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Readability Assessment of Consent Forms Concerning Pediatric Dentistry Found on Turkish Websites

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Abstract: ***Aim*:** Informed consent of the patient must be obtained for any procedure to be performed on the patient. Consent forms should ensure that patients are adequately informed about the procedure to be applied to them. In the meantime, patients need to understand the consent form they have read. Therefore, this study aims to assess the readability of consent forms concerning pediatric dentistry in Turkey. ***Methodology*:** Using the keywords pediatric dentistry, consent form, general anesthesia, and sedation, 100 consent forms first encountered in Google search were examined. These consent forms were evaluated using the Ateşman readability index. ***Results*:** In this study, 100 websites were examined, and 62% of the consent forms were rated as medium difficulty. In terms of readability level, the text with the lowest readability level is at the fifth and sixth-grade levels, the text with the highest level is at the undergraduate level, and the text with the average level is at the ninth and tenth-grade levels. ***Conclusion*:** Considering that the rate of high school and above literacy in our country is 37%, it seems reasonable that health institutions should regulate the readability level of consent forms.

Keywords: Pediatric dentistry, consent form, readability, general anesthesia, sedation.

Research Paper

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INTRODUCTION

Readability is a concept that emerged in America at the beginning of the 19th century [1]. This concept has been used chiefly in inter-institutional correspondence [2]. Criteria such as word length and the number of multiple syllables are considered to evaluate readability. As the number of words in a sentence increases, the readability of the sentence decreases [3, 4]. There are many analyzes used to evaluate readability. One of them is Ateşman readability formula.

Informed consent must be obtained from the patients for all kinds of procedures to be performed on the patient in health services. This consent occurs as the patient's decision is explained after the patient is given clear information about the medical procedures that can be done for oral and dental health and their expected effects [5, 6].

In the Patient Rights Regulation, it is stated that informing the patient should be made in an understandable, precise, and clear manner and that the patient should be able to answer questions about medical practice [7]. According to Turkey's general education level statistics determined by TUIK (Turkish Statistical Institute) as of 2020, those who have a secondary school and equivalent vocational schools and below (primary school graduate (5 years), primary school graduate (8 years), illiterate, literate people (who do not have any school education) constitute 63% of the population [8]. Since every citizen of our country receives medical care from health institutions and considering the level of education, the readability of patient information forms is of utmost importance. From this point of view, no study evaluated the readability of consent forms concerning pediatric dentistry in the literature review conducted in Turkish and English. Consequently, this study aims to increase parental awareness by evaluating the readability levels of consent forms concerning pediatric dentistry.

MATERIALS AND METHODS

Our study used the readability index developed by Ateşman in 1997 [9]. Ateşman readability level

determination program, which is a free online program, was used to evaluate the readability of consent forms. Ateşman readability formula is shown below.

198,825 – 40,175 * Word Length_avg. – 2,610 * Sentence Length_avg.

The word length used in the formula is calculated as syllables, and the sentence length is calculated as words [9, 10].

Analysis of Data

SPSS 26 statistical package program was used for the analysis of the data. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to calculate the normal distribution of the data (Table 1). According to the results obtained, data do not show normal distribution.

Table 1: Normality Test Results

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	p	Statistic	df	p
Number of Words	0,184	100	0,001	0,834	100	0,001
Number of Characters	0,171	100	0,001	0,836	100	0,001
Number of Difficult Words	0,183	100	0,001	0,834	100	0,001
Unique Word	0,130	100	0,001	0,913	100	0,001
Unique Word %	0,102	100	0,012	0,969	100	0,018
Number of Short Words	0,183	100	0,001	0,839	100	0,001
Number of Short Words %	0,176	100	0,001	0,879	100	0,001
Number of Characters Without Spaces	0,163	100	0,001	0,837	100	0,001
Number of Sentences	0,136	100	0,001	0,833	100	0,001
Number of Paragraphs	0,129	100	0,001	0,865	100	0,001
Average Word Length	0,228	100	0,001	0,779	100	0,001
Average Sentence Length	0,136	100	0,001	0,934	100	0,001
Ateşman Readability Index	0,165	100	0,001	0,930	100	0,001

The mean, standard deviation, minimum, and maximum values of the data were calculated. The range table was taken as a reference in the evaluation of Ateşman readability index classification (Table 2, Table 3).

Table 2: Ateşman readability classification

	Ateşman Readability Index Range
Very easy	90-100
Easy	70-89
Medium Difficult	50-69
Difficult	30-49
Very difficult	1-29

Table 3: The relationship between Ateşman Readability Index and Readability Levels

Index	**Readability Level**
90-100	Easily understood by 4th-grade and below students
80-89	Easily understood by 5th or 6th-grade students
70-79	Easily understood by 7th or 8th-grade students
60-69	Easily understood by 9th or 10th-grade students
50-59	Easily understood by 11th or 12th-grader students
40-49	Easily understood by 3rd or 15th-grade (associate degree) students
30-39	Easily understood by undergraduates
29 and below	Easily understood by postgraduates

RESULTS

The first 100 consent forms encountered by using the keywords pediatric dentistry, consent form, general anesthesia, and sedation in Google Search in November 2022 were evaluated in this study. Each consent form was transferred to the Ateşman readability level determination program, and the results were recorded. The analysis did not include forms shorter than 20 sentences, articles written for academic

purposes, and commercial sites. Of all the forms, 53 were university consent forms, 14 were from hospitals and oral and dental health centers under the Ministry of Health, and the remaining 33 were consent forms from private hospitals and clinics. The authors and addresses of the examined websites were recorded.

The results of the analysis of 100 websites are presented below. As a first step, the websites examined in this study were classified using the Ateşman readability classification (Figure 1).

The results indicate that 24% of websites are at the easy level, 62% are at the medium level, and 14% are at the hard level.

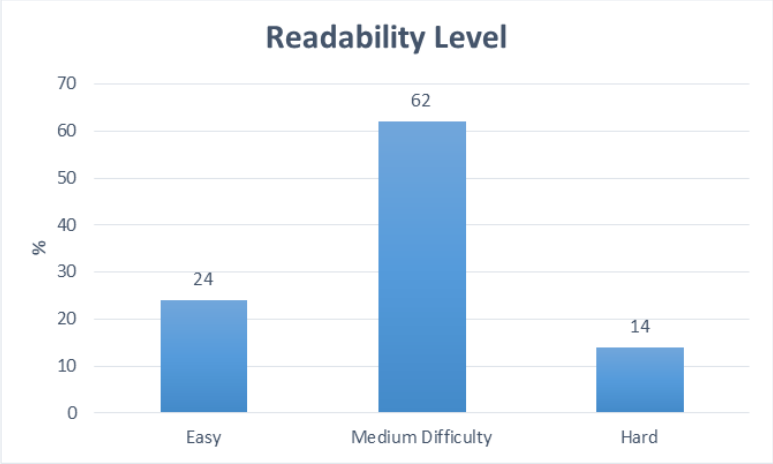

Figure 1: Ateşman readability classification of the examined websites

Linguistic statistics of the texts are presented in table 4. The average number of words was 1117.2±934.2. The average number of characters is 9248.5±7484.2. The average number of difficult words is 1093.7±915.2. The average number of unique words is 629.7±421.1. The average number of short words is 178.1±150.6. The average number of characters without spaces is 8018.6±6556.9. The average number of sentences was 170.1±128.9. The average number of paragraphs is 96.3±76.2. The average word length is 2.9±0.0.3. The average sentence length is 6.4±2.3. The mean Ateşman Readability Index was 54.8±9.4.

Regarding the level of readability, the text with the lowest readability level is at the fifth and sixth-grade level, the text with the highest readability level is at the undergraduate level, and the average level of readability is at the ninth and tenth-grade levels.

Table 4: Linguistic Statistics of Texts

	N	Minimum	Maximum	Average	Std. Deviation
Number of Words	100	85	3762	1117,2	934,2
Number of Characters	100	689	30813	9248,5	7484,2
Number of Difficult Words	100	80	3679	1093,7	915,2
Number of Unique Words	100	66	1835	629,7	421,1
Number of Unique Words (%)	100	23	89	63,0	11,9
Number of Short Words (<5 characters)	100	12	700	178,1	150,6
Number of Short Words (<5 characters) (%)	100	9	30	16,2	3,3
Number of Characters Without Spaces	100	604	26647	8018,6	6556,9
Number of Sentences	100	23	566	170,1	128,9
Number of Paragraphs	100	2	369	96,3	76,2
Average word length	100	2,6	3,94	2,9	0,3
Average sentence length	100	1,1	13	6,4	2,3
Ateşman readability index	100	30,7	83,4	62,4	10,6
Readability level		5th and 6th Grade	Undergraduate Degree	9th and 10th grade	

DISCUSSION

In addition to the up-to-date medical information equipment of the physicians, it is necessary to inform the patient about the complications that may occur during the intervention with the consent forms known as the legal basis of the patient-physician relationship, which is also legally necessary, and to obtain separate consent for each application [11-14]. With the informed consent form, the patient is informed

not only about possible complications but also about the proposed treatment methods, the success rate and duration of these methods, alternative treatment methods, and results if the recommended treatment is not accepted, and written consent is obtained [11, 14].

Language readability has been developed by linguists and is still being developed in order to make the language more understandable. It has been reported, however, that the formula developed for one language will not produce similar results in another [4, 15]. Based on this consideration, Ateşman's 'Ateşman Readability Formula' was used in this study [9].

Pediatric dentistry is a department with a broad spectrum, including root canal treatment, restoration, tooth extraction, local anesthesia applications, general anesthesia, sedation, and preventive treatment applications. For this reason, it is vital to understand these consent forms, which are prepared to inform the patient about the procedure to be performed when the patient applies to the clinic. In this study, we investigated the readability level of consent forms concerning pediatric dentistry in our country according to the Ateşman Readability Formula. We found that the average readability level was at the ninth and tenth-grade level, and the average Ateşman Readability Index was 54.8±9.4.

A study evaluating the readability of consent forms used before anesthesia applications in 2014 found that the readability levels of anesthesia consent forms were very low and appealed to people with academic education [16]. Similarly, in another study evaluating the readability of oncological information forms, the readability levels of the information forms were found to be relatively low [17].

In a study evaluating the readability of intravenous and intramuscular injection informed consent forms, the readability was relatively low [18]. Another study conducted to evaluate the readability and content of patient information texts on orthognathic surgery on Turkish websites found that patient information texts have moderate reading difficulties, and complications are not sufficiently included [19].

While studies generally reveal a direct ratio between the level of education and the level of understanding, it should be emphasized that information forms should be prepared according to the average education level of the people in a country [20]. On the other hand, another issue that needs to be considered is that no matter how educated a person is, he or she may not be accustomed to medical terms. Therefore, it is crucial to remember that consent forms should contain as few medical terms as possible. As a result of all this information, when preparing consent forms, which constitute the legal basis between the patient and the physician, education levels should be taken into consideration, and care should be taken to ensure that the forms are prepared in such a way that they are understandable to include the population with the lowest level of education.

CONCLUSIONS

The consent form should explain clearly the treatment options, work to be done, and possible risks to the patient, as well as explain the subject scientifically. In our study, the readability of the consent form was found to be average at the ninth and tenth-grade levels. Considering that the literacy rate in our country is over 95%, although this rate seems acceptable, it is known that consent forms will not be effective unless the patients understand them. From this point of view, we believe it would be beneficial for health institutions to revise the forms by considering readability principles.

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