

ORIGINAL ARTICLE

Özgün Araştırma

Yazışma Adresi

Correspondence Address

Özlem DALTABAN

Department of Periodontology,
Faculty of Dentistry,
Akdeniz University, Antalya, Turkey
daltabanozlem@yahoo.com

Geliş Tarihi : Oca 25, 2021

Received

Kabul Tarihi : Nis 13, 2021

Accepted

E Yayın Tarihi : May 01, 2022

Online published

Bu makalede yapılacak atıf

Cite this article as

Daltaban Ö. and Üstün K.

The Quality of Information about

Periodontal Disease in Turkish

Internet Sites.

Akd Med J 2022; 8(2):128-133

Özlem DALTABAN

Department of Periodontology,
Faculty of Dentistry,
Akdeniz University,
Antalya, Turkey

ORCID ID: 0000-0003-2246-8782

Kemal ÜSTÜN

Department of Periodontology,
Faculty of Dentistry,
Akdeniz University,
Antalya, Turkey

ORCID ID: 0000-0001-9696-2041

The Quality of Information about Periodontal Disease in Turkish Internet Sites

Türkçe İnternet Sitelerinde Periodontal Hastalıklar ile ilgili Bilgi Kalitesi

ABSTRACT

Objective:

The aim of this study was to determine the quality of periodontal disease-related information provided on the Turkish webpages.

Methods:

An internet search was performed with the term 'gum disease' using the Google search engine. The first 100 websites were analyzed for content presentation and quality of information by the Journal of the American Medical Association (JAMA) criteria and DISCERN instrument.

Results:

Following the application of the exclusion criteria of this study, a total of 71 webpages were included for further analysis. According to the affiliation, 69% of the webpages belonged to a dental health center, 12% private hospital, 7% newspaper, 6% university, 3% professional organization, and 3% commercial. All websites assessed by the DISCERN instrument resulted in an average score of 2.21 (± 1.01), indicating low to moderate quality. Of the 71 websites evaluated, only 38% fulfilled the authorship, 6% the attribution, and 18% the currency benchmarks of JAMA. According to the content presentation, 75% of the sites did not have proper information about oral hygiene instructions.

Conclusion:

The present findings suggested that the quality of periodontal disease-related information provided on the Turkish webpages have important shortcomings.

Key Words:

Gingival disease, Internet, Public health informatics, Periodontal disease

ÖZ

Amaç:

Bu çalışmanın amacı, dişeti hastalıkları ile ilgili Türkçe internet sitelerindeki bilgi kalitesinin değerlendirilmesidir.

Yöntem:

Google arama motoru kullanılarak, 'dişeti hastalığı' terimi için arama yapıldı. Arama sonucu ilk 100 internet sitesi, içerik sunumu ve kalite açısından DISCERN aracı ve Journal of the American Medical Association (JAMA) kriterlerine göre analiz edildi.

Bulgular:

Çalışmaya ait dâhil edilme kriterlerine uyan toplam 71 internet sitesi analiz edildi. Sitelerinin %69'u özel ağız ve diş sağlığı merkezi, %12'si özel hastane, %7'si gazete haberi, %6'sı üniversite, %3'ü meslek kuruluşu ve %3'ü ticari kuruluşa aitti. Değerlendirilen tüm internet sitelerine ait DISCERN ortalama puanı 2,1 (\pm 1,1) olup, düşük-orta düzey kalite değeri tespit edildi. Değerlendirilen 71 internet sitesinden yalnızca %38'i yazarlık, %6'sı kaynakça ve %18'i güncellik ile ilgili JAMA kriterlerini karşıladı. İçerik sunumu açısından, internet sitelerinin %75'inde oral hijyen uygulamaları konusunda yeterli bilgi yoktu.

Sonuçlar:

Periodontal hastalıklar ile ilgili Türkçe internet sitelerinin bilgi kalitesinde önemli eksiklikler bulunmaktadır.

Anahtar Sözcükler:

Dişeti hastalıkları, İnternet, Halk sağlığı bilşimi, Periodontal hastalık

INTRODUCTION

Internet is the most popular source of health-related information for the public in general (1). People can enter keywords through a variety of search engines and in return, would receive rich content at the tip of their fingers within seconds. Ni Riordain et al., reported that over a third of patients presenting for dental treatment had searched their oral or dental condition online (2).

Although such online information is easily accessible, it is increasingly difficult to distinguish for users whether resources are appropriate or not. The quality of medical information contained in websites has also become an increasingly important concern (3). This problem has led to the development of validation methods to evaluate the quality of health-related webpages. The most commonly used are the DISCERN tool and the Journal of the American Medical Association (JAMA) criteria, which evaluate the website's accessibility, usability, reliability, and quality of information (4-6).

Numerous studies have been performed to determine the content and quality of information about a variety of medical specialist areas on webpages. Studies evaluating online information relating to dentistry, such as orthodontics, periodontology, and oral surgery, reported the quality of internet information as poor (6-10). However, to the best of our knowledge, no study evaluated the quality of online information on periodontal disease in Turkish websites.

Periodontal disease (ie, gingivitis and periodontitis) is one of the most common public health problems affecting the tooth-supporting tissues and thereby leading to tooth loss (11). The disease has an important socio-economic impact on healthcare costs and patients' quality of life (12). The successful management of the periodontal disease requires controls of both plaque biofilm and modifiable risk factors (13). In this context, the internet could play an important role in patients' awareness of periodontal disease and may promote

oral health by providing reliable and accurate information.

Based on the statements above, the aim of this study was to evaluate the quality of periodontal disease-related information provided in the Turkish websites by using DISCERN and JAMA scales.

MATERIALS and METHODS**Search Strategy**

An internet search was conducted for the term 'dişeti hastalıkları' (gum diseases) using the search engine Google™, in Turkey, on December 24, 2020. A simple search methodology was used to imitate the likely outcome of a search conducted by an individual with limited periodontal and internet knowledge. Although previous research indicated that users conducting an online search typically examine the first page of a search engine, we included the first 100 webpages in the study to provide a thorough evaluation of the available online information (14).

Websites were excluded if they had no information on "gum disease", were not in Turkish, had links to scientific articles of abstracts, duplicate websites, videos, online medical dictionaries, and non-accessible or membership/subscription requirements. The remaining 71 websites were scored by a single periodontist (ÖD), and then checked by the second periodontist (KÜ). The websites were categorized based on affiliation (10) and were evaluated on the presentation of information such as etiology, clinical signs and symptoms, and treatment process stages of periodontal disease.

Assessment of Quality

The quality of the website information was evaluated using the JAMA benchmarks and the DISCERN instrument for website analysis.

The JAMA benchmarks provide that a webpage must present the following standard concepts; authorship (proper identification of author's name, affiliations, and relevant credentials of medical content), attribution (complete references and sources of information of all contents presented on a website), disclosure (sponsorship, ownership, commercial support, or financing must be completely defined) and currency (providing dates when the content was uploaded) (5).

The DISCERN instrument, developed at the University of Oxford, (www.discern.org.uk), consists of 16 questions that may be utilized to assess the quality of written information on health-related websites (4). The DISCERN tool questions were related to the reliability (Questions 1-8), quality of information on treatment choices (questions 9-15), and overall quality of the publication (question 16). Score of each question was rated on a 5-point scale (one = very poor, two = poor, three = moderate, four = good and five = excellent) (4).

Statistical Analysis

Descriptive statistics for frequencies and percentages were calculated. The DISCERN tool results were expressed as the mean \pm standard deviation. All calculations were undertaken using a statistical software package (IBM SPSS Statistics 23,

Chicago, IL, USA). P value less than 0.05 were considered statistically significant.

RESULTS

The search process generated 676.000 sites on the Google search engine. There were no English websites, as we selected the Turkish language from the settings section of the Google search engine. Of the first 100 websites evaluated, 13 sites were duplicated websites, 10 sites were advertising products, 5 were irrelevant, and 1 was video feed (www.youtube.com). After exclusion, a total of 71 websites were included (Figure 1).

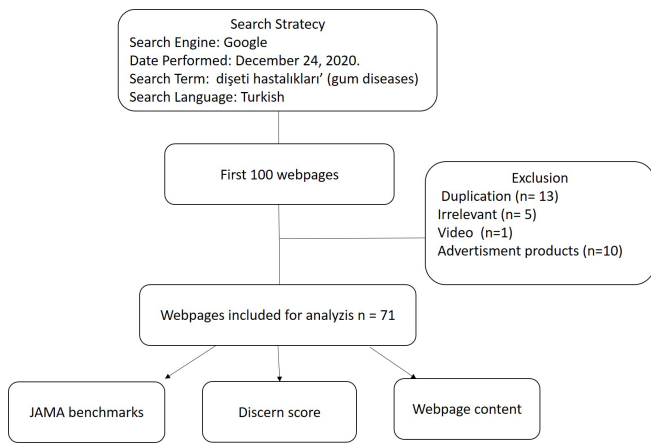


Figure 1: Flow Diagram for webpage selection process

Among the total 71 websites, 49 (69%) belonged to dental health center, 9 (12%) private hospital, 5 (7%) newspaper, 4 (6%) university, 2 (3%) professional organization and 2 (3%) commercial (Table I).

Table I: Categorization of Websites based on Affiliation

Affiliation	Number of Websites	Percentage (%)
Dental health center	49	69
Private hospital	9	12
Journalism	5	7
University	4	6
Professional organization	2	3
Commercial	2	3

The website's content evaluation based on the presentation of information about the periodontal disease was represented in Table II.

Table II: Content Analysis of Websites

Variable	Discussed n (%)
Etiology of periodontal disease	
Plaque (as the main factor)	92%
Smoking	56%
Diabetes	52%
Others	68%
Signs and symptoms of periodontal disease	
85%	
Treatment options	
Information for oral hygiene instructions	15%
Nonsurgical treatment	72%
Surgical treatment	60%

Twenty five percent of the websites have information on how to perform tooth brushing and the use of interdental cleaning devices. None of the websites included videos and audio illustrations, only twelve websites included images for content presentation.

The quality of the 71 selected websites, assessed by the DISCERN tool, resulted in a score of 2.21 (±1.01), indicating low to moderate quality (Figure 1). When Discern scores were evaluated, none of the websites received the highest score of five. Eleven websites (15%) received a score of four, 19 received (27%) three, 15 received (21%) two, and 26 webpages (37%) received a score of one. The questions with the poorest DISCERN scores were “does it describe the risks of each treatment?”, “is it clear when the information reported in the publication was produced?”, “does it describe how the treatment choices affect the overall quality of life?” and “does it provide details of additional sources of support and information?” (Figure 2).

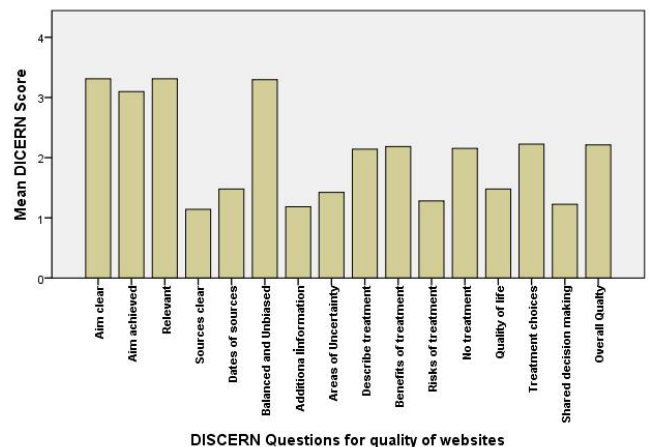


Figure 2: Quality of information on gum disease of 71 websites according to DISCERN instrument.

Concerning the total number of benchmarks obtained; four benchmarks have met the criteria in only one website (2%), three benchmarks met in 8 websites (11%), two benchmarks met in 17 websites (24%), one benchmark was met in 37 websites (52%), and no benchmark was found in 8 websites (11%) (Table III). Forty-seven of the websites (66%) displayed an author and 58 websites (82%) had no date of presentation.

Table III: Websites meeting JAMA Benchmarks and percentages

JAMA benchmarks	Number of websites	Percentage (%)
Authorship	27	38
Attribution	4	6
Disclosure	58	82
Currency	13	18

DISCUSSION

This is the first report analyzing the quality of information related to the periodontal disease on Turkish websites. The results of our study present that the majority of the information on websites is of low quality and content. This result is consistent with previous studies related to periodontology (7, 10, 15). Chestnutt et al., evaluated English webpages for information on gum disease using Excite, Yahoo, and Hotbot search engines, and reported that the reliability of the webpages was inadequate (15). A recent study examined the quality of German dentists' webpages on periodontal disease using DISCERN and Minervation validation instruments for healthcare webpages (the LIDA instrument) and found that most of the websites on periodontitis need to be improved in quality (7). Kanmaz and Budunelli aimed to determine the quality of information about periodontal disease symptoms on English webpages by using DISCERN, JAMA, and Health on the Net Code of Conduct Certification (HONcode) tools. The authors reported that the quality of the information for patients on the internet about periodontal disease is insufficient (10).

Although there is a huge amount of oral health related information on the internet, patients may suffer difficulty locating the most beneficial sites. In this study, according to the DISCERN questionnaire, the overall average DISCERN score of the evaluated webpages was 2.21 (± 1.01), indicating that the quality of information was insufficient (4). In conclusion with previous studies, we also found that certain questions tended to be rated low, and no website reached a 5-point score in all items (Figure II) (6, 10, 16). This result suggested that most websites have serious shortcomings.

When considering the JAMA benchmarks, many websites failed to demonstrate information about the author (authorship), appropriate reference sources of information (attribution), and dates when the information was uploaded and updated (currency) (Table III). Only one website met the full

JAMA benchmarks, while 52% of the websites achieved one benchmark. These results are in line with the articles evaluating the quality of the web-based information on various oral conditions (9, 14, 16). Information about the author and references is important, because it assures patients that the information they have read has been provided by an expert in the field with current scientific evidence.

When considering the content of the webpages searched in this study, bacterial biofilm (plaque) was discussed as the main etiological factor for periodontal disease in 92% of the 71 sites analyzed (Table II). Basic knowledge of the impact of bacterial biofilm on periodontal health is essential. But only 56% of the websites mention the risks of smoking on periodontal disease. Smoking is the main modifiable risk factor in the development and progression of periodontitis (17). The internet is effective in promoting a behavior change in the area of smoking cessation (18). Therefore, recommendations on the importance of smoking cessation should be included in dental websites.

Based on the results of our analysis, 75% of the websites did not have any information on how to perform tooth brushing and the use of interdental cleaning devices (Table II). Educating the general population about effective oral hygiene procedures is essential for the maintenance of periodontal health (12). Furthermore, our study found that although the periodontal treatment (nonsurgical and surgical) was discussed at 46 sites, 83% did not point out any risks related to treatment such as gingival recession or hypersensitivity. Kanmaz and Budunelli et al., observed similar findings in English websites (10).

None of the websites analyzed in this study included videos and audio illustrations, only twelve websites included images for content presentation. Distinction between dental plaque and stains, food debris, or dental restorations may be difficult for laypeople. There may be excessive tooth brushing problems because stains will not be easily removed. For this reason, didactic online information may be supplemented with instructional images or videos. A previous study indicated that information supplied by video clips has increased patient consciousness on the treatment of oral ulcers (19).

The current study has some limitations. First of all, the internet is a dynamic process and webpages may change over time. Secondly, only one search engine (Google) was used in this study, and other sources such as Yahoo, Medline, or social network sites (e.g. Facebook) were not evaluated. But according to the statistical report on internet development from the Turkish Statistical Institute in 2020, Google is one of the most commonly used search engines in Turkey (available at: <https://www.inter-networkworldstats.com/>).

CONCLUSION

The present findings of this study suggested that the content and quality of online information related to periodontal disease on the Turkish websites are insufficient.

Ethics Committee Approval:

The study does not require ethics committee approval.

Author Contributions:

Concept - Ö.D.; Design – Ö.D.; Supervision – Ö.D, K.Ü.; Resources – Ö.D.; Materials –Ö.D., K.Ü.; Data Collection and/or Processing – Ö.D., K.Ü.; Analysis and/ or Interpretation – Ö.D., K.Ü.; Literature Search – Ö.D.; Writing Manuscript – Ö.D.; Critical Review – K.Ü.

Conflict of Interest:

The authors declare that they have no conflict of interest.

Financial Disclosure:

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

1. Eysenbach G, Köhler C. How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *BMJ* 2002; 324:573-7.
2. Riordain RN, McCreary C. Dental patients' use of the Internet. *British dental journal*. 2009;207(12):583-6; 75.
3. Pang PC, Chang S. Designing Health Websites Based on Users' Web-Based Information-Seeking Behaviors: A Mixed-Method Observational Study. *J Med Internet Res* 2016; 18:145.
4. Charnock D, Shepperd S, Needham G, Gann R. DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. *J Epidemiol Community Health* 1999; 53:105-11.
5. Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the Internet: Caveat lector et viewer--Let the reader and viewer beware. *JAMA* 1997; 277:1244-5.
6. López-Jornet P, Camacho-Alonso F. The quality of internet information relating to oral leukoplakia. *Med Oral Patol Oral Cir Buccal* 2010; 15:727-31.
7. Schwendicke F, Stange J, Stange C, Graetz C. German dentists' websites on periodontitis have low quality of information. *BMC Med Inform Decis Mak* 2017; 17:114.
8. Patel U, Cobourne MT. Orthodontic extractions and the Internet: quality of online information available to the public. *Am J Orthod Dentofacial Orthop* 2011; 139:103-9.
9. Wiriyakijja P, Fedele S, Porter S, Ni Riordain R. Web-based information on the treatment of oral leukoplakia - quality and readability. *J Oral Pathol Med* 2016; 45:617-20.
10. Kanmaz B, Buduneli N. Evaluation of information quality on the internet for periodontal disease patients. *Oral Dis* 2021; 27:348-56.
11. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJ, Marcenes W. Global burden of severe periodontitis in 1990-2010: a systematic review and meta-regression. *J Dent Res* 2014; 93:1045-53.
12. Petersen PE, Ogawa H. The global burden of periodontal disease: towards integration with chronic disease prevention and control. *Periodontol 2000* 2012; 60:15-39.
13. Arweiler NB, Ausschill TM, Sculean A. Patient self-care of periodontal pocket infections. *Periodontol 2000* 2018; 76:164-79.
14. Abdouh I, Porter S, Fedele S, Elgendy N, Ni Riordain R. Web-based information on the treatment of the mouth in systemic sclerosis. *BMC Rheumatol* 2020; 4:61.
15. Chestnutt IG. The nature and quality of periodontal related patient information on the world-wide web. *Br Dent J* 2002; 193:657-9.
16. Hu X, Pan H, He W, Hua H, Yan Z. Evaluation of the content quality of websites for recurrent aphthous ulcers and oral lichen planus. *BMC Oral Health* 2017; 17:170.
17. Genco RJ, Borgnakke WS. Risk factors for periodontal disease. *Periodontol 2000* 2013; 62:59-94.
18. Mutter ER, Oettingen G, Gollwitzer PM. An online randomised controlled trial of mental contrasting with implementation intentions as a smoking behaviour change intervention. *Psychol Health* 2020; 35:318-45.
19. Riordain RN, Hodgson T. Content and quality of website information on the treatment of oral ulcers. *Br Dent J* 2014; 217:15.