

Is the Quality of Facial Paralysis Rehabilitation Videos on YouTube Sufficient? A Cross-sectional Study

YouTube'daki Fasiyal Paralizi Rehabilitasyon Videolarının Kalitesi Yeterli mi? Kesitsel Bir Çalışma

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ABSTRACT Objective: This study aimed to examine the quality and reliability of videos on YouTube for facial paralysis exercises. **Material and Methods:** The videos that appeared after searching “facial paralysis”, “Bell’s palsy”, “facial paralysis rehabilitation”, and “facial paralysis exercises” on YouTube were listed. After these videos were selected according to the inclusion criteria, the number of views of the videos, the number of likes-dislikes, duration, upload time, video power index (VPI), the modified DISCERN criteria, the modified Journal of the American Medical Association benchmark criteria, and the Global Quality Score (GQS) checklist values were applied to the videos and the results were collected. All videos were divided into 3 groups according to publisher person/organization; universities/professional organizations (Group 1), medical advertising/ for-profit companies (Group 2), and independent users (Group 3). **Results:** Four hundred videos were reviewed by both authors and 46 that met the inclusion criteria were included in the study. The GQS score of the videos in Group 1 was statistically significantly better than that of Group 3 ($p=0.005$). The VPI values of Group 1 (VPI: 140.5) and Group 3 (VPI: 141.9) were found to be significantly higher than that of Group 2 (VPI: 26.6) ($p=0.026$; and $p=0.007$, respectively). **Conclusion:** This is a pioneer study that showed that facial paralysis rehabilitation videos were viewed as low quality. Considering the importance of rehabilitation in preventing sequelae, especially in the acute period, these videos need to be supported in high quality by professionals in this field on YouTube.

ÖZET Amaç: Bu çalışma, yüz felci egzersizlerine yönelik YouTube'daki videoların kalitesini ve güvenilirliğini incelemeyi amaçladı. **Gereç ve Yöntemler:** YouTube'da “yüz felci”, “Bell felci”, “yüz felci rehabilitasyonu” ve “yüz felci egzersizleri” araması yapıldıktan sonra ortaya çıkan videolar listelendi. Bu videolar dâhil edilme kriterlerine göre seçildikten sonra videoların izlenme sayısı, beğeni-beğenmeme sayısı, süresi, yükleme süresi, video güç indeksi [video power index (VPI)], değiştirilmiş DISCERN kriterleri, değiştirilmiş Amerikan Tabipler Birliği Dergisi kıyaslama kriterleri ve videolara Global Kalite Skoru [Global Quality Score (GQS)] kontrol listesi değerleri uygulanarak sonuçlar toplandı. Tüm videolar yayıncı kişi/kuruluşa göre 3 gruba ayrıldı; üniversiteler/meslek kuruluşları (Grup 1), tıbbi reklamcılık/kar amacı güden şirketler (Grup 2) ve bağımsız kullanıcılar (Grup 3). **Bulgular:** Her iki yazar tarafından 400 video incelendi ve dâhil edilme kriterlerini karşılayan 46 video çalışmaya dâhil edildi. Grup 1'deki videoların GQS skoru Grup 3'e göre istatistiksel olarak anlamlı düzeyde daha iyiydi ($p=0,005$). Grup 1 (VPI: 140,5) ve Grup 3 (VPI: 141,9)'ün VPI değeri Grup 2'ye (VPI: 26,6) göre anlamlı olarak yüksek bulundu (sırasıyla $p=0,026$ ve $p=0,007$). **Sonuç:** Bu çalışma, yüz felci rehabilitasyonu için izlenen videoların düşük kalitede olduğunu göstermektedir. Özellikle akut dönemde sekellerin önlenmesinde rehabilitasyonun önemli göz önüne alındığında bu videoların YouTube üzerinden alanında profesyonel kişiler tarafından yüksek kalitede desteklenmesi gerekmektedir.

Keywords: Bell’s palsy; facial paralysis; quality; rehabilitation; YouTube

Anahtar Kelimeler: Bell paralizi; fasiyal paralizi; kalite; rehabilitasyon; YouTube

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Peripheral facial nerve palsy is a condition that can reduce the function of facial muscles as a result of damage to the facial nerve by lower motor neuron lesions. Trauma, cholesteatoma, infection, autoimmune issues, and pregnancy are all potential causes, but idiopathic Bell's palsy is the most common.¹

Facial paralysis is a severe disease that can have a negative impact on a person's quality of life. Patients with facial paralysis have been shown to experience higher levels of depression, lower self-reported attractiveness, reduced facial movement, and asymmetry. This suggests that it may have a significant impact on a patient's quality of life.^{2,3}

Rehabilitation plays a crucial role in helping patients recover from facial paralysis and improve their overall well-being. Facial rehabilitation is described in five main stages.⁴ The first stage of facial rehabilitation is educating the patient after determining the pathology and goals. This is followed by mobilization of the soft tissue to reduce tension in the facial muscles. Retraining of facial expression should be done, including functional and neuromuscular reeducation, and finally, if synkinesis has occurred, its management should be done.

Facial paralysis rehabilitation should be started especially in the early period. This is more important in chronic patients. Medication will provide full recovery in some patients, but facial exercises are necessary for patients who do not have recovery.⁵ The recommended therapies for patients include local heat therapy, facial exercises, massage, or taping to lift drooping flaccid face muscles.⁶

As technology develops, the frequency of accessing information about diseases via the internet has also increased. Informative videos, especially prepared by experts in the field of diseases or by other patients, are uploaded to online video repositories that are frequently used in society, such as YouTube (Google LLC, California, United States of America). However, there is growing concern about the overall quality and reliability of these videos.⁷

In recent years, videos about facial paralysis rehabilitation have been uploaded to YouTube by different professional groups or patients. These videos

are also watched and applied by many patients. This study aims to examine the reliability and quality of facial paralysis rehabilitation videos.

MATERIAL AND METHODS

This study used a cross-sectional and retrospective research method to evaluate the quality, reliability, and popularity of YouTube videos regarding exercises for facial palsy rehabilitation. Our study does not need approval from an ethics committee because the videos it contains are available to the public and it provides an evaluation under standard procedures.

SEARCH STRATEGY

"Facial paralysis", "Bell's palsy", "facial paralysis rehabilitation", and "facial paralysis exercises" were searched for once on October 15, 2023. These keywords were selected based on the YouTube search bar's relevancy of the term "facial palsy". By each search term, we listed the top 100 results. Videos in English and containing rehabilitation information were included, and duplicate videos were excluded from the list.

VIDEO ANALYSIS

Video attributes were tracked, including the number of views, likes, dislikes, and comments, along with the upload source, URL address, title, length, and upload date. Two authors evaluated the videos independently, one from the perspective of a physical therapy and rehabilitation physician and the other from the perspective of an otolaryngologist. All videos were divided into 3 groups according to publisher person/organization; universities/professional organizations, medical advertising/for-profit companies, and independent users.

OUTCOME MEASURES

Three objective checklists were used to reach the primary outcome measures which are about the reliability and quality of these videos. According to the first, the modified DISCERN criteria, the videos were assessed for content uncertainty, bias, clarity, reliability, and reference attachment using the modified DISCERN criteria score; each criterion has a question ("Are the aims clear and achieved?", "Are reli-

able sources of information used?”, “Is the information presented balanced and unbiased?”, “Are additional sources of information listed for patient reference?”, and “Are areas of uncertainty mentioned?”) and it is valuable in one of the five total points; higher scores indicate higher reliability.⁸ For the second, the modified Journal of the American Medical Association (JAMA) benchmark criteria, each of the following received a maximum of four points under the modified JAMA benchmark criteria: authorship (authors and contributors, their affiliations, and relevant credentials should be provided), attribution (References and sources for all content should be listed clearly, and all relevant copyright information should be noted), disclosure (Ownership should be prominently and fully disclosed), and currency (Dates, when content was posted and updated, should be indicated) of the videos.⁹ The higher score indicates better results. The last criterion, the Global Quality Score (GQS), is the information in the video that was assessed using the GQS concerning its quality, ease of use by patients, benefits, and video streams. GQS scoring is as follows: 1: Poor quality, very unlikely to be of any use to patients; 2: Poor quality but some information is present; 3: Suboptimal flow, some information covered but important topics missing; 4: Good quality and flow, most important topics covered, useful to patients; 5: Excellent quality, highly useful to patients.¹⁰

The video power index (VPI), a secondary outcome measure, was performed to analyze the video’s popularity by using the number of views, likes, and upload time.

STATISTICAL ANALYZES

The data were evaluated in the statistical package program IBM SPSS Statistics Standard Concurrent User V 25 (IBM Corp., Armonk, New York, USA). Descriptive statistics were given as number of units (n), percentage (%), median (M), the smallest value (minimum) and the largest value (maximum), and interquartile range. The normal distribution of the data of numerical variables was evaluated with the Shapiro-Wilk normality test. Comparisons of numerical variables that did not meet the normal distribution condition were made with the Kruskal-Wallis

analysis. The Dunn-Bonferroni test was used as a multiple comparison test. The correlation level between numerical variables that did not comply with the normal distribution condition was evaluated with the Spearman correlation analysis. r value between 0-0.19 indicates a very weak relationship, between 0.20-0.39 indicates a weak relationship, between 0.40-0.59 indicates a moderate relationship, and between 0.60-0.79 indicates a good relationship, between 0.80-1 was considered a strong relationship. Cohen’s Kappa analysis was applied to evaluate interobserver agreement. A value of p<0.05 was considered statistically significant.

RESULTS

Both authors examined all 400 videos on the list, and 46 of those that met the criteria for inclusion were added to the study. Statistics of descriptive characteristics are given in [Table 1](#).

After the videos were divided into 3 groups according to publisher person/organization, the intergroup comparison values of the findings are given in [Table 2](#). The number of comments for Group 3 videos is statistically significantly different from Group 1 and Group 2 (p=0.009; p=0.012, respec-

TABLE 1: Descriptive characteristics of variables.

Variables	Statistics
Duration (sec), M (minimum-maximum)	431.0 (105.0-880.0)
Comments, M (minimum-maximum)	60.0 (0.0-2470.0)
Like, M (minimum-maximum)	934.5 (88.0-35217.0)
Dislike, M (minimum-maximum)	13.0 (0.0-991.0)
Views, M (minimum-maximum)	56383.0 (3634.0-1972218.0)
Upload time (day), M (minimum-maximum)	1148.5 (91.0-4773.0)
VPI, M (minimum-maximum)	70.1 (6.5-999.1)
View ratio, M (minimum-maximum)	71.8 (6.4-1027.2)
Like ratio, M (minimum-maximum)	97.7 (90.7-100.0)
DISCERN, M (minimum-maximum)	2.8 (0.0-4.0)
JAMA, M (minimum-maximum)	0.0 (0.0-4.0)
GQS, M (minimum-maximum)	3.0 (1.0-4.5)
Publisher person/organization, n (%)	
Universities/professional organizations	6 (13.0)
Medical advertising/for-profit companies	21 (45.7)
Independent users	19 (41.3)

VPI: Video power index; GQS: Global Quality Score; JAMA: Journal of the American Medical Association.

TABLE 2: Comparison of variables between groups.

	Group 1 Universities/ professional organizations M (IQR)	Group 2 Medical advertising/ for-profit companies M (IQR)	Group 3 Independent users M (IQR)	Statistics
Duration (sec)	369.0 (467.0)	349.0 (334.0)	465.0 (407.0)	H=0.751 p=0.687
Comments (n)	6.0 (145.0) ^a	30.0 (104.0) ^a	132.0 (759.0) ^b	H=12.618 p=0.002
Like (n)	3121.5 (8474.0) ^{a,b}	286.0 (692.0) ^a	2329.0 (8353.0) ^b	H=12.902 p=0.002
Dislike (n)	167.0 (376.0) ^{a,b}	7.0 (13.0) ^a	88.0 (368.0) ^b	H=9.756 p=0.008
Views (n)	412460.5 (862151.5) ^a	22104.0 (31916.5) ^b	103789.0 (547313.0) ^a	H=13.630 p=0.001
Upload time (day)	2799.0 (2468.0) ^a	974.0 (1103.5) ^b	1679.0 (2171.0) ^a	H=6.564 p=0.038
VPI	140.5 (202.8) ^a	26.6 (74.0) ^b	141.9 (255.9) ^a	H=12.217 p=0.002
View ratio	146.3 (211.8) ^a	27.0 (74.2) ^b	142.2 (265.0) ^a	H=12.345 p=0.002
Like ratio	96.1 (3.1)	98.5 (2.2)	97.4 (2.9)	H=5.309 p=0.070
DISCERN	2.5 (1.6)	3.0 (1.0)	1.5 (2.0)	H=4.915 p=0.086
JAMA	1.0 (1.75)	0.0 (1.0)	0.0 (1.0)	H=4.424 p=0.109
GQS	3.5 (1.13) ^a	3.0 (0.5) ^{a,b}	2.5 (1.0) ^b	H=9.811 p=0.007

VPI: Video power index; GQS: Global Quality Score; JAMA: Journal of the American Medical Association; M: Median; IQR: Interquartile range; H: Kruskal-Wallis test; ^{a,b}Superscripts indicate differences between groups.

tively). The number of likes in Group 3 was found to be higher and statistically significantly different than in Group 2 (p=0.002). The number of dislikes in Group 3 was found to be higher and statistically significantly different than in Group 2 (p=0.019). The number of views of Group 2 was lower than Group 1 and Group 3 and was found to be statistically significant (p=0.025; p=0.003, respectively). The upload time value of Group 2 was found to be statistically significant and lower than that of Group 1 and Group 3 (p=0.029; p=0.048, respectively). The VPI values of Group 1 and Group 3 were found to be statistically significantly higher than Group 2 (p=0.035; and p=0.006, respectively). The view ratio value of Group 2 was found to be lower than that of Group 1 and

Group 3 and was statistically significant (p=0.026; p=0.007, respectively). In the GQS score, the score of Group 1 was higher than that of Group 3 and was statistically significant (p=0.005).

Spearman correlation values of DISCERN, JAMA, GQS, VPI scores, and video metrics are shown in Table 3. A weak positive correlation was found between the JAMA score and the DISCERN score (r_s=0.338, p=0.022). A good positive correlation was found between the GQS score and DISCERN score, and a moderate positive correlation was found between the GQS score and JAMA score (r_s=0.701, p<0.001; r_s=0.416, p=0.004 respectively). A strong positive correlation was detected between the VPI score and the number of likes and views

TABLE 3: Spearman correlation values of DISCERN, JAMA, GQS, and VPI scores.

	1-DISCERN	2-JAMA	3-GQS	4-VPI
1-DISCERN	-	$r_s=0.338$ $p=0.022^*$	$r_s=0.701$ $p<0.001^*$	$r_s=-0.139$ $p=0.357$
2-JAMA		-	$r_s=0.416$ $p=0.004^*$	$r_s=0.127$ $p=0.400$
3-GQS			-	$r_s=0.048$ $p<0.753$
4-VPI				-

* $p<0.05$ Statistically significant; r_s : Spearman correlation coefficient; VPI: Video power index; GQS: Global Quality Score; JAMA: Journal of the American Medical Association.

($r_s=0.869$, $p<0.001$; $r_s=0.861$ $p<0.001$, respectively). A good positive correlation was detected between the VPI score and the number of dislikes ($r_s=0.696$, $p<0.001$). A strong positive correlation was detected between the number of likes and the number of dislikes and views ($r_s=0.876$, $p<0.001$; $r_s=0.946$, $p<0.001$, respectively). A strong positive correlation was detected between the number of dislikes and the number of views ($r_s=0.902$, $p<0.001$).

The interobserver agreement for both the GQS and DISCERN scores was found to be good ($K=0.732$; $p<0.001$; $K=0.734$; $p<0.001$, respectively). Interobserver agreement was evaluated for the JAMA score and a very high level of agreement was found ($K=0.952$, $p<0.001$).

DISCUSSION

Videos published for facial rehabilitation have been evaluated for reliability and quality. It was found that there were not enough videos that could help patients, and the modified DISCERN criteria, the modified JAMA benchmark criteria, and the GQS checklist values of the videos that were available were generally low. This shows us that the patient who wants to apply to an online resource for rehabilitation is faced with a low-quality video group.

Facial paralysis treatment involves treating the patient’s psychosocial issues, protecting the eyes with tape and glasses, and taking care to keep the face warm and shielded from airflow. In medical treatment, adrenocorticotrophic hormone, steroids, antivirals, and non-steroidal anti-inflammatory drugs are recommended starting from the first week to reduce edema and inflammation. Additionally, electrical

stimulation, massage, local superficial heat before exercise, biofeedback (EMG/mirror), exercise (Mimicry therapy-mirror), and surgery can be applied in addition to medical treatment.¹¹

Rehabilitation has been shown in some publications to be more effective with additional physical therapy modalities in patients with facial paralysis, while in some publications it has been shown that its effect is limited. In a study by Nicastrì et al., face massages and active motion exercises had a significant effect on the degree of facial paralysis and recovery time only in patients presenting with severe facial paralysis.¹² Kim et al. showed that adding symmetric self-performed facial muscle exercises to the treatment for four weeks affected healing.¹³ In their study, Tuncay et al. stated that adding three weeks of daily electrical stimulation therapy to conventional therapy provided improvement in functional facial movements and electrophysiological outcome measurements at a three-month follow-up.⁶ The importance of rehabilitation in facial paralysis is already known through these studies, and it is recommended that these patients reach rehabilitation at the earliest period. This means that patients can be reached even earlier through channels where they can get information about rehabilitation online.

Facial functions improve with facial exercise therapy. It is especially effective when applied together with other treatments in the early period. It also has a healing-enhancing effect in the chronic period.⁵ Patients included in the rehabilitation program experience an increase in facial motor control, physical function, and the patient’s quality of life.⁴ In addition, facial rehabilitation helps improve the clinical

condition of patients in the treatment of complications that may develop such as synkinesis.¹⁴ In patients with facial paralysis, if access to rehabilitation is made in the acute period, the recovery of the patients will be accelerated. It has been stated in recent reviews that it is quite difficult to recover in the clinic with rehabilitation after sequelae occur.¹⁵

Especially with the implementation of large-scale quarantines during the coronavirus disease-2019 (COVID-19) period, it has been a problem for patients to reach relevant specialists. During this period, patients began to learn about diseases and their treatments through online videos. YouTube is a widely used social media platform for this purpose. In a study examining online home exercises in healthy individuals during the COVID-19 period, it was determined that the videos were of low quality and did not cover WHO exercise recommendations.¹⁶ In studies examining YouTube exercises in the treatment of various patients, it was observed that the videos were of low-medium quality. Videos uploaded by specialist doctors or other professional healthcare professionals are of high quality.¹⁷ Similar results were obtained in our study, and videos published by medical professionals were found to be more reliable.

Other methods have also been tried online for facial rehabilitation. Open access and a free website with features that support motor learning and reduce cognitive load in facial paralysis patients can be given as examples. It has been emphasized that it is promising if severe or total paralysis occurs after 2 weeks in patients receiving standard medication.¹⁸ Studies have been published in recent years explaining that rehabilitation can be improved through digital neuromuscular retraining in patients with facial paralysis and that it is promising in terms of effectiveness.¹⁹

YouTube contains many rehabilitation videos, and the quality of these videos is questionable. In another article examining videos on vestibular rehabilitation, it was suggested that video quality was low and that experts in this field should upload high-quality and reliable videos.²⁰ It was stated that existing videos on meniscus tear rehabilitation were examined and their quality was low.²¹ Similarly, YouTube videos were also examined for lymphedema rehabil-

itation, pulmonary rehabilitation, fibromyalgia syndrome exercises, and ankylosing spondylitis exercises.²²⁻²⁵ As a result, it has been stated that if patients are going to perform rehabilitation through these videos online, high-quality videos are needed. Our results are similar to other studies.

This study has some limitations. The first of these, and probably the most important, is that although 100 videos for each search word were examined on YouTube, the number of videos that could be collected was found to be very low, and the number of videos explaining all the important stages of rehabilitation was found to be very few and of low quality. Secondly, the number of videos published by universities and professionals of the subject is very low. The videos in this group should be increased and patients should be informed about all stages of this rehabilitation. Additionally, as another limitation, patients may try to access these videos in many different ways, even though we write down the most frequently searched words. In this study, we tried to minimize this and searched with frequently used terms.

CONCLUSION

In conclusion, rehabilitation is an important part of treatment for facial paralysis and the sooner these patients receive treatment, the more they benefit. In our study, the quality and reliability of the videos on YouTube have been observed to be low, so the number of videos on this subject should be increased by universities and professional organizations in this field or patients should be directed to face-to-face rehabilitation.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

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