Clinical Research Ethics Committee (decision number: 2022/4-6, date: 21.07.2022). Additionally, all patients included in this study indirectly provided written informed consent for the publication of the videos included in this study, as they uploaded them to social media platforms and/or gave permission for their upload.

Video Parameters, Quality, and Reliability Analysis

Videos were categorized based on video length (seconds), the number of views, time since upload on YouTube (days), the rate of video views, video comment counts, and video likes counts, in addition to the video source, target audience, language format, and video content. Video source was categorized into 2 groups: university/academic institution/societies or personal. The video's target audience was categorized into 2 groups: physicians or patients. The video content category was categorized into 3 groups: only theoretical, practical only theoretical, only practical, or theoretical + practical. The rate of video likes wasn't calculated because YouTube removed the public dislike count from all videos in November 2021. So Video Power Index wasn't calculated like the rate of video likes. The Journal of American Medical Association (JAMA) score developed by Silberg et al. (9) and the Global Quality Score (GQS) developed by Singh et al. (10) were used to determine the accuracy and reliability of the medical information in the videos evaluated in the scoring.

JAMA score is a scoring system that measures the quality of online information using four different criteria: authorship, citation, explanation, and validity (9). The GQS is a likert scale that analyzes the usefulness of the webcast for patients, scoring the quality of the video from 0 to 5 on the basis of educational value (10). These two scoring systems provide a non-specific evaluation of health-related websites. To measure the reliability and quality of information of patients and information providers in health-related videos, the DISCERN questionnaire consisting of 15 questions (where each question can receive 1-5 points) developed by Charnock et al. (11) was applied.

Statistical Analysis

During the statistical analysis of the study results, the Statistical Package for the Social Sciences version 22.0 software (SPSS Inc., Chicago, IL, USA) was used. Median, minimum, maximum, number, and percentage were used as descriptive methods. Shapiro-Wilk test was conducted to evaluate the normalcy of distribution. The chi-square test was used for comparison to categorical data. Kruskal-Wallis test was used in the comparison of averages, and the Mann-Whitney U test was used in the determination of the group that causes the difference. Pearson and Spearman rho correlation analysis were used in evaluation of correlation among parameters. The level of significance was accepted as $p < 0.05$.

Results

Between February 1, 2022, and February 1, 2023, shoulder dislocations and, shoulder reduction search words were used, and videos uploaded on YouTube were included in the study. As presented on the flowchart of video choice and study design in Figure 1, a total of 124 videos were listed on the relevant dates. Five videos were left outside the study for being in a language other than English, and 16 videos were for being commercial/advertorial in purpose. After the exclusions, the remaining 103 videos were included in the study (Figure 1). The rate of commercial/advertorial videos on shoulder dislocation/reduction in this study was 12.9 observed to be 12.9%.

The total video length of the videos included in the study was 37,298 seconds (621.63 minutes), the median video length was 273 seconds (minimum: 21, maximum: 3389), and the median number of views was 227 (minimum: 1, maximum: 710.93). The number of days since upload on YouTube was a median 261 (minimum: 41, maximum: 365). The number of median likes was observed as 7 (minimum: 0, maximum: 2,300). The total video comment counts were median of 1 (minimum: 0, maximum: 250). The target audience of most of the videos was 55.3% (n=57) physicians. When the sources of the videos were evaluated, only

6.8% (n=7) videos were uploaded from university/academic institution/societies. In terms of the assessment conducted to measure the quality of the videos, the median DISCERN score was calculated as 30 (minimum: 15, maximum: 50), the GQS as 2 (minimum: 1, maximum: 5), and JAMA score as 1 (minimum: 0, maximum: 4). Classification of the videos and their descriptive statistics are presented in Table 1.

Regarding the assessment of the videos in terms of their assessment scores and video parameters in the target audience,

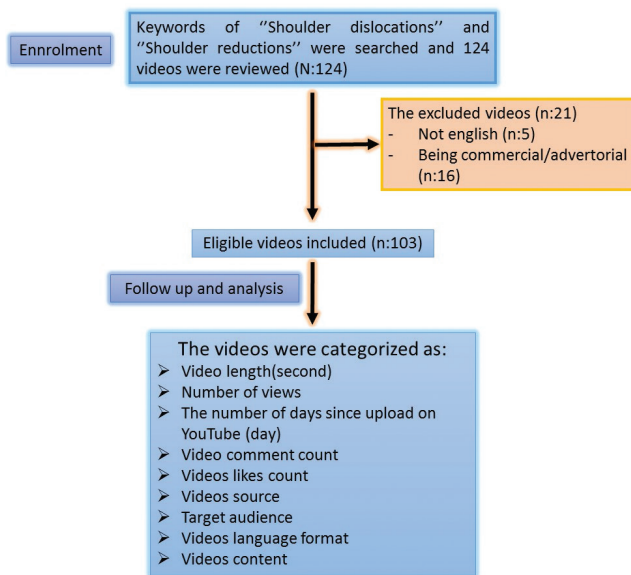


Figure 1. Flowchart of the video selection and study design

source, content, and language format classifications; videos toward physicians were found to be significantly longer compared to videos toward patients (p=0.011). It was determined that the DISCERN scores of videos directed towards physicians were higher compared to videos towards patients but there was no difference in terms of GQS and, and JAMA scores (p=0.007, p=0.440, and p=0.455 respectively). It was observed that videos with university/academic institution/societies as video sources were longer compared to videos with personal origins (median 585 sec. vs 252.5 sec. respectively), while their DISCERN scores (median score 42 vs 29.3 respectively) and GQS (median 4 vs 2 respectively) scores were higher (p=0.03, p=0.003, and p=0.006 respectively). Regarding videos content, videos with theoretical + practical information were observed to be longer and they had higher DISCERN, GQS, and JAMA scores (p=0.015, p=<0.001, p=<0.001, and p=0.021 respectively). Regarding language format, English audio videos were observed to have higher GQS (median score 2 vs 1) and DISCERN (median score 30 vs 25) scores compared to English subtitled videos (p=0.028, p=0.041 respectively). Analysis conducted regarding scores of videos in the target audience, video source, video content, and language format classifications and video parameters is presented in Table 2.

The correlation analysis conducted between video parameters and DISCERN, score, GQS, and JAMA scores is presented in Table 3. The only parameter with a significant relationship with DISCERN score, GQS, and JAMA scores was videos length (rho: 0.582, p<0.001, rho: 0.509, p<0.001 and rho: 0.301, p=0.002 respectively). While there was a strong correlation between the

| Video length (second) [median, (min.-max.)] | | 273 (21-3389) |
|--|--|---------------|
| The number of days since upload on YouTube (day) [median, (min.-max.)] | | 261 (41-365) |
| Number of views [median, (min.-max.)] | | 227 (1-71093) |
| Videos likes count [median, (min.-max.)] | | 7 (0-2300) |
| Videos comment count [median, (min.-max.)] | | 1 (0-250) |
| Videos source | University/academic institution/societies (n; %) | 7 (6.8) |
| | Personal (n; %) | 96 (93.2) |
| Videos content | Only theoretical information (n; %) | 53 (51.5) |
| | Only practical information (n; %) | 21 (20.4) |
| | Theoretical + practical information (n; %) | 29 (28.2) |
| Language format | English audio (n; %) | 92 (89.3) |
| | English subtitles (n; %) | 11 (10.7) |
| Target audience | Physicians (n; %) | 57 (55.3) |
| | Patients (n; %) | 46 (44.7) |
| DISCERN score [median, (min.-max.)] | | 30 (15-50) |
| GQS [median, (min.-max.)] | | 2 (1-5) |
| JAMA score [median, (min.-max.)] | | 1 (0-4) |
| GQS: Global Quality Score, JAMA: Journal of American Medical Association, min.-max.: Minimum-maximum | | |

Table 2. Analysis of videos in terms of evaluator scores and video parameters in target audience, video source, video content and language format classification

| | Target audience | | | | Videos source | | | Videos content | | | Language format | | | | |
|--|------------------|-------------------|----------|-------------------|--------------------|--|------------------|------------------|------------------------------------|----------------------------------|--|------------------|------------------|----------------------|---------|
| | Physicians | | Patients | | p value | university/ academic institution/ societies | Personal | p value | Only theoretical information | Only practical information | Theoretical + practical information | p value | English audio | English subtitles | p value |
| | 351 (21-1527) | 201 (44-3389) | 0.011 | 585 (176-1517) | 252.5 (21-3389) | 0.03 | 297 (21-3389) | 127 (38-787) | 351 (71-1517) | 300 (26-3389) | 0.015 | 207 (21-960) | 0.057 | | |
| Video length (second) [median, (min.-max.)] | 261 (52-375) | 261.5 (41-361) | 0.405 | 299 (80-375) | 258.5 (41-374) | 0.428 | 261 (49-374) | 271 (52-361) | 204 (41-375) | 255.5 (41-375) | 0.814 | 365 (82-363) | 0.650 | | |
| The number of days since upload on YouTube (day) [median, (min.-max.)] | 273 (2-71093) | 195 (1-71017) | 0.278 | 229 (2-62104) | 226.5 (1-71093) | 0.995 | 316 (1-71017) | 137 (12-3862) | 229 (2-71093) | 228 (1-71093) | 0.429 | 219 (42-3862) | 0.765 | | |
| Videos comment count [median, (min.-max.)] | 1 (0-250) | 1 (0-250) | 0.789 | 0 (0-5) | 1 (0-250) | 0.302 | 1 (0-250) | 1 (0-10) | 1 (0-250) | 1 (0-250) | 0.521 | 1 (0-4) | 0.758 | | |
| DISCERN score [median, (min.-max.)] | 30 (15-50) | 27 (15-46) | 0.007 | 42 (30-50) | 29.5 (15-46) | 0.001 | 27 (15-45) | 27 (15-35) | 34 (24-50) | 30 (15-50) | <0.001 | 25 (17-50) | 0.041 | | |
| GQS [median, (min.-max.)] | 2 (1-4) | 2 (1-5) | 0.440 | 4 (2-4) | 2 (1-5) | 0.006 | 2 (1-4) | 2 (1-4) | 3 (1-5) | 2 (1-5) | <0.001 | 1 (1-4) | 0.028 | | |
| JAMA score [median, (min.-max.)] | 1 (0-4) | 1 (0-4) | 0.455 | 1 (0-3) | 1 (0-4) | 0.631 | 1 (0-4) | 0 (0-2) | 1 (0-4) | 1 (0-4) | 0.021 | 0 (0-2) | 0.051 | | |

GQS: Global Quality Score, JAMA: Journal of American Medical Association, min.-max.: Minimum-maximum

Table 3. Correlation analysis between video parameters and DISCERN score, GQS and JAMA scores

| | | DISCERN score | GQS | JAMA score | Videos length | Number of views | The number of days since upload on YouTube | Video comment count | Video source | Video content | Language format | Target audience | |
|----------------|-------------------------|-------------------------|--------|------------|---------------|-----------------|--|---------------------|--------------|---------------|-----------------|-----------------|-------|
| Spearman's rho | DISCERN score | - | 0.784 | 0.181 | 0.582 | 0.305 | 0.103 | 0.111 | -0.329 | 0.362 | -0.202 | -0.266 | |
| | | Correlation coefficient | <0.001 | 0.064 | <0.001 | 0.002 | 0.301 | 0.265 | 0.001 | <0.001 | 0.040 | 0.007 | |
| | | Sig. (2-tailed) | - | - | - | - | - | - | - | - | - | - | |
| | GQS | 0.784 | - | 0.012 | 0.509 | 0.228 | 0.228 | 0.118 | -0.270 | 0.277 | -0.217 | -0.077 | |
| | | Correlation coefficient | <0.001 | - | 0.904 | <0.001 | 0.020 | 0.021 | 0.235 | 0.006 | 0.005 | 0.027 | 0.442 |
| | | Sig. (2-tailed) | - | - | - | - | - | - | - | - | - | - | - |
| JAMA score | 0.181 | 0.012 | - | 0.301 | 0.130 | -0.474 | 0.138 | -0.048 | -0.126 | -0.193 | 0.074 | | |
| | Correlation coefficient | 0.064 | 0.904 | - | 0.002 | 0.192 | <0.001 | 0.163 | 0.633 | 0.206 | 0.051 | 0.458 | |
| | Sig. (2-tailed) | - | - | - | - | - | - | - | - | - | - | - | |

GQS: Global Quality Score, JAMA: Journal of American Medical Association

DISCERN score and GQS, no statistically significant correlation was detected between the DISCERN score and the JAMA score, the number of days since upload on YouTube, and video comment counts (p=0.064, p=0.301, and p=0.265 respectively).

Discussion

In this study, where we examined shoulder dislocation/reductions on YouTube, which is the most frequently used platform and where people refer to social media even provision of emergency departments, the quality and information content of shoulder dislocation/reduction videos are poor compared to all scoring systems.

YouTube is a popular video-sharing platform for being free, easy to access, has a large user database, and allows viewers to communicate with the uploaders. Patients and healthcare professionals increasingly and more frequently use the internet and video-sharing sites such as YouTube to learn about their health problems (12,13). YouTube has been a reference for receive information about medical illnesses and train patients, but it might have false information (5). Therefore, it is important to know the quality of the content on these platforms because, as resources such as YouTube are researched by physicians and patients and can play a role in patients' decision-making processes (14). Patients refer to social media even in cases of medical emergency (5). Since shoulder dislocations/reductions have not been evaluated before, the results of our study will be a guiding in this field.

The length of the total viewing time of the videos included in the research and the fact that the total number of views is 519,685, the total time after uploading to YouTube is 23,103 days, and the total number of comments is 1,125 show that shoulder dislocation/reduction videos attract attention. In our study, it was noted that the DISCERN, GQS, and JAMA scores were all high only in theoretical + practical information videos. DISCERN scores, which were developed to measure the reliability and quality of information of patients and information providers in health-related videos, were also found to be high in videos originating from universities/academic institutions/societies and those targeting physicians. This situation was observed in line with similar studies in the literature (15-18). We believe that the most significant findings of this study are the statistically significant difference between DISCERN scores and video content and the moderate correlation of 0.58 between DISCERN scores and video length. Similarly, there is a low level of correlation between the number of video views and DISCERN scores. These low and medium correlations do not mean that the videos are of high quality. In the literature, some studies have concluded that videos with high-quality content are more popular, while some

studies have concluded that videos with low-quality content are more popular (19-21). In addition, studies supporting that there is no significant relationship between the number of views of videos and video quality scores also support this situation (13,22,23).

Study Limitations

This study has some limitations and need to be addressed. First, its evaluation of videos in a certain period, such as the last year, may limit generalization. Second, the fact that this study only represents the YouTube platform may limit generalization to all social media. The strengths of this study are that all validated forms of the scales were ultimately compatible with each other and this study was the first systematic review of information on YouTube videos about shoulder dislocations/reduction that use validated tools to assess the quality of the information to the knowledge of authors. Third, although making discrimination between publications of high and low quality with aid of DISCERN is possible, expressing positive or negative opinions about this scoring developed for the purpose of making decisions about patient information or treatment options may not be very meaningful for visual broadcasts such as YouTube videos.

Conclusion

Although YouTube is the most frequently preferred platform to search and convey information, it does not provide very reliable information on shoulder dislocations/reductions. Online and understandable videos prepared by professional institutions are required.

Ethics

Ethics Committee Approval: Bandırma Onyedi Eylül University Faculty of Medicine Clinical Research Ethics Committee (decision number: 2022/4-6, date: 21.07.2022).

Informed Consent: All patients included in this study indirectly provided written informed consent for the publication of the videos included in this study, as they uploaded them to social media platforms and/or gave permission for their upload.

Authorship Contributions

Surgical and Medical Practices: H.Y.B., Concept: H.Y.B., A.Y., Design: H.Y.B., A.Y., Data Collection or Processing: H.Y.B., A.K., M.U., A.Y., Analysis or Interpretation: H.Y.B., A.K., M.U., A.Y., Literature Search: H.Y.B., A.K., M.U., A.Y., Writing: H.Y.B., A.K., M.U., A.Y.

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