Original Article

HEALTH SCIENCES
MEDICINE

DOI: 10.32322/jhsm.1287297
J Health Sci Med. 2023;6(4):821-825

YouTube™ as an information source for speech and language disorders

İbrahim Can Yaşa, Serpil Hülya Çapar, Yiğitcan Perker

Department of Speech and Language Therapy , Faculty of Health Sciences, Bahçeşehir University, İstanbul, Turkey

Cite this article as: Yaşa İC, Çapar SH, Perker Y. YouTube™ as an information source for speech and language disorders. *J Health Sci Med.* 2023;6(4):821-825.

Received: 25.04.2023 • **Accepted**: 18.07.2023 • **Published**: 30.07.2023

ABSTRACT

Aims: The purpose of this study is to evaluate the quality of the information provided by the top 100 videos when searching for "speech and language disorders" on YouTube™.

Methods: The results of the YouTube™ search were examined using the keyword “speech and language disorders”. The search was limited to the first 100 videos. Modified DISCERN, Global Quality Score (GQS), Video Information and Quality Index (VIQI), and the Journal of American Medical Association (JAMA) criteria were used for the evaluation of the videos. The Kruskal-Wallis H Test, Mann-Whitney U, and Spearman's RHO correlation were used for statistical analyses. The significance level was taken as $p<0.05$.

Results: A total of 83 videos were taken for evaluation and 38 (41%) of these videos were uploaded by Hospital/University staff, 23 (27.7%) of them were from Others, 15 (18.1%) of them were from Specialists and 11 (13.3%) of them were uploaded by laypersons. The average DISCERN, VIQI, and GQS scores were 3.1 and the JAMA score was 2.0.

Conclusion: We think that it is important for experts and academic institutions to upload high-quality, accurate, and precise videos that meet the expectations of society and include the experiences of the patients and their relatives.

Keywords: Language disorders, speech disorders, internet, information source

INTRODUCTION

When language and speech disorders are mentioned, various impairments for communication, language, and speech disorders of people come to mind. Among these, language-related ones are defined as developmental language and speech disorders, acquired language-speech disorders, and language disorders occurring because of any syndrome or disease. Speech disorders, on the other hand, are speech sound disorders associated with the acquisition and use of speech sounds of a certain language (articulation disorder-phonological disorder-childhood speech disorders). They include motor speech disorders (dysarthria-apraxia) related to the inability to use the motor muscle components of speech. In addition, stuttering and cluttering, which are related to the fluency of speech, are included in this classification, which also includes voice disorders.[1]

Recent studies show that 8 out of 10 users use the Internet to access health information online.[2,3] A recent study showed that more than 60% of adults use YouTube™ to search for health information online.[4] For those who have primary caregiver roles, there may be uncertainty about what the problem is and what can be done as an intervention.[5] For these reasons, parents prefer social media for answers about the health status of their children.[6] There has been a significant increase in the number of parents seeking online information and support regarding children's health, development, or disorder in the digital age we live in.[7]

It was reported in a study conducted by using the descriptive analysis of videos about speech disorders in recent years that the average frequency of watching these videos was 1 million 606 thousand.[8] In terms of the number of views, YouTube™ videos show that it is a frequently used area in terms of speech disorders, although it is not clear whether these are caregivers or not. The number of views of the videos and by whom they are uploaded is among the basic criteria for evaluating the quality.[9] Kollia et al.[10] conducted a study on autism spectrum disorder and reported that the most viewed videos were uploaded and provided by non-professionals (e.g., personal videos and television program videos). However, experts have doubts about the reliability of such videos in terms of answering people's questions.

Corresponding Author: İbrahim Can Yaşa, ibrahimcanyasa@gmail.com

According to a study that evaluated internet searches of individuals with stuttering in 2022, it was found that people who did not start treatment were more likely to search for online resources associated with stuttering than those who received treatment.[11] This finding shows that people who are relatively less knowledgeable about the subject prefer videos as an information source. In this context, it is very important to determine the quality of these videos.

The quality of health-related videos uploaded to YouTube™ needs to be critically evaluated because of their wide use in professional education and because patients frequently turn to it for information. The purpose of the study was to evaluate the quality of videos uploaded to YouTube™ about language and speech disorders.

METHODS

Ethics committee approval was not required for the study because there was no human or animal involvement and the YouTube™ videos reviewed were public.

A video search was conducted on the online video-sharing website YouTube™ (www.youtube.com) on April 12, 2023. Browser history was deleted, cookies were cleared, and a new YouTube account was opened in the Google Chrome Browser to minimize user-targeted search results. The search was made by using the keywords "speech disorders", "language disorders", and "speech and language disorders". A total of 79% of YouTube™ users look at other pages when they cannot find what they are looking for on the first page, and more than 90% of search results are only on the first 3 pages.[12] Considering these, the first 100 search results were included in the present study. The access links of the detected videos were exported to an Excel file because the search results may change on different days. Videos that were not in English, silent videos with low video quality, closed likes and comments, and inconsistent titles and content were excluded from the study. The first 83 videos were included in the study after the videos were removed in line with the exclusion criteria.

The evaluation of the videos was performed by two Speech and Language Therapists who had master's and Ph.D. degrees specialized in speech and language therapy to avoid any possible bias. Quantitative data of videos were evaluated according to the duration of the video, the number of views, number of likes and dislikes, the number of comments, and elapsed time since uploading, and the videos were categorized as hospital/university, specialist, layperson, and others according to their upload sources.

Modified Discern, Global Quality Score (GQS), Video Information and Quality Index (VIQI), and Journal of American Medical Association (JAMA) were used to evaluate the quality of the videos.

The modified DISCERN score was used to specifically evaluate the clarity, reliability, bias, reference suffix, and areas of uncertainty for information in YouTube™ videos (Table 1). Each of the items was scored as 1 for Yes and 0 for No.[13]

Table 1. Modified DISCERN criteria

1. Are the aims clear and achieved?
2. Are reliable sources of information used? (i.e., publication cited, speaker is board-certified vascular surgeon)
3. Is the information presented balanced and unbiased?
4. Are additional sources of information listed for patient reference?
5. Are areas of uncertainty mentioned?

The Global Quality Score (GQS) takes into account the flow of information in online videos along with ease of use and video quality (Table 2). The evaluation is made with a 5-point Likert scale, with 1 point indicating the lowest quality and 5 indicating excellent quality.[14]

Table 2. The Global Quality Score (GQS) criteria

1. Poor quality, very unlikely to be of any use to patients
2. Poor quality but some information present, of very limited use to patients
3. Suboptimal flow, some information is covered but important topics missing, somewhat useful to patients
4. Good quality and flow, most important topics covered, useful to patients
5. Excellent quality and flow, highly useful to patients

The information accuracy, information flow, quality, and precision of the videos were evaluated with the Video Information and Quality Index (VIQI) Scale. When the videos were evaluated with VIQI, a 5-point Likert-style scale was used, with 1 point indicating the lowest quality and 5 indicating excellent quality.

The Journal of American Medical Association (JAMA) system evaluates the reliability of health-related online resources based on 4 criteria (authorship, citation, explanation, and timeliness). JAMA Criteria are given in Table 3. Each criterion is graded between 0 and 1, and a maximum of 4 points that can be obtained means the highest quality.[15]

Table 3: Journal of the American Medical Association (JAMA) 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: Website "ownership" should be prominently and fully disclosed, as should any sponsorship, advertising, underwriting, commercial funding arrangements or support, or potential conflicts of interest
Currency: Dates, when content was posted and updated, should be indicated

Statistical Method

Statistical analyses were performed using the IBM SPSS 21.0 software version 21. The variables were investigated using Kolmogorov-Smirnov/Shapiro-Wilk's test to determine whether or not they are normally distributed. As all the parameters were not normally distributed the Kruskal-Wallis test was performed to compare those variables among the video source. The Mann-Whitney U test was performed to calculate the significance of pairwise differences using Bonferroni correction to adjust for multiple comparisons. While investigating the associations between the variables, the Spearman test was used to calculate the correlation coefficient and significance.%5 Type-I error was accepted statistical significance.

RESULTS

A total of 83 consecutive videos were analyzed within the scope of the study. Thirty-four (41%) of these videos were uploaded by Hospital/University staff, 23 (27.7%) of them were from Others, 15 (18.1%) of them were from Specialist and 11 (13.3%) of them were uploaded by Layperson (Figure 1).

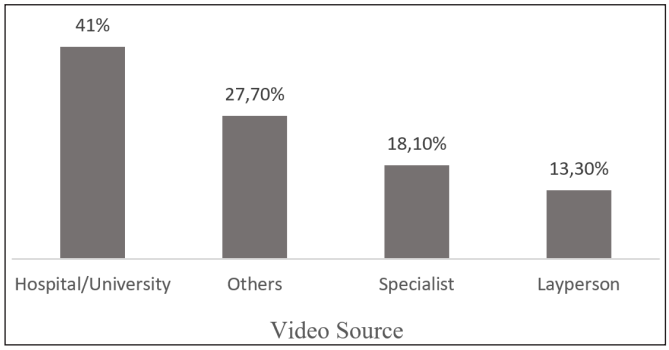

Figure 1.

When the contents of the 83 videos evaluated were examined, it was found that the videos were on fluency disorders (n=20), speech sound disorders (n=19), developmental language disorders (n=35), neurogenic-acquired language disorders (n=15), motor speech disorders (n= 7), voice disorders (n=4), language disorders secondary to autism spectrum disorder (n=12), delayed speech (n=9), and language disorders (n=12).

When all videos are evaluated together, the mean number of days since the upload of videos was 1635.6±1034.9 days, the mean total video duration was 587.6±717.3 seconds, the mean total view count was 24152.5±58899.7, the mean Likes number was 234.4±393.5, the mean Dislikes number was 7.6±22.5, the mean total number of comments was 15.5±34.9, the mean total DISCERN score was 3.1±1.2, the mean total VIQI score was 3.1±1.0, the mean GQS score was 3.1±1.0 and the mean total JAMA score was 2.0±0.9. The features of the videos were shown in Table 4.

Table 4. The features of the videos

Variable	Mean±SD
Number of days since upload (day)	1635.6±1034.9
Total video duration (seconds)	587±717.3
Total view count	24152.5±58899.7
Likes	234.4±393.5
Dislikes	7.6±22.5
Number of comments	15.5±34.9
DISCERN score	3.1±1.2
VIQI score	3.1±1.0
GQS score	3.1±1.0
JAMA score	2.0±0.9

When the videos were compared to their source, the mean total video duration was found to be statistically significantly shorter in the Hospital/University group compared to the Specialist and Layperson groups (491.5±810.2 vs 595.4±451.8 and 491.5±810.2 vs 703.0±480.0; p=0.007, p=0.005, respectively).

No statistically significant difference was detected between the groups in other features of the videos. Table 5 summarizes the comparison of the features of videos according to their source.

Table 5. The comparison of features of the videos according to their sources

Mean	Hospital/University (n=34)	Others (n=23)	Specialist (n=15)	Layperson (n=11)	P Value
Days since upload (day)	1856.4±1070.5	1634.1±1185.5	1404.6±805.8	1271.0±779.8	P=0.285
Total video duration (seconds)	491.5±810.2	669.5±818.9	595.4±451.8	703.0±480.0	P=0.007
Total view count	37622.3±87902.4	17814.9±23289.9	9855.2±15824.8	15266.1±17377.5	P=0.283
Likes	248.9±484.8	242.9±327.8	197.8±377.6	222.3±234.1	P=0.674
Dislikes	12.0±33.8	5.2±9.6	3.5±4.9	4.7±4.3	P=0.691
Comments	11.4±33.9	16.0±26.8	11.1±16.8	33.6±61.4	P=0.171
DISCERN score	3.1±1.2	2.9±1.2	3.4±1.1	3.5±1.1	P=0.452
VIQI score	2.9±1.1	3.0±0.9	3.7±0.9	3.3±0.7	P=0.124
GQS score	2.9±1.1	3.0±0.9	3.7±0.9	3.3±0.7	P=0.141
JAMA score	2.1±1.0	1.7±0.8	2.2±0.9	2.0±0.1	P=0.343

*Spearman correlation analysis

*Kruskal Wallis test, after Bonferroni correction, only Hospital/University-Specialist and Hospital/University-Layperson were found statistically significant with p values listed above. P values for pairwise comparison are as follows; Hospital/University-Others p=0.120, Others-Layperson p=0.274, Others vs Specialist p=0.344, Specialist vs Layperson p=0.281.

Correlation analysis revealed a positive and statistically significant correlation between the mean total video duration and VIQI and GQS scores (r=0.252, p=0.022; r=0.236, p=0.032, respectively). No statistically significant correlation was found with other video parameters. Table 6 shows the Spearman correlation analysis and coefficient values.

Table 6. The correlation coefficients between the video features and DISCERN, JAMA, VIQI and JAMA scores

Mean	DISCERN	VIQI	GQS	JAMA
Number of days since upload (day)	r=-0.098 P=0.378	r=-0.145 P=0.190	r=-0.131 P=0.238	r=-0.121 P=0.275
Total video duration (seconds)	r=0.053 P=0.631	r=0.252* P=0.022*	r=0.236* P=0.032*	r=0.080 P=0.470
Total view count	r=0.185 P=0.093	r=0.098 P=0.378	r=0.114 P=0.305	r=-0.005 P=0.965
Likes	r=0.156 P=0.159	r=0.123 P=0.267	r=0.130 P=0.240	r=-0.032 P=0.775
Dislikes	r=0.170 P=0.124	r=0.099 P=0.372	r=0.106 P=0.338	r=-0.033 P=0.766
Number of comments	r=0.054 P=0.626	r=0.033 P=0.766	r=0.037 P=0.737	r=-0.101 P=0.363
Video source	r=0.069 P=0.535	r=0.209 P=0.058	r=0.197 P=0.074	r=-0.037 P=0.742

*Spearman correlation analysis

DISCUSSION

Especially with the pandemic process, platforms such as YouTube™ have become a source of medical information that could reach large audiences free of charge.[16] It is very important to evaluate the credibility of sources because these platforms have high-quality videos as well as low-quality ones that might cause misleading information.

It was found in the present study that most of the videos (41%) uploaded about language and speech disorders were uploaded by professionals who were working in hospitals and universities and (18.1%) specialists. It was also found that less part of the videos was uploaded by non-professional (13.3%) laypersons and (27.7%) others. However, when the number of views of the videos was examined, no significant differences were detected between the groups. When the literature was reviewed, there are also studies reporting that the majority of those who watched health-related videos on the internet were not interested in the source of the videos.[17] The present study also supported this and showed that users did not consider uploader differences when choosing videos to watch.

Literature showed that more parents and other family members sought information online about the relevant speech and language disorder.[18] In the present study, it was seen that the videos uploaded to YouTube™, in line with the literature, mostly focused on language and speech disorders in childhood.

When the literature was reviewed, it was seen that the prevalence of delayed speech was 2.53%,[19] the prevalence of articulation disorder was 2.1%, stuttering was 2.1%, and voice disorder was 1.2%,[20] In the present study, in which the videos published on YouTube were evaluated, it was found that the number of videos about fluency disorders (n=20) and speech sound disorders (n=19), which had a high prevalence, was high, and there was little content about delayed speech even though the prevalence was high (n=9).

The scales recommended to be used for the evaluation of written scientific material such as JAMA and DISCERN were used in previous studies conducted on videos on the Internet, and it is recommended to develop appropriate methodology and scales for the evaluation of visual publications such as videos.[18] For this reason, the researchers used the Video Power Index (VPI) value, the Global Quality Scale (GQS), and the modified DISCERN scale in the present study, where the quality of videos on language and speech disorders on the digital content platform YouTube™ was evaluated.

Total Modified DISCERN scores were obtained as a mean of 3.1±1.2, which result shows that the quality of the videos is at moderate levels. It was seen that 17% (n=14) of the videos were of high quality. Total Global Quality Scale (GQS) mean was 3.1±1.0, the total Video Power Index (VPI) mean was 3.1±1.0, and the total JAMA score mean was 2.0±0.9. Similar to the modified DISCERN scores, the GQS, VPI, and JAMA scores indicated moderate levels of quality of the videos. When the evaluation was made according to the loaders, the differences between the groups were not significant. There is no consensus in the literature on which of these scales is more precise. However, in some previous studies[21,22] a more objective evaluation was aimed by using the two scales together. Obtaining similar results from the scales that were used in our study shows that the reliability of the assessment is high.

There are few studies evaluating Language and Speech Disorders videos uploaded to YouTube™. Akram et al.[18] examined the understandability and actionability of uploaded videos about language and speech disorders. As a result of their study, they reported that YouTube™ videos have low scores of understandability and action-ability. Similarly, in the present study, the quality of the uploaded videos was found to be at moderate levels.

In their study in which videos on YouTube™ about children with speech and/or language disorders were evaluated according to the video uploader of understandability and actionability, Bellon-Harn et al.[23] eported that videos uploaded by professionals were found to be superior to other uploading sources in terms of understandability, but no difference was detected in terms of action-ability among video sources. Similarly, according to the correlation analysis in our study, no significant difference was detected between the video quality scales according to the video uploader.

There were two main limitations in the study. This cross-sectional study includes Youtube™ searches on the specified date, and the data obtained is based on a specific search result. Another limitation was that language and speech disorders have a very wide spectrum. The evaluation of each sub-title in future studies will provide valuable contributions to the literature.

CONCLUSION

YouTube™ is increasingly accessed by patients and their families for information on the diagnosis, understanding, and treatment of language and speech disorders. However, the present study shows that the quality of the videos on these topics is not sufficient. We think that it is important to upload quality, accurate and precise videos that meet the expectations of society, especially the experiences of patients and their relatives, by experts and academic institutions.

ETHICAL DECLARATIONS

Ethics Committee Approval: Ethics committee approval was not obtained as there was no human or animal participation in the study, and the videos were public. The study, which follows the World Medical Association Declaration of Helsinki, did not utilize any patient data or materials. All videos used in the study can be found on a public social media site (YouTube™).

Informed Consent: There was no human or animal participation in the study and the videos reviewed on YouTube™ were open to everyone. Therefore, it was not necessary to obtain informed consent.

Referee Evaluation Process: Externally peer reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. American Speech-Language-Hearing Association. Definitions of communication disorders and variations [Relevant Paper]. *ASHA Suppl.* 1993;35(3 Suppl 10):40-41.
2. Atkinson N, Saperstein S, Pleis J. Using the internet for health-related activities: findings from a national probability sample. *J Med Internet Res.* 2009;11(1):e1035.
3. Rutten LJF, Squiers L, Hesse B. Cancer-related information seeking:hints from the 2003 Health Information National Trends Survey (HINTS). *J Health Commun.* 2006;11 Suppl 1:147-156.
4. Cohen RA, Adams PF. Use of the internet for health information: United States, 2009. *NCHS Data Brief.* 2011;(66):1-8.
5. Gunjawate DR, Ravi R, Bellon-Harn ML, et al. Bebek işitme kaybını ele alan youtube videolarının içerik analizi: kesitsel bir çalışma. *İnternette Tüketici Sağlığı Derg.* 2021;25(1):20-34.
6. Bryan MA, Evans Y, Morishita C, et al. Parental perceptions of the internet and social media as a source of pediatric health information. *Acad Pediatrics.* 2020;20(1):31-38.
7. Burton H, Tew V, Cueva S, et al. Social moms and health:A multi-platform analysis of mommy communities. *Proc IEEE ACM Int Conf Adv Soc Netw Anal Min,* 2013;169–174.
8. Bellon-Harn ML, Ponce J, Hancock R. A cross-sectional descriptive analysis of speech, hearing, and feeding in YouTube videos:a brief communication. *Cleft Palate-Craniofacial J.* 2022;10556656221127552.
9. Bellon-Harn ML, Manchaiah V, Shashikanth S. A cross-sectional study of the portrayal of childhood speech and language disorders in YouTube videos. *Digital Health.* 2020;6:2055207620929785.
10. Kollia B, Kamowski-Shakibai MT, Basch CH, et al. Sources and content of popular online videos about autism spectrum disorders. *Health Promotion Perspectives.* 2017;7(4):238.
11. Leko Krhen A, Šušak L. Internet searches conducted by people who stutter:association with speech-language therapy and severity of stuttering. *Logopedics Phoniatrics Vocology.* 2022;1-8.
12. Desai T, Shariff A, Dhingra V, Minhas D, Eure M, Kats M. Is content really king? An objective analysis of the public's response to medical videos on YouTube. *PLoS ONE* 2013;8(12):e82469.
13. Kaşıkcı MT, Yıldırım S. Alzheimer Hastalığı Bilgilendirmesinde Kaynak Olarak YouTube Videolarının İncelenmesi. *Muğla Sıtkı Koçman Üniversitesi Tıp Derg.* 2021;8:215-219.
14. Von Brevern M, Radtke A, Lezius F, et al. Epidemiology of benign paroxysmal positional vertigo:a population based study. *J Neurol Neurosurg Psychiatry.* 2007;78(7):710-715.
15. Silberg WM, Lundberg GD, Musacchio R. Quality of Medical Information on the Internet-Reply. *JAMA*. 1997;278(8):632-633.
16. Kocyigit BF, Akaltun MS, Sahin AR. YouTube as a source of information on COVID-19 and rheumatic disease link. *Clin Rheumatol.* 2020;39(7):2049-2054.
17. Pew Research Center:Internet, Science & Tech. Fox S. (2023, April 13). Available from:https://www.pewresearch.org/internet/2006/10/29/online-health-search-2006/
18. Akram S, Abbas I, Waleed JA. Descriptive study of portrayal of speech and language disorders in YouTube videos. *Competitive Soc Sci Res J.* 2022;3:708-719.
19. Sunderajan T, Kanhere SV. Speech and language delay in children:Prevalence and risk factors. *J Fam Med Primary Care.* 2019;8(5):1642.
20. Gillespie SK, Cooper EB. Prevalence of speech problems in junior and senior high schools. *J Speech Hear Res.* 1973;16(4):739-743.
21. Azer SA. Are DISCERN and JAMA suitable instruments for assessing YouTube videos on thyroid cancer? Methodological concerns. *J Cancer Educ.* 2020;35(6):1267-1277.
22. Singh SK, Liu S, Capasso R, et al. YouTube as a source of information for obstructive sleep apnea. *Am J Otolaryngol.* 2018;39(4):378-382.
23. Bellon-Harn ML, Morris LR, Manchaiah V, et al. Use of vídeos and digital media in parent-implemented interventions for parents of children with primary speech sound and/or language disorders:a scoping review. *J Child Fam Stud.* 2020;29(12):3596-3608.