

Original Research Article

Evaluating the Reliability of YouTube Videos About Primary Herpetic Gingivostomatitis

Primer Herpetik Gingivostomatit ile ilgili YouTube Videolarının Güvenilirliğinin Değerlendirilmesi

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ABSTRACT

Aim: The aim of this study was to evaluate the accuracy and reliability of the information included in YouTube™ videos regarding Primary Herpetic Gingivostomatitis (PHGS).

Materials and Method: The term PHGS were typed into the search bar on YouTube™ (www.YouTube.com), and the first 300 videos were scanned. Global Quality Score (GQS) and Reliability Score (a modified DISCERN tool), two social media video content evaluation methods, were used to assess the reliability and quality of the included videos. Each video's usefulness rating, source, duration, number of views, and likes were also recorded. The interaction index and viewing rates of videos were calculated.

Results: 69% of the videos were very useful, and the GQS scores were good (48.3%) and excellent (17.2 %) mostly. The popularity and visibility data of videos were not correlated with the video usefulness score, GQS, and DISCERN ($p>0.05$). Total DISCERN scores and GQS were correlated with usefulness scores of the videos ($p<0.05$).

Conclusion: Although the number of videos on YouTube™ on PHGS is insufficient, their quality and reliability are high, regardless of the number of views, duration and likes.

Keywords: Primary Herpetic Gingivostomatitis; Reliability; YouTube

ÖZET

Amaç: Bu çalışmanın amacı, Primer Herpetik Gingivostomatitis (PHGS) ile ilgili YouTube™ videolarında yer alan bilgilerin doğruluğunu ve güvenilirliğini değerlendirmektir.

Gereç ve Yöntem: YouTube™ (www.YouTube.com) arama çubuğuna PHGS terimi yazıldı ve ilk 300 video tarandı. Dahil edilen videoların güvenilirliğini ve kalitesini değerlendirmek için iki sosyal medya video içeriği değerlendirme yöntemi olan Küresel Kalite Puanı (GQS) ve Güvenilirlik Puanı (modifiye DISCERN) kullanıldı. Her videonun yararlılık derecesi, kaynağı, süresi, izlenme sayısı ve beğenileri de kaydedildi. Videoların etkileşim endeksi ve izlenme oranları hesaplandı.

Bulgular: Videoların %69'u çok kullanışlıydı ve GQS puanları çoğunlukla iyi (%48,3) ve mükemmel (%17,2) idi. Videoların popülerlik ve görünürlük verileri video kullanışlılık puanı, GQS ve DISCERN ile ilişkili değildi ($p>0,05$). Toplam DISCERN puanları ve GQS, videoların kullanışlılık puanları ile korelasyon göstermiştir ($p<0,05$).

Sonuç: PHGS konusunda YouTube'daki videoların sayısı yetersiz olmakla birlikte izlenme sayısı, süresi ve beğenisinden bağımsız olarak kalite ve güvenilirliği yüksektir.

Anahtar Kelimeler: Güvenilirlik; Primer Herpetik Gingivostomatitis; YouTube

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INTRODUCTION

A double-stranded virus in the human herpes virus family is the herpes simplex virus (HSV). The majority of oral infections are caused by HSV-1, despite the virus having eight different types.¹ HSV-1 is typically the reason behind the acute infectious condition known as primary herpetic gingivostomatitis (PHGS), which affects the oral cavity.² The virus often causes PHGS in children ages 2 to 5 and is spread by coming into contact with a lesion directly or contaminated bodily fluids (such as saliva).^{1,2} Due to the circulating maternal antibodies that are present in 70–80% of the adult population, infections before the age of six months are uncommon.³ On the other hand PHGS can also occur in adolescents and adults. By the time they reach the age of 35, an estimated 90% of people throughout the world are HSV-1 seropositive, and in half of those people, the virus will reactivate as herpes labialis.⁴

Children who have not previously been exposed to the virus are more likely to develop PHGS. In certain cases, there may be no symptoms, but in the majority of them, a prodrome of fever, anorexia, irritability, and the emergence of painful oral lesions occurs. Vesicles that develop into painful ulcers with generalized edematous and bleeding gingiva are the initial stage of the lesions.⁵ Malaise, drowsiness, and cervical or submandibular lymphadenopathy are some of the accompanying symptoms.^{6,7}

YouTube™ is a convenient platform for accessing a wide range of information, including health-related topics. The main goal of this study was to evaluate the accuracy and value of the information included in YouTube™ videos regarding the causes of PHGS, its mechanisms, preventative tactics, and new developments in its treatment. The secondary goal was to determine whether the videos' length, caliber, source, usefulness, and/or dependability affected their exposure and popularity.

MATERIALS AND METHOD

Study design

Our study uses a cross-sectional study design to examine the educational value of YouTube™ hosted videos.

YouTube™ research

The terms 'herpetic gingivostomatitis, acute herpetic gingivostomatitis, and primary herpetic gingivostomatitis' were analyzed according to the frequency of search in the search engine (<https://trends.google.com>). 'Primary herpetic gingivostomatitis' was the most searched term, and the first 300 videos were evaluated by typing this term on the youtube platform between 07:00 - 21:00 on 6-7 May 2023. The study didn't require ethics board permission or any regulatory oversight.

Video collection

The YouTube™ videos that were discovered during the search were examined and categorized in accordance with the inclusion and exclusion criteria. English and related videos about the topic of PHGS were included in the study. Videos that were not in English, duplicated, unrelated to the topic of PHGS, irrelevant, without sound, or conference/lecture videos that were primarily aimed at a single person were omitted from the study. 29 videos (9.7%) were included for further study, whereas 271 videos (90.3%) were removed based on the aforementioned inclusion/exclusion criteria.

Examination of the videos

The videos were evaluated independently by two researchers (D.A.A., O.S.A.). D.A.A. was in charge of the initial scanning. Each video's views, uploading date, comments, likes and dislikes, nation of origin, and length in minutes were all noted;⁸ however, the researcher who watched each video never considered the quantity of comments or the number of likes/dislikes before finishing the viewing to prevent bias in the evaluation. Discussion of the problems and a review of the literature were used to settle disagreements among researchers over the evaluation of specific videos.

Based on the viewing rate (total number of views/number of days from upload; and the interaction index (number of likes minus number of dislikes/total number of views 100%), viewer interactions were computed.⁹

Each video's source was noted in accordance with the following categories: hospital/university, commercial (dentistry supply business or dental

manufacturing business), healthcare professionals (pedodontist, periodontist, dentist), layperson, or other (e.g., television channels or news agencies).¹⁰ Additionally, we divided the different video formats into two categories: educational (i.e., those that offered details about PHGS and its causes, risk factors, clinical manifestations, and treatment choices) and testimonial (i.e., those that related a person's experience with PHGS).

The videos' comprehensibility depending on their content was assessed in this study using a comprehensiveness tailored index, scored from 0 to 2 (Usefulness score/Video content score), to assess clinical presentation, etiology/risk factors, and treatment options. The scores were 0, 1, and 2. The videos were given a score of 0 if they didn't discuss any clinical manifestations, indicators of risk, or treatment alternatives.; a score of 1 if they did but did not mention any management options; and a score of 2 if they did describe two or more clinical presentations, two or more etiological factors and at least one treatment choice. The scores were based on the sum of the points.¹¹

Additionally, an ordinal scale of five points known as the Global Quality Scale (GQS), which is based on the accessibility of the material, its utility to patients, and the caliber of the video, was used to evaluate the quality of the information offered by the included videos. Five questions make up the scale: one asks about very low quality, two about poor quality generally and restricted usage, three about moderate quality, four about fair quality, and five about exceptional quality.¹²

The DISCERN tool, a questionnaire based on a defined set of criteria to evaluate the reliability and quality of written health information on treatment alternatives, was used to assess the reliability. Singh *et al.*⁹ adapted the DISCERN scale created by Charnock *et al.*¹³ We assessed the credibility of the videos in accordance with Singh *et al.*⁹ High scores reveal the videos' trustworthy content; the scale consists of five questions in total.

Statistical Analysis

The sample size was determined based on similar You Tube studies.^{8,9}

Descriptive data were presented in this study as numbers, percentages, means, standard deviations, minimums, and maximums. The Shapiro Wilk test was used to verify the assumption of normality as the first stage in the statistical investigation. To compare the means of three or more groups without a normal distribution, the Kruskal Wallis test was applied.

To identify the group or groups that contributed to the difference, the Post Hoc Bonferroni test was used. The link between a continuous variable and a categorical variable was examined using Kendal's Tau correlation. When the sample size assumption was not given, the Pearson Chi-Square test was utilized to look at the association between categorical variables. The categorical dependent variable was modeled with independent factors using multinomial logistic regression analysis. The Statistical Package for Social Sciences (SPSS) for Windows, version 25.0 (SPSS Inc., Chicago, IL, USA) software was used to conduct the analyses.

RESULTS

The first 300 movies returned by the search for "PHGS" were analyzed. Because they didn't satisfy the criteria, 271 (90.3%) videos that were collected for the research couldn't be used. 23 videos since they are "not in English," 27 videos since they are "duplicate," 88 videos due to "not related to the subject," 42 videos because they are "irrelevant videos," 11 videos due to "no sound," and 80 videos since they are "conference/lecture" could not be used (Figure 1).

Video publishing proportion of countries for PHGS have been determined 10.3 % for Canada, 3.4 % for Colombia, 6.8% for Egypt, 3.4 % for Germany, 3.4 % for Iraq, 3.4 % for Ireland, 24.1% for India, 6.8 % for Pakistan, 10.3 % for UK, and 27.5 % for USA (Figure 2).

Table 1 provides the distributions of the video characteristics. The majority of the videos watched were "educational type" videos (n = 23, 79.3%), and "Healthcare professionals" (n = 18, 62.1%) published the majority of the videos. Descriptive statistics for the GQS and Total Discern are also given in Table 1. According to the GQS, 2.3% of videos were found to be "generally poor quality," 20.7% to be "moderate quality," 48.3% to be "good quality," and 17.2% to be "excellent quality." (Supplementary file 1)

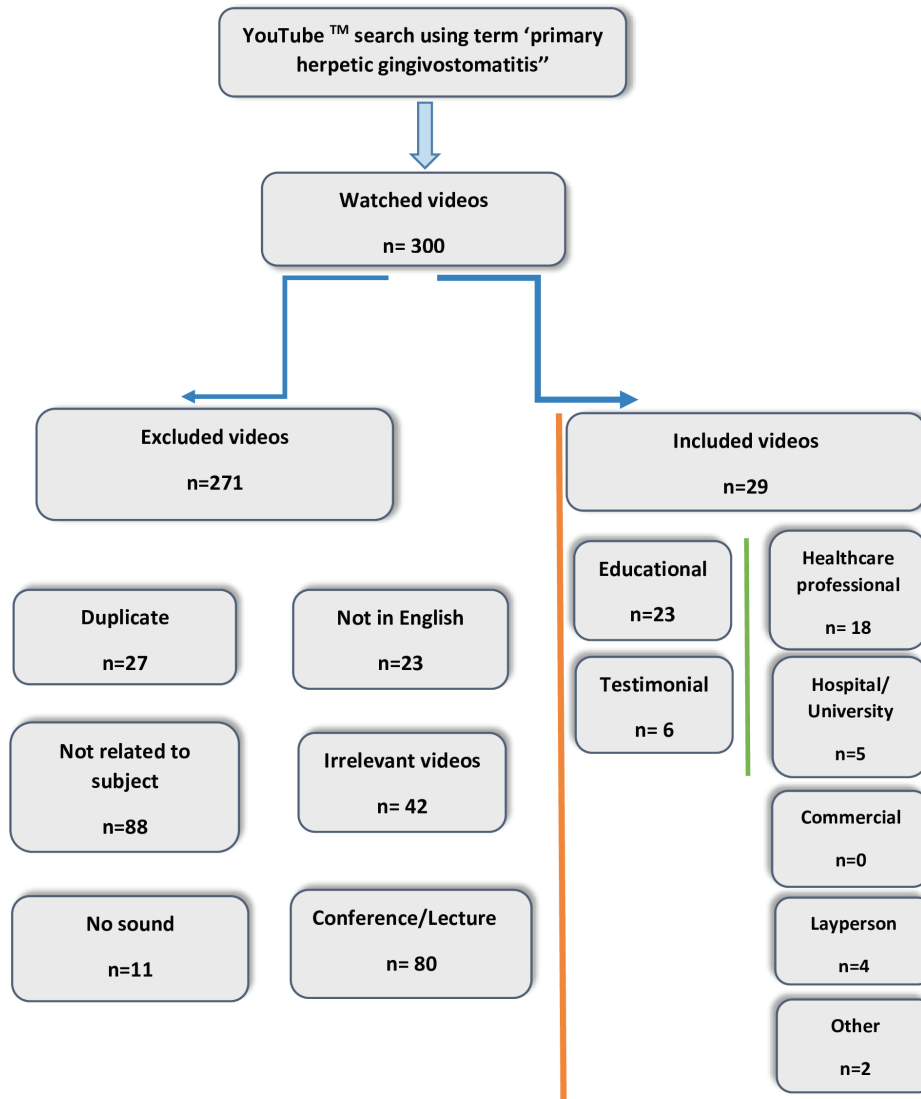


Figure 1. Flow diagram of the selection process

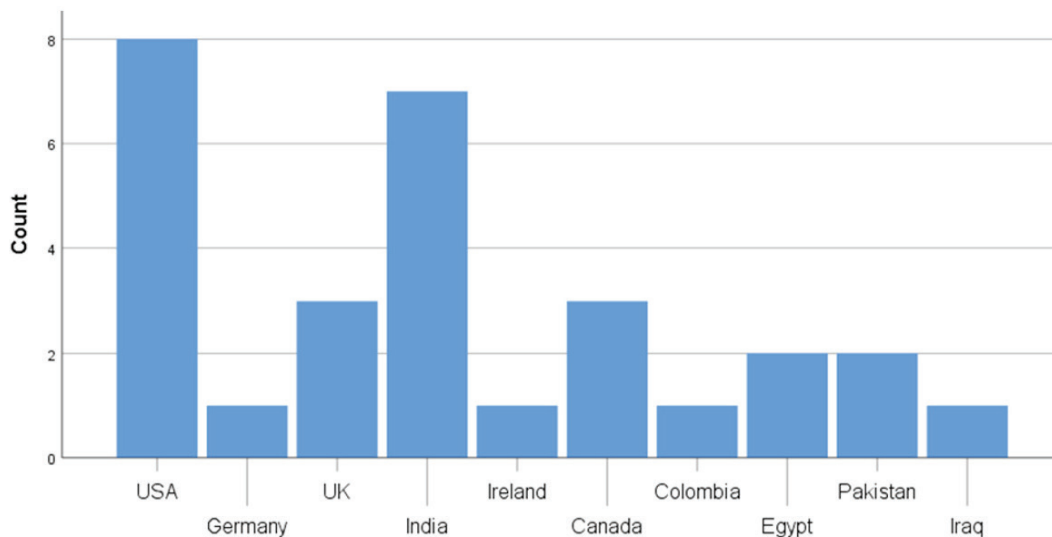


Figure 2. Countries where videos are uploaded

Table 1. Distribution of videos according to their descriptive features

	Minimum	Maximum	Mean	Standard Deviation	Median
Number of views	18.00	16100.00	4192.17	4799.52	2276.00
Duration in seconds	0.00	1755.00	473.21	442.56	427.00
Days since upload	55.00	4674.00	1351.79	1267.14	1043.00
Number of comments	0.00	388.00	23.79	74.62	2.00
Number of likes	0.00	179.00	36.66	39.96	22.00
Viewing Rate	4.16	1089.02	304.57	264.39	244.17
Interaction Index	0.00	6.67	1.48	1.47	1.06
Global Quality Scale	1.00	5.00	3.66	1.56	4.00
Total DISCERN	2.00	5.00	3.62	1.01	4.00
			n		%
Source of Upload	Healthcare professionals		18		62.1
	Hospital/University		5		17.2
	Commercial		0		0.0
	Layperson		4		13.8
	Other (Tv channels. new agencies)		2		6.9
Video Type	Educational		23		79.3
	Testimonial		6		20.7
Usefulness Score	Score 0		3		10.3
	Score 1		6		20.7
	Score 2		20		69.0
Total DISCERN	Score 1		6		20.7
	Score 2		0		0.0
	Score 3		5		17.2
	Score 4		5		17.2
	Score 5		13		44.8
Global Quality Scale	Score 1		0		0.0
	Score 2		6		20.7
	Score 3		4		13.8
	Score 4		14		48.3
	Score 5		5		17.2

Comparison of the averages of video features according to Usefulness Scores are given in Table 2. To compare the averages of video features according to the Usefulness scores of the videos, assumptions were verified and Kruskal Wallis tests were run. In order to identify the group or groups that contributed to the difference, the Bonferroni test was used. A statistically significant difference between the overall DISCERN averages according to the Usefulness ratings was discovered as a result of the analysis ($p < 0.05$). Statistically significant differences were determined between Score 2, Score 0 and Score 1 according to the Bonferroni test ($p = 0.005$ and $p = 0.004$). The average of Score 2 is higher than the averages of Score 0 and 1. A statistically significant difference was found between the GQS averages according to the Usefulness scores ($p < 0.05$). Significant variations in terms of statistics were determined between Score 2, Score 0 and Score 1 according

to the Bonferroni test ($p = 0.007$ and $p = 0.030$). The average of Score 2 is higher than the averages of Score 0 and 1.

To compare the variations in the averages of the video features according to the Total DISCERN scores of the videos, assumptions were verified and Kruskal Wallis tests were run. In order to identify the group or groups that contributed to the difference, the Bonferroni test was used. A statistically significant difference between the mean time from the day of loading and the Total DISCERN scores was discovered as a result of the investigation ($p < 0.05$). A statistically significant difference was found between score 1 and score 4 according to the Bonferroni test ($p = 0.046$). The average of score 1 is higher than the average of score 4. Statistically significant differences were found between the GQS averages according to the total DISCERN scores ($p < 0.05$). Statistically significant differences

were found between score 1, score 4 and score 5 according to the Bonferroni test ($p=0.020$ and $p<0.001$). The averages of score 4 and score 5 are higher than the averages of score 1.

Kendal's Tau correlation was used to examine the relationship between YouTube video features and Total DISCERN, GQS, and Usefulness scores. No statistically significant correlation between video features and the Total Discern, GQS, and Usefulness scores was discovered, per the analysis's findings ($p>0.05$). A statistically significant, positive, and high-level correlation was found between Total DISCERN and Usefulness Scores with a correlation coefficient of 0.718 ($p<0.05$). A statistically significant, positive, and high-level relationship was determined with a correlation coefficient of 0.738 between Total DISCERN and the GQS ($p<0.05$). With a correlation coefficient of 0.633 between the GQS and the Usefulness Scores, a statistically significant, favorable, and moderate link was discovered. ($p<0.05$). (Table 3)

Relationships between video features and Usefulness Scores are given in Table 4. As a result of the analysis a statistically significant relationship was found between the 'Source of Upload' and 'Usefulness Scores' ($p<0.05$). When the observations are examined for the reason for the relationship, it is seen that the sources of the videos with a usefulness score of 2 are mostly "Healthcare professionals and Hospital/University" groups. It has been determined that the sources of the videos with a usefulness score of 0 and 1 are mostly "layperson and others" groups.

It was discovered that there is a statistically significant correlation between "Video Type" and "Usefulness Scores." ($p<0.05$). When the observations are looked at to determine the cause of the correlation, it is discovered that the majority of the videos with a usefulness score of 2 are "educational." All of the videos having a usefulness score between 0 and 1 were found to be "testimonial" videos.

Table 2. Comparison of the averages of video features according to Usefulness Scores

		Mean	Standard Deviation	Average Rank	Test Statistic	p
Number of views	Score 0	10435.00	5304.67	24.67	4.368	0.113
	Score 1	3518.50	4089.94	13.17		
	Score 2	3457.85	4440.53	14.10		
Duration in minutes	Score 0	575.00	451.85	18.17	0.623	0.732
	Score 1	395.33	250.92	13.42		
	Score 2	481.30	496.95	15.00		
Days since upload	Score 0	1563.00	530.28	20.50	1.605	0.448
	Score 1	1322.67	1104.35	15.75		
	Score 2	1328.85	1416.96	13.95		
Number of comments	Score 0	7.00	12.12	11.17	3.554	0.169
	Score 1	73.33	154.46	20.50		
	Score 2	11.45	30.53	13.93		
Number of likes	Score 0	54.00	7.21	21.33	1.901	0.387
	Score 1	40.33	40.37	14.92		
	Score 2	32.95	43.04	14.08		
Viewing Rate	Score 0	641.50	116.11	25.33	4.998	0.082
	Score 1	248.51	215.93	13.00		
	Score 2	270.85	263.08	14.05		
Interaction Index	Score 0	0.60	0.24	7.33	4.252	0.119
	Score 1	2.61	2.36	19.67		
	Score 2	1.28	1.08	14.75		
Total DISCERN	Score 0	1.00	0.00	3.50	17.151	0.001*
	Score 1	2.17	1.33	7.08		
	Score 2	4.50	0.76	19.10		
Global Quality Scale	Score 0	2.00	0.00	3.50	13.624	0.001*
	Score 1	2.83	0.98	9.00		
	Score 2	4.10	0.64	18.53		

* $p<0.05$

Table 3. Relationships between features of YouTube videos and Usefulness Score, Total Discern, and Total Global Scale

		Usefulness Score	Total DISCERN	Global Quality Scale
Number of views	Rho	-0.169	-0.159	-0.077
	p	0.266	0.272	0.600
Duration in minutes	Rho	-0.025	0.146	0.092
	p	0.871	0.318	0.531
Days since upload	Rho	-0.174	-0.123	-0.116
	p	0.256	0.402	0.431
Number of comments	Rho	-0.121	-0.096	-0.145
	p	0.450	0.529	0.344
Number of likes	Rho	-0.150	-0.138	-0.012
	p	0.329	0.348	0.936
Viewing Rate	Rho	-0.190	-0.125	-0.012
	p	0.211	0.391	0.936
Interaction Index	Rho	0.014	0.055	0.130
	p	0.926	0.705	0.374
Total DISCERN	Rho	0.718	1.000	0.738
	p	0.001*	-	0.001*
Global Quality Scale	Rho	0.633		1.000
	p	0.001*		-

*p<0.05

A statistically significant correlation was found between the 'Total DISCERN Score' and the 'Usefulness Scores' ($p<0.05$). It was observed that the usefulness scores increased with the increase in the total DISCERN scores. When the observations were looked at to determine the cause for the relationship, it was determined that the videos with a usefulness

score of 2 mostly gave "Yes" answers to the DISCERN questions.

The 'GQS' and 'Usefulness Scores' were discovered to be statistically significantly correlated ($p<0.05$). It was determined that the usefulness scores increased with the increase in the GQS and they were quite compatible with each other (Table 4).

Table 4. Relationships between video features and Usefulness Scores

			Usefulness Scores			Test Statistics	
			Score 0	Score 1	Score 2		p
Source of Upload	Healthcare professionals	n	0	2	16	18.047	0.001*
		%	0.0	33.3	80.0		
	Hospital/University	n	0	1	4		
		%	0.0	16.7	20.0		
	Layperson	n	2	2	0		
		%	66.7	33.3	0.0		
Other	n	1	1	0			
	%	33.3	16.7	0.0			
Video Type	Educational	n	0	3	20	17.571	0.001*
		%	0.0	50.0	100.0		
	Testimonial	n	3	3	0		
		%	100.0	50.0	0.0		
Are the aims clear and achieved?	No	n	0	0	0	-	-
		%	0.0	0.0	0.0		
	Yes	n	3	6	20		
		%	100.0	100.0	100.0		
Are reliable sources of information used?	No	n	3	3	0	17.571	0.001*
		%	100.0	50.0	0.0		
	Yes	n	0	3	20		
		%	0.0	50.0	100.0		
Is the information presented balanced and unbiased?	No	n	3	3	0	17.571	0.001*
		%	100.0	50.0	0.0		
	Yes	n	0	3	20		
		%	0.0	50.0	100.0		
Are additional sources of information listed for patient reference?	No	n	3	6	5	13.616	0.001*
		%	100.0	100.0	25.0		
	Yes	n	0	0	15		
		%	0.0	0.0	75.0		
Are areas of uncertainty mentioned?	No	n	3	5	5	9.784	0.006*
		%	100.0	83.3	25.0		
	Yes	n	0	1	15		
		%	0.0	16.7	75.0		
Total DISCERN	Score 0	n	3	3	0	20.489	0.001*
		%	100.0	50.0	0.0		
	Score 3	n	0	2	3		
		%	0.0	33.3	15.0		
	Score 4	n	0	1	4		
		%	0.0	16.7	20.0		
Score 5	n	0	0	13			
	%	0.0	0.0	65.0			
Global Quality Scale	Score 2	n	3	3	0	16.817	0.001*
		%	100.0	50.0	0.0		
	Score 3	n	0	1	3		
		%	0.0	16.7	15.0		
	Score 4	n	0	2	12		
		%	0.0	33.3	60.0		
	Score 5	n	0	0	5		
		%	0.0	0.0	25.0		

DISCUSSION

The purpose of this study was to assess the information that online videos provide patients looking for PHGS-related information, as well as the caliber and content of these videos. Most of the videos used in the research were from healthcare professionals, and virtually all were released with educational intent. According to the study's findings, videos with high content received similarly likes, comments, views, viewing rate, and interaction index with those with poor content. The popularity and visibility data of videos were not correlated with the video usefulness score, GQS, and DISCERN.

PHGS, an acute viral illness that affects the oral cavity, is most frequently caused by HSV-1.⁶ It is possible to see the lack of appetite, general malaise, and sore oral tissues. The internet and especially YouTube videos can be used for the findings, treatment methods and comforting recommendations of PHGS, which is frequently encountered in childhood (especially 2-5 years old) and can cause anxiety in parents. Simple access to inaccurate and biased information may have a negative impact on both patients and physicians by encouraging individuals to seek therapies that are unsuitable for their unique circumstances or by endorsing unneeded procedures.

Several studies investigate YouTube videos related to oral and dental conditions in children. Tozar *et al.*¹⁴, in their studies regarding pediatric dental trauma, reported that 47.2% of the YouTube videos had low content. Early childhood caries videos have generally low usefulness scores according to El Karmi *et al.*¹⁵ Many of the movies regarding children's oral hygiene, according to Duman¹⁶, are only moderately useful. The results of our study showed that 69% of our videos had a usefulness score of 2. Although the small number of videos that met the inclusion criteria is a limitation, the results are encouraging when compared to other YouTube studies.

According to Hassona *et al.*¹⁰ the most popular videos were also the least beneficial. Similarly, El Karmi *et al.*¹⁵ revealed that less useful videos rank early on the viewing list. On the other hand, Kovalsky *et al.*¹⁷ and Göller *et al.*¹⁸ found that better-quality videos had greater views and more likes. Our findings indicate that there is no statistically significant rela-

tionship between the video specifications (number of views, likes and duration of videos) and usefulness and quality scores. The fact that highly viewed and liked videos are not always very useful and of high quality can lead to a misunderstanding of diseases that worry parents, such as PHGS.

When examining research on mouth lesions that were conducted using YouTube™; Gulve *et al.*¹⁹ found that the majority of oral cancer and precancerous lesions-related videos they assessed lacked sufficient quality, dependability, and comprehensiveness. Similarly, Morais *et al.*¹¹ revealed that oral lichen planus videos are low-quality. According to our results, most of the videos included are of good end excellent quality (48.3 and 17.2, respectively). This result is promising, but it should be noted that only a few of the videos we watched met our criteria and could be evaluated in detail.

According to Göller *et al.*¹⁸ the level of video quality varies depending on the expertise and background of the sources contributing the videos as well as their relevance to the subject matter. In support of this finding, our study has shown that the videos uploaded by Healthcare professionals are more useful. Because of this, patients should consider the source when watching videos and should not treat every video identically.

This study's immediate cross-sectional analysis is one of its drawbacks since the quantity and demographic makeup of videos on the YouTube™ are continually changing. Another limitation can be restricted to seeing English-language videos only.

CONCLUSIONS

During times of concern, it's important to reach out to healthcare professionals for guidance and support. They can provide accurate information, help alleviate worries, and guide parents through the necessary steps to ensure the child's well-being. In cases where this is not possible, YouTube™ can be used to get information about PHGS, paying attention to the source.

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