Cumhuriyet Dental Journal, 28(4): 505-511, 2025
DOI: https://doi.org/10.7126/cumudj.1700803

Cumhuriyet Dental Journal

| cdj.cumhuriyet.edu.tr | Founded: 1998 Available online, ISSN: 1302-5805 Publisher: Sivas Cumhuriyet Üniversitesi

Evaluation of Usability of Youtube Videos about Diastema Closure in Patient Information and Student Education

Serra Kutlu Katırcıoğlu[1,a,*], Nihan Ozel Erçel [2,b]

[1]*Department of Restorative Dentistry, Faculty of Dentistry, Nigde Omer Halisdemir University, Niğde, Türkiye.*
[2]*Department of Biostatistics and Medical Informatics, Faculty of Medicine, Mersin University, Mersin, Türkiye.*
**Corresponding author*

Research Article

History

Received: 16/05/2025
Accepted: 18/06/2025

ABSTRACT

Objectives: The aim of our study is to evaluate the usability of diastema closure applications found on YouTube for the purposes of educating patients and students.

Materials and Methods: On April 4, 2023, a search was performed on YouTube using the search term "Diastema Closure." Of the first 350 videos recorded, only 105 were included in the research. The following were recorded for each video: views, likes, dislikes, length in seconds, month since upload, category, and features such as source of upload. The quality of the videos was appraised and scrutinized using the following tools: The Global Quality Score (GQS), the Usefulness Score (US), and the Journal of the American Medical Association (JAMA) scores are the primary metrics of interest. The Kolmogorov–Smirnov test was used as the statistical method, and the Mann–Whitney U-test was used for the comparisons.

Results: A positive correlation was found between the number of video views and likes, as well as between video upload time and the JAMA score. The mean Quality score values are 2 for GQS and JAMA, and 0 for Usefulness. A moderate positive correlation was identified between the GQS and usefulness scores ($r = 0.617$, $p < 0.001$), indicating a statistically significant relationship between the two variables.

Conclusions: The efficacy of YouTube videos in educating students and patients regarding diastema closure procedures was deemed inadequate. To avoid receiving inadequate and inaccurate information, professionals should be consulted.

***Keywords*:** Diastema closure, medical education, social media, YouTube

Hasta Bilgilendirme ve Öğrenci Eğitiminde YouTube Diastema Kapatma Videolarının Kullanılabilirliğinin Değerlendirilmesi

Araştırma Makalesi

Süreç

Geliş: 16/05/2025
Kabul: 18/06/2025

ÖZ

Amaç: Çalışmamızın amacı YouTube'da bulunan diastema kapatma uygulamalarının hasta ve öğrenci eğitiminde kullanılabilirliğini değerlendirmektir.

Gereç ve Yöntemler: 4 Nisan 2023'te YouTube'da "Diastema Closure" arama terimi kullanılarak bir arama yapıldı. Kaydedilen ilk 350 videodan yalnızca 105'i araştırmaya dahil edildi. Her video için şunlar kaydedildi: görüntülemeler, beğenmeler, beğenmemeler, saniye cinsinden uzunluk, yüklemeden bu yana geçen ay, kategori ve yükleme kaynağı gibi özellikler. Videoların kalitesi şu araçlar kullanılarak değerlendirildi ve analiz edildi: Küresel Kalite Puanı (GQS), Faydalılık Puanı (ABD) ve Amerikan Tabipler Birliği Dergisi (JAMA) puanları. İstatistiksel yöntem olarak Kolmogorov-Smirnov testi kullanıldı, karşılaştırmalar için Mann-Whitney U testi kullanıldı

Bulgular: Video görüntüleme ve beğeni sayıları ile video yükleme süresi ve JAMA puanı arasında pozitif bir korelasyon bulundu. Ortalama Kalite puanı değerleri GQS ve JAMA için 2, Usefulness score için 0'dır. GQS ve faydalılık puanları arasında pozitif, orta düzeyde ve istatistiksel olarak anlamlı bir korelasyon vardır ($r = 0,617$, $p < 0,001$).

Sonuçlar: Diastema kapatma işlemine ait YouTube videolarının öğrenci ve hasta eğitimi açısından yetersiz olduğu değerlendirildi. Yetersiz ve yanlış bilgilerin önüne geçebilmek için profesyonellerden yardım alınmalıdır.

***Anahtar Kelimeler*:** Diastema kapatma, medikal eğitim, sosyal medya, YouTube

Copyright

This work is licensed under Creative Commons Attribution 4.0 International License

[a] *kutluserra@gmail.com* *0000-0001-5127-0885* [b] *mail* *0000-0001-8506-7623*

How to Cite: Kutlu Katırcıoğlu S, Ozel Erçel N. (2025) Evaluation of Usability of Youtube Videos about Diastema Closure in Patient Information and Student Education, Cumhuriyet Dental Journal, 28(4): 505-511.

Introduction

Midline diastemas have the capacity to influence dentofacial harmony, thereby impacting an individual's smile.[1-3] The condition has the potential to induce functional and psychological disorders in patients.[4,5] The etiology of diastema is multifactorial, involving factors such as atypical frenulum connection, shape and size incompatibility of the teeth, congenital lateral deficiency, excess teeth in the midline, tongue piercing, periodontal diseases, and hereditary

features.[6-9] Maxillary midline diastemas are classified as malocclusions when the distance between the proximal surfaces exceeds 0.5 millimeters.[10] In the domain of aesthetic dentistry, the closure of diastemas is a procedure that can be performed.[11,12]

The initial step in the treatment of diastema is the identification and elimination of the underlying cause. Thereafter, a variety of methods are available, including orthodontic treatment, rehabilitation with composite resins, and prosthetic approaches.[8,12,13] In the domain of orthodontics, diastemas have been observed to persist at the conclusion of treatment due to alterations in tooth ratios. This phenomenon, however, is not without its drawbacks, as it can often be financially exorbitant and protracted. Furthermore, some patients may be reluctant to wear braces.[12] Porcelain is an aesthetic material that requires more than one session to complete. Furthermore, laboratory stages are costly and require preparation from intact tooth tissue.[13] Composite resin restorations are frequently utilized in the aesthetic restoration of anterior teeth, employing a minimal or noninvasive approach.[14,15] Advances in adhesive dentistry have enabled composite resins to offer minimally invasive, functional, and aesthetic results that can be completed in a single session.[16,17]

YouTube, founded in 2005, is a prominent media platform that can be readily accessed by individuals with internet connectivity.[18,19] The utilization of social media in the field of dentistry, including the video-sharing platform YouTube, is on the rise.[20,21] In contemporary society, video-sharing platforms have emerged as a prominent medium for disseminating information on a wide range of subjects, including health-related concerns, to the general public.[22] Nonetheless, it is paramount to assess the veracity of these videos, given that their circulation might amplify the spread of misinformation.[23] A review of the extant literature reveals the existence of research that has evaluated the quality of YouTube videos related to specific health applications. However, the quality of videos on diastema closure on YouTube has not been examined in a study. The objective of the present investigation was to appraise the efficacy of the diastema closure application in YouTube videos for patient and student education.

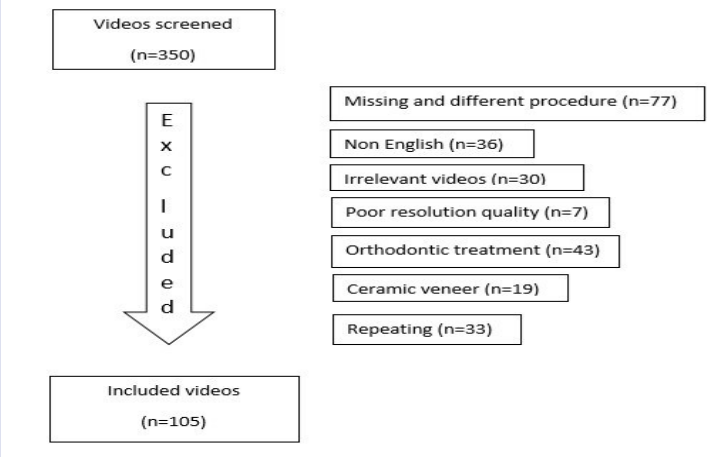


Figure 1. Search strategy.

Materials and Methods

The present study utilized published online videos, and ethics committee approval was waived due to the non-involvement of human or animal sources. In the course of this study, a comprehensive search was conducted on the YouTube platform on April 4, 2023, employing the search term "diastema closure."The initial 350 videos associated with this search term were documented. Exclusion criteria were: videos not related to the search term, videos in which diastema closure was performed using materials other than composite, videos that did not include the relevant procedure, videos not in English, repetitive videos (Figure 1). The videos were subsequently reviewed by a physician with nine years of experience in the field. A comprehensive analysis was conducted, encompassing a multitude of metrics, including but not limited to: the total number of video views, the number of positive ratings, the number of negative ratings, the duration of the video in seconds, the duration since the video's upload in months, the video category (0 for animation, 1 for patient), the sources as indicated by the provided link (1 for doctor, 0 for nondoctor), and the individual responsible for the video upload. The 105 videos included in the study were analysed using three separate tools: Global Quality Score (GQS),[24] Usability Score (US),[25] Journal of American Medical Association (JAMA) scoring system. [26,27]

Global Quality Score

The GQS (GQS) represents a 5-point scoring system utilized to evaluate the quality of web-based materials. This system appraise the quality and usefulness of the resources in question through meticulous evaluation.[28, 29] GQS was employed to assess the efficacy of the video for patients. The evaluation process utilizes both the content of the video and the criteria delineated in Table 1 to assign a quantitative score. A score of 5 indicates that the viewer has encountered information of the highest quality.

Usefullness Score

A comprehensive analysis encompasses eight distinct subjects, namely definition, indications, contraindications, advantages, related procedures, complications, prognosis, survival rate, and cost. For each title that is present in the video content, one point is awarded.

A score ranging from 0 to 2 indicated that the content of the video was of substandard quality, contained misleading information, and lacked pertinent information in eight domains that were evaluated.

A score ranging from 3 to 5 indicated that the content of the moderate video was conducive to the dissemination of a positive message concerning diastema closure. However, the video exhibited a paucity of discourse on certain domains.

A score ranging from 6 to 8 indicated that the video content was of the highest caliber, providing students with meticulous, accurate, and accurate information.

The usefulness score was documented. The usefulness score was predicated on the quality and flow of the content;

poor (0): poor quality, poor flow, missing and inadequate information;

moderate (1): moderate quality, suboptimal flow, adequate information about content;

excellent (2): excellent quality and flow, comprehensive and very useful information.

Table 1. Descriptive statistics of features and quality scores for videos

	n (%)	Min-Max	Median (Q1-Q3)
Video source			
Not doctor	22 (21)		
Doctor	83 (79)		
Video category			
Patient	95 (90.5)		
Animation	10 (9.5)		
Views		8-11207609	3000 (438-14812)
Number of likes		0-39000	41 (8-283)
Viewing rate		1-311323	97 (24-510)
Viewer's interactions		0-0.14	0,02 (0.01-0.03)
Video duration (sec)		30-4537	217 (129-537)
Month since upload		1-599	27 (12-46)
GQS Score		2-4	2 (2-2)
JAMA Score		1-2	2 (2-2)
Usefulness for student		0-1	0 (0-0)
Poor	102 (97.1)		
Moderate	3 (2.9)		
Excellent	-		

Jama

The JAMA score is a comprehensive evaluation framework that assesses authorship, citation, description, and timeliness, thereby determining the reliability of a video. The evaluation system employed a point-based scale, with each criterion assigned a value of one point. The total score thus ranged from zero to four points. The following criteria are delineated:

Authorship: The video should include author and contributor credentials, as well as their respective affiliations.

Attribution: It is evident that the video meticulously enumerates all relevant copyright information, while concurrently providing explicit references and sources for the content.

Currency: The initial date of the published content, along with any subsequent updates, should be specified.

Disclosure: Disclosures should encompass conflicts of interest, funding, sponsorship, advertising, support, and video ownership.

A total of 105 videos were subjected to statistical analysis.

Statistical Analysis

The data analysis was facilitated by the utilization of the IBM SPSS Statistics Version 26 software program. An investigation was conducted to determine whether the collected data aligned with a standard normal distribution. To this end, the Kolmogorov-Smirnov test was employed as a diagnostic tool. The descriptive statistics of the video information and scores are presented as the number (n), percentage (%), minimum value, maximum value, and median (Q1-Q3). The relationship between non-normally distributed video feature measurements and scores was determined through the implementation of a Spearman correlation test. The Mann-Whitney U test was employed to compare the medians of the GQS and JAMA scores according to the utilization classification. The Mann-Whitney U test was employed to compare the medians of the score and video characteristics according to the categorization of the video genre as either anime or non-anime, and the categorization of the video source as either medical professional or non-medical professional. It is noteworthy that a statistically significant level of $p < 0.05$ was attained by all of the obtained results.

Results

The descriptive statistics of features and quality scores for videos are presented in Table 2. The study incorporated a total of 105 videos. 83 of these were uploaded by a physician. 10 videos were animated, 95 non-animated videos showed diastema closure on the patient. The mean values of the Quality scores are 2 for the GQS, 2 for the JAMA score, and 0 for the US. Correlations between video features and quality scores are presented in Table 3. There was a strong positive link between video views and likes (r = 0.948 and p < 0.001). A weak yet statistically significant positive correlation was identified between the number of video views and the upload time of the video (r = 0.461, p < 0.001). A similar correlation was identified between the number of views of the video and the JAMA score, with a weak positive association that was statistically significant (r = 0.207, p = 0.034). A weak yet statistically significant positive correlation was observed between the number of likes and video duration (r = 0.262 and p = 0.007). Furthermore, an examination revealed a weak yet statistically significant correlation between the number of likes and the duration of video uploads (r = 0.320, p = 0.001). There is also a weak, positive and statistically significant correlation between the number of likes and GQS (r = 0.241 and p = 0.013) and JAMA (r = 0.214 and p = 0.029) scores.

A modest positive correlation exists between the duration of the video and the JAMA score, which is statistically significant (r = 0,194 ve p = 0,048). A moderate positive correlation was identified between the GQS and Usefullness scores, with a statistical significance indicated by the calculated r value of 0.617 and a p-value less than 0.001. A statistically significant difference was identified between the Usefulness poor and moderate classes with regard to GQS score medians (p < 0.001) (Table 4).

As demonstrated in Table 5, a comparative analysis of the scores according to the presence or absence of animation in the video was performed. Furthermore, a comparative analysis of video-related features depending on the source of the video was performed. An examination of the data revealed no statistically significant difference in the median values of the GQS, JAMA, and usability score, according to whether the video was animated or not (p > 0.05). A subsequent analysis of the video characteristics revealed statistically significant differences in terms of the number of views, number of likes, and duration medians, distinguishing between videos that were animated and those that were not. The P values were determined to be p = 0.007, p = 0.020, and p = 0.048, respectively. A subsequent analysis revealed no statistically significant difference in the medians of video features according to video source (p > 0.05). A statistically significant difference in JAMA score medians was observed between doctor and non-doctor (p < 0.001).

Table 2. Correlations between video features and quality scores

		Views	Number of likes	Video duration	Month since upload	Viewers interactions	Viewing rate	Usefulness Score	GQS score	JAMA score
Views	r	1	0.948	0.163	0.461	-0.403	0.897	0.023	0.189	0.207
	p	-	<0.001	0.097	<0.001	<0.001	<0.001	0.819	0.054	0.034
Number of likes	r		1	0.262	0.320	-0.148	0.916	0.058	0.241	0.214
	p		-	0.007	0.001	0.132	<0.001	0.560	0.013	0.029
Video duration	r			1	-0.188	0.210	0.309	0.123	0.177	0.194
	p			-	0.055	0.032	0.001	0.213	0.071	0.048
Month since upload	r				1	-0.548	0.094	-0.162	-0.145	-0.018
	p				-	<0.001	0.339	0.098	0.141	0.853
Viewers interactions	r					1	-0.204	0.065	0.052	0.018
	p					-	0.037	0.509	0.596	0.851
Viewing rate	r						1	0.094	0.253	0.183
	p						-	0.339	0.009	0.062

r: Spearman correlation coefficient

Table 3. Correlations between quality scores

		GQS	JAMA	Usefullness
GQS	r	1	0.133	0.617
	p	-	0.177	<0.001
JAMA	r		1	0.164
	p		-	0.096

r: Spearman correlation coefficient

Table 4. Comparison of GQS and JAMA scores according to Usefulness Score classification

		Min-Max	Median (Q1-Q3)	p *
GQS score	Poor	2-3	2 (2-2)	<0.001
	Moderate	3-4	4 (4-4)	
JAMA score	Poor	1-2	2 (1-2)	0.095
	Moderate	2-2	2 (2-2)	

**: Mann-Whitney U test*

Table 5. Comparison of scores according to whether the video is animated or not; and comparison of video-related features by source of video

	Animation		Patient			Not doctor		Doctor		
	Min-Max	Median (Q1-Q3)	Min-Max	Median (Q1-Q3)	p *	Min-Max	Median (Q1-Q3)	Min-Max	Median (Q1-Q3)	p *
Views	484-11207609	33095 (4695-160656)	8-1938677	1758 (343-9930)	0.007	343-1058468	2948 (1200-12078)	8-11207609	3000 (282-15356)	0.302
Number of likes	7-39000	383 (82-1550)	0-11000	34 (7-215)	0.020	2-8000	58 (21-170)	0-39000	35 (6-300)	0.415
Video duration	94-3413	586 (180-854)	30-4537	213 (128-419)	0.048	55-1417	302 (99-602)	30-4537	213 (131-443)	0.862
Month since upload	2-599	31 (8-114)	1-146	27 (12-44)	0.585	2-599	30 (12-47)	1-146	27 (11-44)	0.856
Viewers interactions	0-0.04	0. 01 (0-0.03)	0-0.14	0. 02 (0. 01-0. 03)	0.164	0.01-0.06	0. 01 (0.01-0.03)	0-0. 14	0. 02 (0.01-0.04)	0.328
Viewing rate	48311323	639 (239-4068)	0.51138478	86 (17-441)	0.006	13-13398	214 (67-655)	0.51-311323	92 (14-482)	0.186
GQS score	2-2	2 (2-2)	2-4	2 (2-2)	0.342	2-3	2 (2-2)	2-4	2 (2-2)	0.532
JAMA score	1-2	2 (1-2)	1-2	2 (1-2)	0.875	1-1	1 (1-1)	1-2	1 (1-2)	<0.001
Usefulness score for student	0-0	0 (0-0)	0-1	0 (0-0)	0.570	0-0	0 (0-0)	0-1	0 (0-0)	0.368

**: Mann-Whitney U test*

Discussion

This research presents an evaluation of existing YouTube videos on diastema closure by presenting quality information to the audience and encouraging students to learn by presenting visual information.

The advent of smartphones has led to a notable augmentation in internet accessibility, rendering it more convenient than ever. Patients frequently use the internet to better understand their health status, make informed decisions, and find appropriate treatment.[30] A survey indicates that 45% of patients inquire about their health information after scheduling an appointment with a healthcare professional.[31] The advent of the pandemic has precipitated an escalation in the utilization of digital platforms, particularly YouTube, as a conduit for information acquisition.[32,33] Despite the existence of alternative online platforms, YouTube is a prominent source of health-related information.[30] However, given the capacity for any individual to disseminate content, the platform also hosts misinformation.[34] A study revealed that 33% of internet users expressed confidence in the accuracy of online medical information.[35] A multitude of studies have been conducted on the YouTube platform in the domain of dentistry, encompassing subjects such as root canal treatment, orthodontic retention, dental implants, and crown preparation.[25,36-38] A plethora of studies have previously examined health-related information on YouTube; however, there is a paucity of research in the extant literature that analyzes the topic of "diastema closure" in online networks. In the present study, quality scores were utilized to assess the quality of content pertaining to diastema closure, an aesthetic procedure in patient information and student education.

In the present study, the mean GQS value for patient education was found to be of low quality, with 97.1% of the videos designated for student education exhibiting similar deficiencies. Consequently, it can be posited that the quality of YouTube videos is inadequate for educational purposes. Our study is concomitant with the findings of other research, which includes an article investigating the quality of root canal treatment in terms of its use in informing patients about its risks,[36] an article examining the quality of free gingival grafting[39] and an article examining the quality of dental implants.[25] These articles reported that they found the quality of YouTube videos to be low. Conversely, a study that examined the use of YouTube videos as a resource for regenerative endodontic treatment procedures reported that the videos were found to be reliable.[40] As Knösel et al.[34] reported, the reliability of health-related videos on YouTube is a matter of concern, and research on this issue should be expanded.

In the present study, consistent with the findings of other articles, an increase in the number of video views was accompanied by an increase in the number of likes.[38,41] A positive correlation was identified between the number of video views and the time of video upload. It is generally accepted that older videos are expected to have higher view counts. The correlation between the increase in the number of likes and the increase in the duration of the video can be attributed to the increased availability of detailed information as the duration of the video increases. However, an increase in video duration has been shown to result in a loss of viewer focus. It is imperative that further research be conducted to ascertain the optimal duration for health videos to be effective.[42] The observed positive correlation between the GQS and JAMA scores on one hand and the number of likes on the other hand suggests that the quality of the videos is positively associated with the number of likes. This observation is consistent with the results of the study conducted by Lena et al.[42] The JAMA score is contingent upon the credentials of the individual providing the video source, as it is a component of the JAMA criteria.

The positive correlation between GQS and US indicates that these scores are compatible and that videos are inadequate for patient and student education. Nevertheless, the use of videos in education should be evaluated using a more comprehensive set of criteria. Videos uploaded by lay people primarily consist of shared experiences that serve a social purpose; however, videos produced by health organizations often contain more educational content.[43] The present study found that the

distinction between the video uploader being a dentist or a layperson did not have a significant impact on the outcomes. The observed relationship between the number of views and the presence of animation in the videos suggests that viewers prioritize the animation state of the videos while engaging with the content. In this context, our study bears a resemblance to the study conducted by Bulut et al.[39]

A review of the study's limitations reveals that records on YouTube are subject to upload and removal, which can result in variable outcomes depending on the temporal parameters of the search and the dynamic nature of content on the platform. Furthermore, the restriction of the study to English-language videos and videos featuring composite diastema closure constrained the scope and depth of the research.

Conclusions

YouTube offers a vast repository of educational material on various dental treatments, including diastema closure videos, which can serve as a valuable resource for patients seeking information on their condition. Nevertheless, given the absence of content moderation on YouTube, patients and students may encounter challenges in accessing reliable and credible information regarding diastema closure through the platform's video content. Dentists must counsel their patients to seek professional sources to avoid the dissemination of erroneous or incomplete information on YouTube. To this end, it is imperative to provide accurate, current guidance for patient and student education. The dissemination of reliable videos, as determined by professionals, should be strongly encouraged. These professionals play a pivotal role in the production of quality content on social media platforms. The incorporation of multiple languages in the analysis will facilitate a more comprehensive evaluation of the diastema closure information available on various social media platforms in subsequent studies.

Acknowledgements

Nothing to declare.

Conflicts of Interest Statement

The authors declare no competing interests.

References

1. Bernabe E, Flores-Mir C. Influence of anterior occlusal characteristics on self-perceived dental appearance in young adults. Angle Orthod 2007;77:831-836.
2. Furuse AY, Franco EJ, Mondelli J. Esthetic and functional restoration for an anterior open occlusal relationship with multiple diastemata: a multidisciplinary approach. J Prosthet Dent 2008;99:91-94.
3. Witt M, Flores-Mir C. Laypeople's preferences regarding frontal dentofacial esthetics: periodontal factors. J Am Dent Assoc 2011;142:925-937.
4. Farronato G, Giannini L, Riva R, Galbiati G, Maspero C. Correlations between malocclusions and dyslalias. Eur J Paediatr Dent 2012;13:13-18.
5. Gkantidis N, Kolokitha O-E, Topouzelis N. Management of maxillary midline diastema with emphasis on etiology. J Clin Pediatr Dent 2008;32:265-272.
6. Şen N, Işler S. Multidisciplinary management of a severe maxillary midline diastema: a clinical report. J Prosthodont 2019;28:239-243.
7. Chu C, Zhang C, Jin L. Treating a maxillary midline diastema in adult patients: a general dentist's perspective. J Am Dent Assoc 2011;142:1258-1264.
8. De Campos PB, Maia R, Rodrigues de Menezes L, Barbosa IF, Carneiro da Cunha A, da Silveira Pereira GD. Rubber dam isolation—key to success in diastema closure technique with direct composite resin. Int J Esthet Dent 2015;10:564-574.
9. Lin W-S, Harris BT, Phasuk K, Llop DR, Morton D. Integrating a facial scan, virtual smile design, and 3D virtual patient for treatment with CAD-CAM ceramic veneers: a clinical report. J Prosthet Dent 2018;119:200-205.
10. Kabbach W, Sampaio CS, Hirata R. Diastema closures: a novel technique to ensure dental proportion. J Esthet Restor Dent 2018;30:275-280.
11. Romero MF, Babb CS, Brenes C, Haddock FJ. A multidisciplinary approach to the management of a maxillary midline diastema: a clinical report. J Prosthet Dent 2018;119:502-505.
12. Saratti CM, Krejci I, Rocca GT. Multiple diastema closure in periodontally compromised teeth: how to achieve an enamel-like emergence profile. J Prosthet Dent 2016;116:642-646.
13. Calamia V, Pantzis A. Simple case treatment planning: diastema closure. Dent Clin 2015;59:655-664.
14. Demirci M, Tuncer S, Öztaş E, Tekçe N, Uysal Ö. A 4-year clinical evaluation of direct composite build-ups for space closure after orthodontic treatment. Clin Oral Investig 2015;19:2187-2199.
15. Frese C, Schiller P, Staehle HJ, Wolff D. Recontouring teeth and closing diastemas with direct composite buildups: a 5-year follow-up. J Dent 2013;41:979-985.
16. Korkut B, Yanikoglu F, Tagtekin D. Direct midline diastema closure with composite layering technique: a one-year follow-up. Case Rep Dent 2016;2016:
17. Kutlu S, Hubbezoğlu İ. Comparison of the microtensile bond strength of four different bulk-fill resin composites of class I cavities with dentin. Cumhuriyet Dent J 2019;22:336-344.
18. Ozsoy-Unubol T, Alanbay-Yagci E. YouTube as a source of information on fibromyalgia. Int J Rheum Dis 2021;24:197-202.
19. Duncan I, Yarwood-Ross L, Haigh C. YouTube as a source of clinical skills education. Nurse Educ Today 2013;33:1576-1580.
20. El Tantawi M, Bakhurji E, Al-Ansari A, AlSubaie A, Al Subaie HA, AlAli A. Indicators of adolescents' preference to receive oral health information using social media. Acta Odontol Scand 2019;77:213-218.
21. Stellefson M, Chaney B, Ochipa K, Chaney D, Haider Z, Hanik B, et al. YouTube as a source of chronic obstructive pulmonary disease patient education: a social media content analysis. Chron Respir Dis 2014;11:61-71.
22. Randeree E. Exploring technology impacts of Healthcare 2.0 initiatives. Telemed J E Health 2009;15:255-260.
23. Rice RE. Influences, usage, and outcomes of Internet health information searching: multivariate results from the Pew surveys. Int J Med Inform 2006;75:8-28.
24. Bernard A, Langille M, Hughes S, Rose C, Leddin D, Van Zanten SV. A systematic review of patient inflammatory bowel disease information resources on the World Wide Web. Am J Gastroenterol 2007;102:2070-2077.

25. Menziletoglu D, Guler A, Isik B. Are YouTube videos related to dental implant useful for patient education? J Stomatol Oral Maxillofac Surg 2020;121:661-664.
26. Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the Internet: caveant lector et viewor—let the reader and viewer beware. JAMA 1997;277:1244-1245.
27. Aydin M, Mert A. Assessment of lateral epicondylitis videos on YouTube/YouTube'da lateral epikondilit videolarinin degerlendirilmesi. Bagcilar Med Bull 2021;6:390-397.
28. Ng CH, Lim GRS, Fong W. Quality of English-language videos on YouTube as a source of information on systemic lupus erythematosus. Int J Rheum Dis 2020;23:1636-1644.
29. Erdem MN, Karaca S. Evaluating the accuracy and quality of the information in kyphosis videos shared on YouTube. Spine J 2018;43:E1334-E1339.
30. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK. Healthcare information on YouTube: a systematic review. Health Informatics J 2015;21:173-194.
31. Tan SS-L, Goonawardene N. Internet health information seeking and the patient-physician relationship: a systematic review. J Med Internet Res 2017;19:e9.
32. Rajeh MT, Aboalshamat KT, Nassar AA, Sembawa SN, Al Hebshi SA, Badri MK. Insights on using social media in dental education: a cross-sectional study in Saudi Arabia. Open Dent J 2020;14:717-723.
33. Yüce MÖ, Adalı E, Kanmaz B. An analysis of YouTube videos as educational resources for dental practitioners to prevent the spread of COVID-19. Ir J Med Sci 2021;190:19-26.
34. Knösel M, Jung K, Bleckmann A. YouTube, dentistry, and dental education. J Dent Educ 2011;75:1558-1568.
35. Nason GJ, Tareen F, Quinn F. Hydrocele on the web: an evaluation of Internet-based information. Scand J Urol 2013;47:152-157.
36. McLean S, Cook N, Rovira-Wilde A, Patel S, Kanagasingam S. Evaluating YouTube as a patient information source for the risks of root canal treatment. J Endod 2023;49:155-161.
37. Meade MJ, Sooriakumaran P, Dreyer CW. Orthodontic retention and retainers: quality of information provided by dental professionals on YouTube. Am J Orthod Dentofacial Orthop 2020;158:229-236.
38. Habib SR, Khan AS, Ali M, Abutheraa EA, Aljibrin FJ, Almutairi NS. An evaluation of the usefulness of YouTube® videos on crown preparation. Biomed Res Int 2022;2022:
39. Bulut S, Ercel N. Quality of free gingival graft content in youtube videos: usability in patient information and student education. Med Oral Patol Oral Cir Bucal2023;26011-26011.
40. Kaval ME, Demirci GK, Atesci AA, Sarsar F, Dindaroğlu F, Güneri P, et al. YouTube™ as an information source for regenerative endodontic treatment procedures: quality and content analysis. Int J Med Inform 2022;161:104732.
41. Jung M-j, Seo M-S. Assessment of reliability and information quality of YouTube videos about root canal treatment after 2016. BMC Oral Health 2022;22:494.
42. Lena Y, Dindaroğlu F. Lingual orthodontic treatment: A YouTube™ video analysis. Angle Orthod 2018;88:208-214.
43. Bezner SK, Hodgman EI, Diesen DL, Clayton JT, Minkes RK, Langer JC, et al. Pediatric surgery on YouTube™: is the truth out there? J Pediatr Surg 2014;49:586-589.