A Quality and Reliability Analysis of Geriatric Exercise Videos on YouTube

YouTube'daki Geriatrik Egzersiz Videolarının Kalite ve Güvenilirlik Analizi

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Abstract

Objective: The aims were to (1) analyze the exercise content of the most viewed videos among the exercise videos published in English for geriatric individuals on YouTube and (2) examine the videos in terms of reliability and quality.

Materials and Methods: A YouTube search was performed in January 2023, and 150 videos were included. Video metrics: number of views, likes, dislikes, comments, video duration, and exercise types were evaluated. The popularity, reliability, and quality of videos were evaluated using the Video Power index, modified DISCERN score, and global quality score (GQS), respectively.

Results: Most of the exercise videos were about strengthening and stretching. According to the GQS, 25.3% of the videos were of low quality, 52.7% were of moderate quality, and 22% were of high quality. Most of the information providers were medical doctors in the high-quality group (p<0.001), DISCERN scores (low moderate quality: p<0.001, low high quality: p<0.001) were different according to quality level. Video duration and number of comments were lower in the high-quality group (p=0.003).

Conclusion: Videos with short duration and few comments, regardless of the number of likes or dislikes, can also be high-quality videos. To make an appropriate choice of exercise videos on YouTube, geriatric individuals should select videos uploaded by medical doctors and official institutions.

Keywords: Geriatric individuals, quality, reliability, YouTube

Öz

Amaç: Amaçlar 1- YouTube'da geriatrik bireylere yönelik, en çok görüntülenen İngilizce egzersiz videolarının, egzersiz içeriklerini analiz etmek, 2- videoların güvenilirlik ve kalite açısından değerlendirmesini yapmaktır.

Gereç ve Yöntem: Ocak 2023'de, YouTube araması yapıldı ve 150 video dahil edildi. Video metrikleri: görüntülenme sayısı/beğenilme/beğenilmeme/yorum sayıları/video süresi ve egzersiz tipleri değerlendirildi. Videoların popülerliği, güvenilirliği ve kalitesi Video Power indeksi, modifiye DISCERN skoru ve Global Quality skoru (GQS) ile değerlendirildi.

Bulgular: Videoların çoğu güçlendirme ve germe ile ilgiliydi. GQS'e göre videoların %25,3'ü düşük kalitede, %52,7'si orta kalitede ve %22'si yüksek kalitedeydi. Yüksek kalite grubunda bilgi sağlayıcıların çoğu tıp doktorlarıydı (p<0,001), DISCERN skorları (düşük-orta kalite: p<0,001, düşük-yüksek kalite: p<0,001) kalite seviyesine göre farklıydı. Yüksek kalite grubunda video süresi ve yorum sayısı daha düşüktü (p=0,003).

Sonuç: Süresi kısa ve yorum sayısı az olan videolar, beğenilme-beğenilmeme sayısından bağımsız olarak yüksek kaliteli video olabilir. YouTube platformunda uygun egzersiz seçimi için geriatrik bireyler medikal doktorlar veya resmi kurumlar tarafından yüklenmiş videoları seçmelidir.

Anahtar kelimeler: Geriatrik bireyler, kalite, güvenilirlik, YouTube

Introduction

It is known that human life expectancy and the elderly population are gradually increasing as a result of early diagnosis and treatment approaches in parallel with scientific developments all over the world. According to the scientifically accepted definition of real age by the World Health Organization (WHO), old age begins with the age of 65 (1). The elderly population over 65 years old constitutes 8.5% (617 million) of the world population. According to the estimations of the "An Aging World: 2015"

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report, it is predicted that this rate will jump to 17% in 2050 and the number of elderly people will reach 1.6 billion (2).

The increase in the elderly population brings with it many chronic diseases. It is known that regular physical activity is one of the most important health behaviors in the prevention or reduction of the severity of chronic diseases (3). However, it is estimated that around 66 percent of adults over the age of 75 do not engage in any regular physical activity (4). The WHO reported that approximately 3.2 million deaths each year are associated with physical inactivity (5). For this reason, it is recommended by the WHO that elderly individuals should do moderate-intensity physical activity for at least 15 minutes a week, taking into account the physical activity level (6).

However, the belief that increasing health problems in older adults will cause a decrease in their ability to exercise keeps them away from exercising. Coaching the elderly person by accompanying someone from the same age group who has been particularly successful in exercise can strengthen the self-efficacy belief of the elderly person (7). In addition, motivating factors such as physician recommendation, information about the benefits of exercise and living close to exercise centers in order to direct them to physical activity are also beneficial (8). In this context, there are informative videos on various social media platforms in order to increase the exercise motivation of older adults and increase their self-efficacy. However, there is no study that evaluates the quality levels of these videos as to whether they are useful by providing accurate information.

The aims of this study were: 1) to analyze the exercise content of the most popular exercise videos targeting geriatric individuals on YouTube, the widely used social media platform, considering factors such as views, likes, duration, and more; and 2) to examine the reliability and quality of these videos.

Materials and Methods

Video scans were made on the YouTube platform using the terms "older, elder, senior exercise" on January 12, 2023 (using website: https://www.youtube.com/). All videos were evaluated by two independent physical medicine and rehabilitation specialists on the same day. Non-English videos containing advertisements, music, animations and lasting longer than 1 hour were excluded from the study. The first 150 videos in English that included the words older, elder, senior exercise and did not include exclusion criteria were evaluated in the study.

Video Metrics Analysis and Categorization

Total days on YouTube, number of view, likes, dislikes and comments, the duration of the videos were recorded in the evaluation. In addition, the types of exercises included in the videos were determined as strengthening exercises, aerobic exercises, stretching exercises, balance exercises, pilates, water exercises, yoga, thai chi exercises. Suggestions that did not belong to any exercise type were classified as other. What type of exercise was described in each video was noted by two independent physical medicine and rehabilitation specialists.

Source of the Videos

The uploaders of the videos were classified as official institutions (government and official associations), medical doctors, physical therapist, geriatric individual and unspesified source.

Assessment of Popularity, Reliability and Quality

The popularity evaluation of the videos was made using the "Video Power index" (VPI). This index is calculated as follows: (likes×100/ (likes + dislikes) × (views/day) /100 (9,10).

The quality of the videos was assessed via the 5-point Global Quality score (GQS) adapted by Bernard et al. (11). It evaluates the quality, flow and usefulness of videos. 1-2 points exhibit low quality, 3 points exhibit moderate quality, 4-5 points exhibit high quality.

The 5-point modified "DISCERN score" adapted by Singh et al. (12) was used to determine the reliability of the videos. It has five main topics as follows: 1. Are the aims clear and achieved? 2. Are reliable sources of information used? 3. Is the information presented balanced and unbiased? 4. Are additional sources of information listed for patient reference? 5. Are the areas of uncertainty mentioned? The range of final score was 0 to 5. Higher scores indicates better reliability.

Ethics Statement

Publicly available videos were evaluated for this study. Additionally, since no human participants or test animals were included in this study, ethics committee approval was not required. Similar studies in the literature were planned in the same way (9,13-16).

Statistical Analysis

The analysis of the study was performed using SPSS for Windows 21.0 software. The Shapiro-Wilk's test was used to investigate the suitability of the data for normal distribution. The Kruskal-Wallis H test (for multiple comparisons, the Dunn test) was used for intergroup comparisons. Chi-square analysis (Pearson exact chi-square test) was used in the analysis of the created cross tables. The Spearman correlation coefficient was used to determine the relationships between the variables. Quantitative data were summarized as mean ± standard deviation, median (Q1; Q3); qualitative data were summarized as number (%). A p-value <0.05 was considered statistically significant.

Results

Of the 158 English videos examined, 150 videos that met the criteria were selected for assessment, 8 videos were excluded. This process is indicated in the flow chart (Figure 1).

The exercise types shown in the videos were evaluated, 86 (57.3%) of the videos showed strengthening, 91 (60.7%) stretching, 63 (42%) aerobic, 16 (10.7%) balance, 10 (6.7%) pilates, 11 (7.3%) yoga, 2 (1.3%) Thai chi exercises. In 49 (32.7%) videos, there were no recommendations for any type of exercise (Table 1).

The information providers of the videos were identified, there were official institutions in 9 videos (6%), medical doctors in

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7 videos (4.66%), physical therapists in 58 videos (38.66%), geriatric individuals in 11 videos (7.33%), and unspecified sources in 65 videos (43.33%).

Videos were divided into three categories according to GQS, 38 videos were determined as low quality (25.3%), 79 videos as medium quality (52.7%), and 33 videos as high quality (22%) (Figure 2).

There was a significant difference between groups in terms of information provider (p<0.001): most of the information providers were medical doctors in high quality group (71.4%). Moreover DISCERN scores were found significantly different. It was found higher in high quality group while it was the lowest in low quality group (p-value between low-moderate quality: p<0.001, p-value between low-high quality: p<0.001) (Table 2).

Comparison of video metrics showed that video duration and number of comments were significantly lower in the high quality group according to GQS (p=0.003). VPIs was similar according to quality in three groups (p>0.05) (Table 2).

The VPIs were compared between information providers, a significant difference was found. When a comparison was made between the groups, the VPI value was statistically significantly lower in videos from official institutions than in videos from physical therapist and medical doctors (p=0.022) (Table 3).

A significant difference was found between the DISCERN scores of the information providers. When the comparison was made between the groups, DISCERN scores were significantly higher (p<0.001) in videos received from official institutions than in videos received from geriatric individuals and unspecified sources (Table 3).
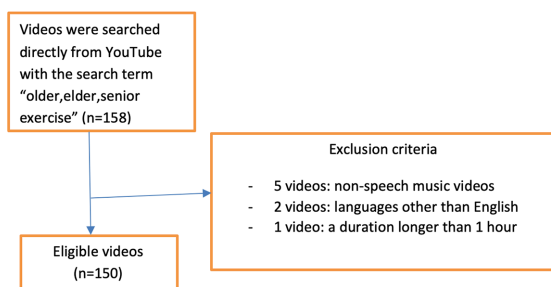

Figure 1. Flowchart of selected videos

Table 1. Distribution of exercise types

Types of exercise	n (%)
Strengthening	86 (57.3%)
Stretching	91 (60.7%)
Aerobic	63 (42%)
Balance	16 (10.7%)
Pilates	10 (6.7%)
Yoga	11 (7.3%)
Thai chi	2 (1.3%)
In-water exercise	0 (0%)
Others	49 (32.7%)

There was a statistically positive correlation between the DISCERN and GQS scores (r=0.75 p<0.001).

Discussion

With the increase in internet usage all over the world, the use of various video sharing sites and social media platforms as a source of information has increased. It was reported that 8 out of 10 internet users access health information online in the Health Information National Trends Survey report (17). The most popular of the video sharing sites is YouTube, with more than 2 billion views per day (18). For this reason, it is important that the content of the videos presented on YouTube is reliable and scientifically correct. For this purpose, this is the first study to systematically investigate the popularity, quality and reliability of English language exercise videos for geriatric individuals on YouTube.

In this study, 25.3% of the videos were low quality, 52.7% were moderate quality and 22% were high quality. Similarly, in a study evaluating YouTube videos related to ankylosing spondylitis exercises, 33.9% of the videos were found to be of low quality (15). In a study by Ertem et al. (14) evaluating priformis exercise videos on YouTube, 31% videos found to be of low quality. In another study evaluating videos of exercises for the coronavirus disease-2019 lockdown, the proportion of low quality videos was even higher (76.5%) (19). It is determined that the quality of exercise videos published on YouTube is mostly low.

In our study, it was determined that videos from medical doctors were of higher quality according to GQS. However, in the study in which exercise videos related to priformis syndrome were evaluated, videos from non-physician healthcare professionals were found to be of higher quality, and in the same study, when video source providers were evaluated according to mDISCERN scores, doctors and other healthcare professionals were found to have high reliability (14). In our study, videos originating from official institutions were more reliable than geriatric individuals origin videos and videos of unspecified origin. In another study, DISCERN scores, videos produced by healthcare workers show the highest scores (19). According to these studies, it is seen that videos originating from medical doctors and healthcare
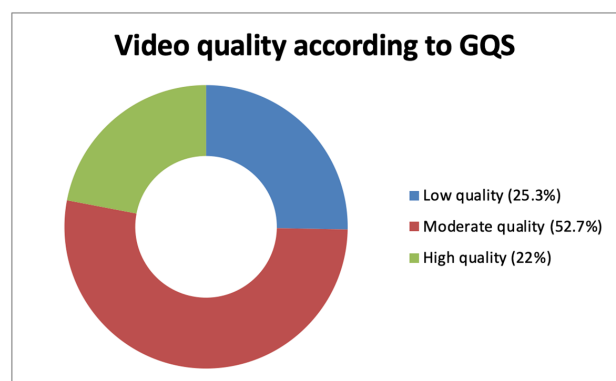

Figure 2. Proportion of videos according to Global Quality score
GQS: Global Quality score

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Table 2. Comparison of videos according to their quality level				
	Low quality (n=38)	Moderate quality (n=79)	High quality (n=33)	p-value
Information provider	**n (%)**	**n (%)**	**n (%)**	
Official institutions	1 (11.1%)	3 (33.3%)	5 (55.6%)	
Medical doctor	0 (0%)	2 (28.6%)	5 (71.4 %)	
Physical therapist	7 (12.1%)	35 (60.3%))	16 (27.6%)	**p<0.001***
Geriatric individuals	1 (9.1%)	9 (81.8%)	1 (9.1%)	
Not specified	29 (44,6%)	30 (46.2%)	6 (9.2%)	
DISCERN score	**n (%)**	**n (%)**	**n (%)**	
1	13 (100%)	0 (0%)	0 (0%)	
2	25 (30.9%)	55 (67.9%)	1 (1.2%)	
3	0 (0%)	24 (49%)	25 (51%)	**p<0.001***
4	0 (0%)	0 (0%)	7 (100%)	
5	0 (0%)	0 (0%)	0 (0%)	
Video metrics	**Median (25-75%)**	**Median (25-75%)**	**Median (25-75%)**	
Days on YouTube	1022 (818-2024)	1030 (789-1908)	1424 (831-2347)	0.616
Duration (seconds)	1112 (820-1732)	1155 (707-1593)	710 (486-974)	**0.003****
Number of views	515495 (291453-1807000)	546288 (256884-1089746)	321603 (217382-767643)	0.105
Number of likes	6068 (3045-16034)	5971 (3209-12659)	4471 (2433-11318)	0.399
Number of dislikes	5 (3-19)	6 (4-25)	9 (4-53)	0.827
Number of comments	416 (149-833)	318 (168-504)	150 (68-333)	**0.003****
Video Power index	**Median (25-75%)**	**Median (25-75%)**	**Median (25-75%)**	
	523.7(284.8-907.2)	422.5(206.6-1246.7)	299.3(131.6-1045)	0.71
*Chi-square test, **Independent samples Kruskal-Wallis test				

Table 3. Information provider variables related with Video Power index and DISCERN score				
Information provider	**Video Power index Median (25-75%)**	**p-value**	**DISCERN score Median (25-75%)**	**p-value**
Official institutions	105.02 (57.22-613.59)		4 (2.5-4)	
Medical doctors	1107.85 (309.70-1501.30)		3 (2-3)	
Physical therapists	519.1764 (210.25-1180.25)	**0.022***	3 (2-3)	**p<0.001***
Geriatric individuals	448.6658 (350.77-949.0044)		2 (2-2)	
Not specified	446.8183 (212.32-1032.46)		2 (2-2)	
*Independent samples Kruskal-Wallis test				

professionals are of higher quality and reliability. It is therefore important to choose the right source of information to obtain quality information from the YouTube.

In our study, consistent with the literature, DISCERN scores used to evaluate reliability were found to be higher in the high quality group and lower in the low quality group (15,20,21).

In our study, the VPI value was statistically significantly lower in videos from official institutions than in videos from medical doctors and physical therapist. However, in a study evaluating exercise videos in polycystic ovary syndrome, there was no difference in VPI, DISCERN, GQS scores between the groups including health employees, sports trainers, and nutritionists as professional video source and the patients and the unidentified as non-professional video source (16).

When video quality according to GQS was compared with video metric features, there was no significant difference between number of like, dislike, view and VPIs in our study. In a study by Rodriguez-Rodriguez et al. (19) when the same parameters

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were compared according to DISCERN scores, similarly, no significant difference was found. In the exercise video study in ankylosing spondylitis, there was no difference between video quality according to GQS and number of views per day, likes per day and comments per day, but significant differences were found in the number of dislikes per day (15).

In our study, the duration of high quality videos was shorter than low and medium quality videos (median: 710 sec: 11.8 min). According to this result, it is proved that longer video duration is not an indicator for video quality and that quality and efficient information can be provided with shorter duration videos. In addition, the fact that the number of comments was lower in the high quality video group in our study showed that the number of comments is not an indicator for video quality. Similarly, in the study of Ertem et al. (14) it was found that videos with fewer comments per day were of higher quality, and in the same study, videos with fewer views per day and likes per day were found to be high quality videos. In the exercise video study in ankylosing spondylitis, no relationship was found between the number of daily comments and quality (15). In this context, studies show that videometric features are not decisive for video quality.

Study Limitations

One of the most important limitations of the study is that only the first 150 videos uploaded in English language were evaluated. In addition, due to the dynamic structure of the YouTube platform, video metrics such as the number of like-dislike views change daily, and the videos on different video sharing platforms were not evaluated.

Conclusion

YouTube platform offers a wide variety of exercise videos for geriatric individuals. However, selecting reliable and scientifically quality videos among these videos is very important for the geriatric population with high fragility. In this study, the most important factor for video quality was the information provider. When the information providers of high quality videos were evaluated, it was determined that the highest rate was from medical doctors, and the second was from official institutions. In addition, it was determined that videos with short duration and few comments, regardless of the number of like-dislike, can also be high quality videos. In terms of reliability, videos from official institutions were found to be more reliable than videos from geriatric individuals and unspesified sources. Those who want to learn about exercise for elderly people through YouTube videos are recommended to watch the videos uploaded by medical doctors and official institutions.

Ethics

Ethics Committee Approval: This study did not include human or animal subjects. Ethical board approval was not required.

Informed Consent: The study does not require patient consent.

Author Contributions

Concept: B.O., G.S., F.B., O.A., Design: B.O., F.B., O.A., Supervision: O.A., Data Collection or Processing: B.O., G.S., C.B., Critical Review: B.O., F.B., G.S., O.A., C.B., Analysis or Interpretation: B.O., G.S., F.B., O.A., C.B., Literature Search: B.O., G.S., F.B., O.A., C.B., Writing: B.O.

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