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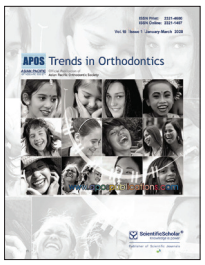

Original Article

Evaluation of quality and reliability of websites about orthognathic surgery using Google Trends™ application

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ABSTRACT

Objectives: Orthognathic surgery is the only treatment option for some cases in orthodontics. Two main goals were aimed in this study. The first goal was to determine the top three keywords that Google searchers look for "orthognathic surgery" using the Google Trends™ application. The second was to assess the quality and reliability of the webpages yielded by searching those four keywords on Google.

Materials and Methods: Google Trends was searched using the keyword "Orthognathic Surgery." Then, Google was searched using keywords: "Orthognathic surgery" and the other first three keywords. An oral surgeon and an orthodontist analyzed the quality and reliability of the websites using the DISCERN assessment tool.

Results: The correlation between evaluators was low. Forty-six of the 70 websites were the websites of different oral and maxillofacial clinics and orthodontic clinics. The percentage of websites was 11% for personal doctor websites, 10% for academic journals, 7% for institutes, 6% for orthodontic clinics, and 1.4% for dental clinics. Overall rating scores of the websites for researchers were 2.41±1.35 for oral surgeon and 1.99±1.49 for orthodontist.

Conclusions: The reliability and quality of the information in all of the websites was very low. The data on the websites did not have any scientific review processes such as review-peer review.

Keywords: Google, Google Trends™, Orthognathic surgery, Orthodontics

INTRODUCTION

Google is the most frequently visited website on the internet.[1] Google Trends is a Google tool used to "analyze the related search activity" on the internet.[1-3] The use of mobile, modern communication tools such as smartphones, personal computers, and televisions, and easy access to the internet allow patients to reach health-care information swiftly and easily using the internet all over the world.[1] In a previous study, it has been shown that 8 out of 10 people used the internet to reach health-care information.[4,5] About 75% of people using the internet for health care do not check the information source.[6] In a study conducted in our country in 2017, 66.3% of internet users in Turkey use the internet to access information about their health.[7]

It is reported that a patient who searches his complaints on Google had pain relief until a doctor's appointment.[8] This new dynamic system, in which patients are involved in the process related to their illness using the internet, has been claimed that the patient has more information and an active participant in the treatment of a passive recipient position. Patients behaving like a doctor may cause anxiety, worthlessness, and feeling of being tested in some doctors; however, it may be

a new form of communication that positively contributes to the patient–physician relationship.[9]

Murray *et al.*[8] stated that sharing the information obtained from the internet about the health issues that require scientific knowledge without review or peer review may cause unwanted and even life-threatening outcomes. Knösel *et al.*[10] have stated that information's on social platforms such as YouTube, Facebook, MySpace, and Twitter is questionable.

Orthognathic surgery is an alternative treatment option for patients who cannot be treated with classical orthodontic methods. To eliminate possible dissatisfaction risk after surgery, detailed information about the process should be given to the patient.[11-14]

The purpose of this study was to determine the first three most searched keywords related with orthognathic surgery in the Google Trends application and to analyze the reliability and quality of the web pages in the perception of orthodontist and maxillofacial surgeon.

MATERIALS AND METHODS

For each of our search words, the first 30 websites (first three pages) matched our criteria on the Google search page were assessed. It was reported in recent studies that 95% of people only viewed the first three pages of Google searches.[7,15,16]

The Google Trends application was searched for the keyword "Orthognathic Surgery" choosing for all countries, unfiltered and since 2004. The first three related terms with orthognathic surgery were "orthognathic surgery before and after," "jaw surgery cost," and "before orthognathic surgery." The content and quality of websites reached as a result of Google search on these related terms were evaluated.

Two independent researchers, one of whom was an orthodontist (DDK) and one with a maxillofacial surgeon (ED), reviewed and rated the reliability and quality of the information contained in the websites.

Fifty of the 120 websites were excluded from the study. These were duplicate websites, unaccessible websites, videos, and advertisements. The remaining 70 websites were scored using the DISCERN questions [Table 1]. Health information was evaluated with the DISCERN questionnaire which provides a score ranging from 1 (low) to 5 (high).[7,17,18]

Statistical analysis

Data were analyzed using the statistical package program (SPSS, V23). Compliance between observers was examined by Kappa analysis. The difference between means was examined by the dependent samples *t*-test. Results were presented as mean ± standard deviation.

RESULTS

Table 2 shows the characteristics of the remaining 70 websites. Forty-six of the 70 websites were the websites of different oral and maxillofacial clinics and orthodontic clinics. Websites which were created by patients, laypersons, and others (14%) were higher than websites created by universities (4.3%). The percentage of websites was 11% for personal doctor websites, 10% for academic journals, 7% for institutes, 6% for orthodontic clinics, and 1.4% for dental clinics. Administrators of the websites were maxillofacial surgeons (15.7%), orthodontists (5.7%), and dentists (5.7%), respectively [Table 2 and Figure 1].

Table 1: DISCERN questionnaires.

Section 1: Reliability questions
1. Are the aims clear?
2. Does it achieve its aims?
3. Is it relevant?
4. Is it clear what sources of information were used to compile the publication (other than the author or the producer)
5. Is it clear where the information used or reported in the publication was produced?
6. Is it balanced and unbiased?
7. Does it provide details of additional sources of support and information?
8. Does it refer to areas of uncertainty?

Section 2: Quality questions
9. Does it describe how each treatment works?
10. Does it describe the benefits of each treatment?
11. Does it describe the risk of each treatment?
12. Does it describe what would happen if no treatment is used?
13. Does it describe how the treatment choices affect overall quality of life?
14. Is it clear that there may be more than one possible treatment choice?
15. Does it provide support or shared decision-making?

Section 3
16. Overall rating of websites

Table 2: The basic website characteristics of 70 websites.

Website owner	*n*	%
Maxillofacial clinics	32	45.7
Patients, laypersons, and others	10	14.2
Personal doctor websites	8	11.4
Journals	7	10
Institutes	5	7.1
Orthodontic clinics	4	5.7
University	3	4.2
Dental clinics	1	1.4
Website admin		
Oral and maxillofacial surgeon	11	15.7
Orthodontist	4	5.7
Dentist	4	5.7
Unspecified	51	72.8

The average reliability scores of the 70 websites out of 5 were 2.27 ± 1.28 for ED and 2.06 ± 1.47 for DDK [Table 3].

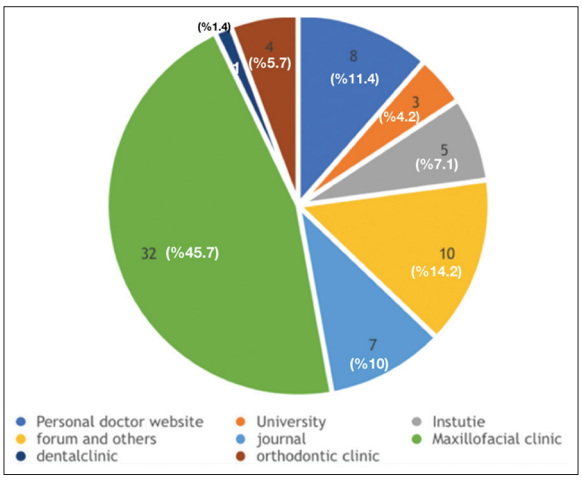

Figure 1: Distribution of the websites.

Table 3: Descriptive statistics for questions about reliability (values shown as mean±standard deviation).

	Researcher 1 (ED)	Researcher 2 (DDK)	*P***	Kappa
Question 1	2.36±1.44	2.26±1.54	0.340	0.346
Question 2	1.91±1.44	2.23±1.52	<0.001	0.550
Question 3	2.04±1.53	2.16±1.55	0.031*	0.673
Question 4	2.18±1.43	1.99±1.48	0.027*	0.514
Question 5	2.53±1.34	1.99±1.48	<0.001*	0.236
Question 6	2.37±1.30	2.00±1.49	<0.001*	0.249
Question 7	2.39±1.29	1.99±1.49	<0.001*	0.205
Question 8	2.44±1.28	1.90±1.48	<0.001*	0.205
Total	2.27±1.28	2.06±1.47	<0.001*	

*Statistically significant, **dependent sample *t*-test between researcher 1 (ED) and researcher 2 (DDK)

Table 4: Descriptive statistics for questions about quality and overall assessment (values shown as mean±standard deviation).

	Researcher 1 (ED)	Researcher 2 (DDK)	*P***	Kappa
Question 1	2.27±1.36	2.04±1.5	0.007*	0.279
Question 2	2.43±1.36	2.03±1.46	<0.001*	0.233
Question 3	2.39±1.39	1.94±1.47	<0.001*	0.287
Question 4	2.33±1.35	2.7±1.33	<0.001*	0.075
Question 5	2.93±1.31	2.99±125	0.583	0.059
Question 6	2.77±1.24	1.9±1.48	<0.001*	0.158
Question 7	2.3±1.33	1.94±1.49	<0.001*	0.194
Total	2.49±1.16	2.22±1.32	<0.001*	
Overall assessment	2.41±1.35	1.99±1.49	<0.001*	

*Statistically significant, **dependent sample *t*-test between researcher 1 (ED) and researcher 2 (DDK)

The average quality ratings were 2.49 ± 1.16 for ED and 2.22 ± 1.32 for DDK. Overall rating scores of the websites for the researchers were 2.41 ± 1.35 for ED and 1.99 ± 1.49 for DDK [Table 4]. There was not a correlation in all of the answers for two researchers.

DISCUSSION

This study highlighted the trend activity of orthognathic surgery. The majority of the pages were created by oral and maxillofacial surgery clinics. Most of the pages were promotional websites rather than scientific content. Personal websites created by professionals such as orthodontists and orthognathic surgeons were significantly less than patients or ordinary people.

In recent studies, it has been shown that the reliability and quality of information on orthognathic surgery on social media is questionable.[7,19-21] In a study conducted in Turkey in 2017, Canigur Bavbek and Tuncer[7] evaluated the Turkish websites which published about orthognathic surgery in a way similar to our study, they stated that the owners of these websites were the most plastic surgeons, orthodontists, and jaw surgeons, respectively. In the same study, the overall quality of the scientific content of the investigated websites was determined at a low-medium level.

Patel and Cobourne[22] in the UK recently have found that the design and content of the websites that published about orthodontics were insufficient. Olkun and Demirkaya,[18] in 2018, examined the websites that broadcast about lingual orthodontics. They found that the quality of the information on the websites was low.

Hegarty *et al.*[1] stated that health professionals should provide more frequent information to social media platforms such as Google and YouTube; however, misinformation would be prevented in this way. Bavbek and Tuncer[7] stated that professional institutions such as universities and educational institutions providing information to the community without the expectation of earnings reported a lack of quality and reliable sources of information in this area.

CONCLUSIONS

1. The reliability and quality of the information in all of the websites was found to be low
2. Although dentists who were coming from the same basic education assessed the websites according to the DISCERN criteria, the opinions of the orthodontist and maxillofacial surgeon about these websites differed
3. The data on the websites reviewed and showed that many non-scientific and non-relevant information are available because they are presented to the public without impartial scientific review processes such as a review-peer review.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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