ORIGINAL ARTICLE

Orijinal Araştırma

Yazışma adresi
Correspondence address
Özge KURT
Department of Endodontics
Faculty of Dentistry,
Aksaray University,
Aksaray, Türkiye

ozge.kurt@aksaray.edu.tr

Geliş tarihi / *Received* : May 08, 2025
Kabul Tarihi / *Accepted* : July 10, 2025

Bu makalede yapılacak atıf
Cite this article as
Kurt Ö, Şimşek E.
Readability Of Patient Information Texts About Apical Resection On Turkish Websites: Quantitative Research

Akd Dent J 2025;4(2): 98-103

Özge KURT
Department of Endodontics
Faculty of Dentistry,
Aksaray University,
Aksaray, Türkiye

Emine ŞİMŞEK
Department of Endodontics
Faculty of Dentistry,
Mersin University,
Mersin, Türkiye

Readability of Patient Information Texts About Apical Resection on Turkish Websites: Quantitative and Research

Web Sitelerinde Kök Ucu Rezeksiyonu Hakkındaki Hasta Bilgilendirme Metinlerinin Okunabilirliği: Nicel Bir Araştırma

ABSTRACT

Objectives

The aim of this study is to analyze the readability levels and content adequacy of patient information texts available on the internet regarding apicoectomy.

Material and Methods

In the Google search (Google LLC, Mountain View, California, USA) using the keywords *'kök ucu ameliyatı,'* the first 60 websites were examined. The patient information and education texts in Turkish were included. The obtained patient information texts were evaluated according to the Ateşman Readability Index. Additionally, it was assessed whether the text contents provided sufficient information about apical resection. The SPSS 23 statistical package program was used for data analysis. Within the scope of the study, the normal distribution of the data was calculated using the Kolmogorov-Smirnov test.

Results

Among the 60 websites, 50 met the inclusion criteria. It was understood that the texts examined within the scope of the study were of medium difficulty according to the Ateşman Readability Index (57.80 ± 7.49). 82% of readers have moderate reading difficulties. When the readability levels of the texts were examined according to the grade levels, it was determined that the highest rate was at the 11th-12th grade level, with 46%

Conclusion

The study findings revealed that the readability of patient information texts available on Turkish websites was at a moderate level. It was determined that the content of the examined websites generally provided sufficient information regarding apical surgery. However, it was observed that these texts might be difficult to fully comprehend, particularly for the general public and patients. Therefore, it is recommended that patient information texts be prepared using simpler, clearer, and more easily understandable language.

Keywords

Apical resection, Readability, Website

DOI: 10.62268/add.1695263

ÖZ

Amaç

Bu çalışmanın amacı, internet üzerinde kök ucu rezeksiyonu hakkında yer alan hasta bilgilendirme metinlerinin okunabilirlik düzeyini ve içerik yeterliliğini analiz etmektir.

Gereç ve Yöntemler

Google arama motoru (Google LLC, Mountain View, California, ABD) kullanılarak *"kök ucu ameliyatı"* anahtar kelimesiyle yapılan aramada elde edilen ilk 60 web sitesi incelenmiştir. Türkçe dilinde hazırlanmış hasta bilgilendirme ve eğitim metinleri çalışmaya dahil edilmiştir. Elde edilen metinler, Ateşman Okunabilirlik İndeksi'ne göre değerlendirilmiştir. Ayrıca, metinlerin içerik açısından kök ucu rezeksiyonu hakkında yeterli bilgi sunup sunmadığı da analiz edilmiştir. Verilerin istatistiksel analizinde SPSS 23 paket programı kullanılmış, verilerin normal dağılıma uygunluğu Kolmogorov-Smirnov testi ile değerlendirilmiştir.

Bulgular

İncelenen 60 web sitesinden 50'si çalışma kriterlerini karşılamıştır. Ateşman Okunabilirlik İndeksi'ne göre değerlendirilen metinlerin orta düzeyde zorluk içerdiği belirlenmiştir (57.80 ± 7.49). Katılımcıların %82'sinin metinleri anlamada orta düzeyde güçlük yaşadığı tespit edilmiştir. Okunabilirlik düzeyleri sınıf seviyelerine göre değerlendirildiğinde, metinlerin %46'sının 11. ve 12. sınıf seviyesinde olduğu belirlenmiştir.

Sonuç

Çalışma sonuçları, Türkçe web sitelerinde yer alan hasta bilgilendirme metinlerinin okunabilirliğinin orta düzeyde olduğunu ortaya koymuştur. İncelenen web sitelerindeki içeriklerin kök ucu rezeksiyonu hakkında genel olarak yeterli bilgi sunduğu belirlenmiştir. Ancak, bu metinlerin özellikle genel halk ve hastalar tarafından tam olarak anlaşılmasının güç olabileceği görülmüştür. Bu nedenle, hasta bilgilendirme metinlerinin daha sade, açık ve kolay anlaşılır bir dil kullanılarak hazırlanması önerilmektedir.

Anahtar Kelimeler

Kök ucu rezeksiyonu, Okunabilirlik, Web sitesi

INTRODUCTION

The primary goal of successful endodontic treatment is to remove the pulp tissue, bacteria, and bacterial toxins, appropriately shape and clean the root canal system, particularly ensuring a three-dimensional hermetic seal at the apex, and restore the affected teeth in a leak-proof manner to maintain the function of the tooth in the oral cavity for many years (1). For this purpose, non-surgical root canal therapy is the first option in many cases, and according to some researchers, the success rate ranges from 72% to 95% (2,3). In cases where root canal treatment fails, retreatment may be necessary (4). When non-surgical root canal therapy does not succeed in teeth with periapical lesions or when retreatment is not applicable (due to the presence of posts and crowns), a surgical approach may be considered to preserve the natural teeth (5,6). In this surgical intervention, the infected tissue around the root apex is surgically removed, and biocompatible materials are used to fill the remaining root apex, as the main aim of the operation is to prevent bacterial microleakage from the root canal system to the periradicular tissues (7). The clinical success of endodontic surgery has been reported as 88% after 72-month in the literature (8).

With the widespread use of the internet, accessing information has become easier for users, including in the healthcare field (9). The internet has become the most common source when searching for health-related information (10). While there are no regulations regarding the sources of information on the internet, there is also no mechanism for verifying the accuracy or usefulness of this information (10). Although information on the internet is presented in video and audio formats, most information is generally in text format (10).

Readability refers to the ease with which a piece of text can be read and understood by a reader. Therefore, it is important for texts to be easily readable. Various formulas, measurements, and indices are used in readability analysis (11). The Flesch Reading Ease formula is used to determine the readability of texts in analytical languages like English, while the Ateşman readability formula has been developed for texts in synthetic languages like Turkish (12). Considering that most information on the internet is in text format, it is crucial for texts related to apical resection to be easily readable by the audience. The aim of this study was to perform a readability and content analysis of patient information texts about apical resection found on Turkish websites.

MATERIAL and METHODS

Since this research only uses publicly available data, ethics committee approval is not required. The study followed the principles of the Helsinki Declaration.

In January 2022, a Google search (Google LLC, USA) was conducted using the keyword *'Kök ucu ameliyatı'* (apical surgery), and the first 60 websites were reviewed. Websites in languages other than Turkish, commercial and advertisement-based websites, videos, academic articles, websites requiring registration or payment for access, social media, book contents, websites for dental professionals education, websites describing patient experiences, appointment scheduling sites, and unrelated content were excluded. Patient information and educational texts in Turkish were included. The texts from 50 websites that met the inclusion criteria were transferred to a separate Microsoft Word (Microsoft Corporation, Redmond, Washington, USA) document. The texts were evaluated based on the source of the author: private healthcare institutions, university hospitals, newspaper articles, and academic articles.

To determine the readability level, the texts were input into a free online readability calculator that uses the Ateşman readability formula. Texts with an Ateşman readability index ranging from 90-100 are classified as very easy, 70-89 as easy, 50-69 as moderate difficulty, 30-49 as difficult, and 1-29 as very difficult (13).

The resulting data, along with the source information of the texts, were transferred into a Microsoft Excel (Microsoft Corporation, Redmond, Washington, USA) file. In addition, the texts were evaluated for their adequacy in providing sufficient information on apical resection. In the study of Turkish websites on apical resection (apical surgery), data analysis was performed using SPSS 23 statistical software. The normality of the data was assessed using the Kolmogorov-Smirnov test (Tab. 1). The readability index values were classified according to the Ateşman readability classification (Tab. 2). Based on the results, apart from the unique word count, average word length, average sentence length, and Ateşman readability index, other data did not show normal distribution. The mean, standard deviation, and minimum and maximum values of the data were calculated.

Table 1. Normality test results

Variable	Kolmogorov-Smirnov Statistic	df	p-value
Word Count	,134	50	,026*
Character Count	,130	50	,035*
Hard Word Count	,133	50	,028*
Unique Word Count	,110	50	,176
Short Word Count (<5 characters)	,178	50	,001*
Non-space Character Count	,132	50	,028*
Sentence Count	,137	50	,020*
Paragraph Count	,223	50	,000*
Average Word Length	,096	50	,200
Average Sentence Length	,118	50	,078
Ateşman Readability Index	,081	50	,200

Table 2. Ateşman readability classification

Ateşman Readability Index Range	Classification
90-100	Very Easy
70-89	Easy
50-69	Moderate Difficulty
30-49	Difficult
1-29	Very Difficult

RESULTS

A total of 60 websites were examined. Ten websites were excluded from the study. The distribution of the websites according to their fields is presented in Table 3. According to the results, 81.7% of the reviewed websites were from private healthcare institutions, 8.3% were university-based, 1.7% were academic articles, and 8.3% were blogs.

Table 3. Distribution of websites reviewed by type

Source	Frequency (f)	Percentage (%)
Private Healthcare Institutions	49	81.7
University	5	8.3
Academic Article	1	1.7
Blog	5	8.3

The results obtained from the examination of 50 websites are presented below. Initially, the websites were classified according to the Ateşman readability classification (Tab. 2). The findings showed that 10% of the websites were classified as easy, 82% as moderate difficulty, and 8% as difficult (Fig. 1).

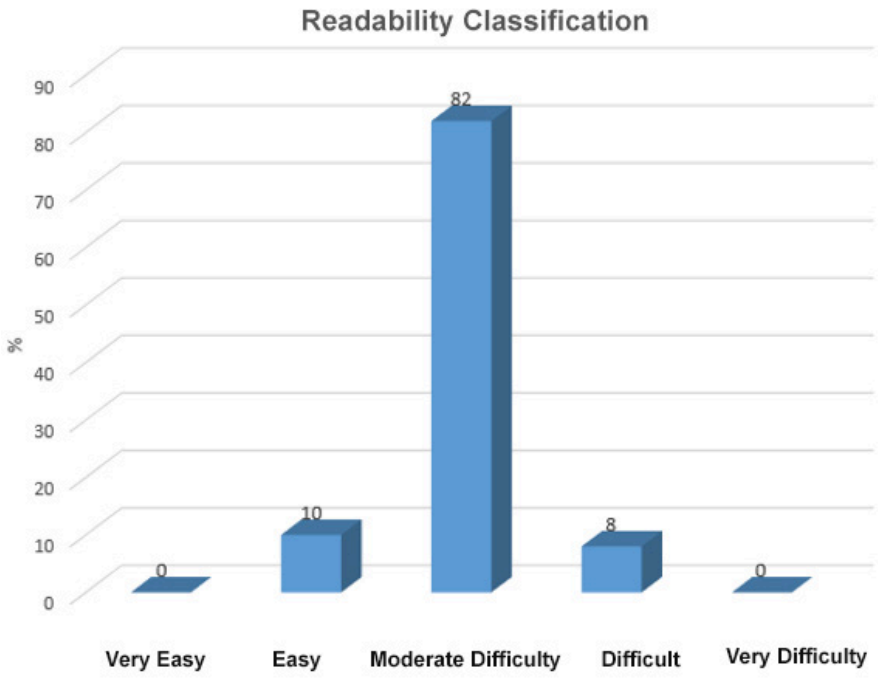

Figure 1. Readability Classification

The linguistic statistics of the texts are presented in Table 4. The average word count was 281.96 ± 205.14, the average character count was 2226.92 ± 1648.75, the average number of difficult words was 278.74 ± 202.09, the average number of unique words was 182.60 ± 112.46, the average number of short words was 54.36 ± 37.29, and the average number of characters without spaces was 1938.06 ± 1440.61. The average sentence count was 26.30 ± 20.15, and the average paragraph count was 15.58 ± 13.76. The average word length was 2.78±0.16, and the average sentence length was 11.29 ± 2.19. The average Ateşman readability index was 57.80 ± 7.49.

Table 4. Linguistic statistics of the texts

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Word Count	50	33	940	281.96	205.14
Character Count	50	242	7552	2226.92	1648.75
Difficult Word Count	50	33	925	278.74	202.09
Unique Word Count	50	29	517	182.60	112.46
Short Word Count (<5 characters)	50	9	144	54.36	37.29
Character Count Without Spaces	50	209	6587	1938.06	1440.61
Sentence Count	50	2	93	26.30	20.15
Paragraph Count	50	2	62	15.58	13.76
Average Word Length	50	2.44	3.05	2.78	0.16
Average Sentence Length	50	6.9	18	11.29	2.19
Ateşman Readability Index	50	40	76.1	57.80	7.49

When the readability levels of the texts were examined by class, it was found that 46% of the texts were at the 11th-12th grade level, and 30% were at the 9th-10th grade level (Tab. 5).

Table 5. Readability level

Level	Frequency (f)	Percentage (%)
7th-8th Grade	4	8
9th-10th Grade	15	30
11th-12th Grade	23	46
13th-14th Grade	7	14
Bachelor's Degree	1	2

DISCUSSION

The primary goal of root canal treatment is to treat or prevent apical periodontitis (14). Studies (6,15) in the literature have reported that 30-60% of teeth that have undergone root canal treatment develop chronic periapical lesions. In teeth that have been previously treated and have periapical lesions, factors such as the restorability of the tooth, the periodontal health status, and the desire of the dentist and/or patient to retain the tooth in the mouth may influence the decision to plan either retreatment or endodontic surgery (14,16). In cases of periapical lesions that do not respond to nonsurgical root canal treatment, or in cases of apical cysts, extraradicular infections, or complex anatomical conditions where retreatment is not feasible, apical resection may be considered (16). The aim of this study was to evaluate the content of patient information texts related to apical resection. With the changing world, internet usage is increasing day by day. This increase is driving individuals to utilize this resource in various fields, especially in healthcare, due to advantages such as easy access to information. The information accessed via the internet may be in the form of audio or video, but studies generally indicate that it is mostly in text form (17). Therefore, evaluating the readability of patient information texts is of significant importance.

In one study, it was determined that individuals obtained their first information from online texts before seeing a doctor (17). It is essential for these online texts to be both comprehensive and readable. The first studies on readability were conducted in the United States in the early 1800s using the English language. Since only Turkish texts were evaluated in this study, the Ateşman readability formula was used. The study found that the patient information texts related to apical resection on Turkish websites were of moderate difficulty (82%) (18).

In the studies conducted, it was found that individuals are less likely to search more than 50 websites for information on any topic (19,20). However, in this study, 60 websites were reviewed using the keyword *'Kök ucu ameliyatı'* via Google (Google LLC, Mountain View, California, USA). When websites in languages other than Turkish, commercial and advertisement-based websites, videos, academic articles, and other irrelevant sites were excluded, 50 websites were included in the study. Understanding the concept of apical resection is challenging for individuals. Therefore, the existence of reliable and readable websites is crucial for simplifying information for patients. In this study, it was found that the majority of the websites were from private healthcare institutions (81.7%). This is consistent with findings from other studies, which suggest that dental treatment-related information is most commonly found on private healthcare institution websites (21,22).

When examining similar readability studies in the literature related to healthcare, the readability levels were found to be similar. It is known that educational texts written for patient information should not exceed the readability level of 6th-8th grade to be easily understood by patients (23). However, in this study, it was found that 8% of the texts had a readability level of 8th grade or below. Based on this, it can be concluded that the texts on apical resection available on the internet are not easily understandable.

When examining health-related research in the literature, it has been reported that the readability analysis of many texts shows similarity in their comprehensibility levels. It is noteworthy that online texts with an easy readability level are rare in most health-related studies. In a study conducted by Özmen et al. (24) the readability and content evaluation of informational texts regarding nerve damage after the extraction of impacted third molars on Turkish websites were analyzed (24). Similar to the findings of our study, it was stated that the readability level was at the 11th and 12th grade level, categorized as moderately difficult. In this study, only Google was used as the most commonly used search engine. The use of other search engines, such as Yandex (YNV, Russia), Yahoo (Microsoft, USA), and Safari (Apple, USA), is quite limited in Türkiye (25).

Our study found that the readability level of the texts examined on the internet was moderately difficult, but the quality of the information in the sources was not determined. The assessment of the accuracy and quality of the information in the text is crucial for researchers. Therefore, further studies are needed to evaluate the quality and accuracy of texts on apical resection available online.

CONCLUSION

Within the limitations of this study, it was found that the patient informational texts on Turkish websites had a moderate level of reading difficulty. It was concluded that if these informational texts are not sufficiently understandable to patients, they will not have a meaningful impact on the reader. It can be concluded that readability tools should be used to ensure easier readability before publishing written patient informational and educational texts. It is beneficial to seek assistance from health professionals when preparing patient informational texts and to ensure that the content is comprehensive and written in a way that is understandable to patients.

Ethics Committee Approval

As no human or animal subjects were used, Ethics Committee approval was not required. No patient information was used in the study, so there was no requirement for patient informed consent.

Author contribution statement

Conceptualization and design: Ö.K., E.Ş.; Acquisition of data: Ö.K., E.Ş.; Analysis data: Ö.K., E.Ş.; Writing: Ö.K., E.Ş.; Critical revision: Ö.K., E.Ş.; All authors read and approved of the final manuscript.

Informed Consent

Written informed consent was obtained from participants who participated in this study.

Conflict of Interest

The authors have no relevant financial or non-financial interests to disclose.

Financial Disclosure

The authors did not receive support from any organization for the submitted work.

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