

# DİŞ HEKİMLİĞİ HASTALARININ KÖK KANAL TEDAVİSİ KONUSUNDA BİLGİ SEVİYELERİ VE BAKIŞ AÇILARI

## DENTISTRY PATIENTS' KNOWLEDGE LEVELS AND PERSPECTIVES ON ROOT CANAL TREATMENT

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### ÖZET

**AMAÇ:** Hastaların kök kanalı tedavisi konusunda bilgi düzeyleri, bilgi kaynakları ve bakış açıları konularının demografik veriler eşliğinde değerlendirilmesidir.

**GEREÇ VE YÖNTEM:** Diş hekimliği fakültesine genel dental muayene için gelen hastalardan gönüllü 500 katılımcıya önceden yapılandırılmış kapalı uçlu sorulardan oluşan anket formu doldurmaları için dağıtıldı. Anket demografik verilere yönelik sorular ile hastaların kök kanal tedavisine yönelik bilgi, farkındalık ve tutumlarını değerlendirmeye yönelik 12 adet çoktan seçmeli soruyu içermektedir. Tamamlanan anketle, katılımcıların kök kanal tedavisi hakkındaki bilgi ve görüşleri demografik veriler eşliğinde analiz edildi. Tanımlayıcı istatistikler ve regresyon modeli istatistiksel analiz için kullanıldı.

**BULGULAR:** Hastaların 335'inin (%67) kök kanal tedavisi konusunda bilgi sahibi olduğu bulunmuştur. Bilgi kaynağının ise %77,6 oranında diş hekimi olduğu anlaşılmıştır. Cinsiyetin kök kanal tedavisi bilgi düzeyi ve tutumunda etkili olmadığı görülmüştür ( $p=0,926$ ). Yaş düzeyi arttıkça, kök kanal tedavisi bilgi düzeyi düşmektedir ( $p=0,044$ ). Eğitim ve gelir düzeyi arttıkça, kök kanal tedavisi bilgi düzeyi de artmaktadır ( $p=0,000$ ).

**SONUÇ:** Hastaların kök kanal tedavisi konusunda bilgi ve farkındalık düzeylerinin yaş, eğitim ve gelir seviyesinden etkilenmediği görülmüştür. Sosyal medya ve çevre, bu konuda hastaların bilgi ve farkındalığını etkilese de diş hekimlerinin temel etmen olduğu anlaşılmaktadır.

**ANAHTAR KELİMELER:** Kök kanal tedavisi, Sağlık anketleri, Diş hekimliği, Bilgi.

### ABSTRACT

**OBJECTIVE:** To evaluate the level of knowledge, sources of information, and perspectives of patients about root canal treatment with demographic data.

**MATERIAL AND METHODS:** A questionnaire consisting of pre-structured closed-ended questions was distributed to 500 volunteer participants from patients who came to the dental school for general dental examination. The questionnaire included questions on demographic data and 12 multiple-choice questions to assess patients' knowledge, awareness and attitudes towards root canal treatment. With the completed questionnaire, participants' knowledge and opinions about root canal treatment were analyzed with demographic data. Descriptive statistics and regression model were used for statistical analysis.

**RESULTS:** It was found that 335 (67%) of the patients had information about root canal treatment. The source of information was found to be the dentist by 77.6%. Gender was not found to have an effect on the level of knowledge and attitude towards root canal treatment ( $p=0.926$ ). As the age level increases, the level of knowledge about root canal treatment decreases ( $p=0.044$ ). As the level of education and income increases, the level of knowledge about root canal treatment increases ( $p=0.000$ ).

**CONCLUSIONS:** Patients' knowledge and awareness levels were found to be affected by age, education and income level. Although social media and the environment affect patients' knowledge and awareness, it is understood that dentists are the main factor.

**KEYWORDS:** Root canal therapy, Health surveys, Dentistry, Knowledge.

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## INTRODUCTION

Parallel to the developments in medical science, there have been developments in dentistry practices all over the world. Along with scientific developments, specialization and specialization on certain subjects in the field of dentistry have become compulsory. In 1942, some dentists came together in Chicago to establish an organization to support laboratory and clinical research on root canal treatment (RCT), and the American Association of Endodontics was established at this meeting. Endodontics was one of the 8 different specialties accepted with the omnibus law published in the Official Gazette in 2011 in Türkiye (1).

Toothache is quite common in society and patients seek treatment to relieve this pain. The most common treatment to relieve toothache is RCT and tooth extraction (2). In these cases, endodontic treatment is an option to protect the tooth. Endodontic treatment or RCT is a procedure in which the infected pulp is cleaned to stop or prevent pulpal or periapical pathologies (3). RCT involves removing the diseased tissue, disinfecting the root canal and filling it with an inert material (4). With RCT, many teeth with pulp and periradicular infections that need to be extracted can be retained in the mouth for long periods of time (5).

If tooth extraction is performed instead of RCT, it can lead to many undesirable conditions such as tooth displacement, disruption of occlusion and aesthetic problems (6). In addition, tooth loss is associated with many problems such as being an indicator of functional aging, increased risk of dementia, psychological problems and deterioration of health due to decreased quality of life (7, 8). Rehabilitation of the extracted tooth area with prosthetic applications, including implant applications, has disadvantages such as high cost and the need for additional operations in addition to the loss of the natural tooth.

As mentioned above, RCT has many importance and advantages, but it draws attention to the level of knowledge and awareness of patients on this subject. Many sources play a role in patients' knowledge and awareness of RCT, including past experiences, dentists, social environment, social media, communication tools and family members (6, 9). Doumani et al. (10) concluded that knowledge and awareness

about RCT differed between various races and populations. Habib et al. (11) showed in their study that knowledge and awareness about RCT may influence the patient's final choice and decision. Therefore, the aim of the present study was to investigate the level of knowledge and awareness of patients applying to the faculty of dentistry in a specific population in Türkiye.

## MATERIALS AND METHODS

A self-administered questionnaire was prepared and delivered to 500 voluntary participants from patients who came to Afyonkarahisar Health Sciences University Faculty of Dentistry for routine dental examination. The survey was prepared inspired by previous studies (6, 10, 12). In the questionnaire, sociodemographic data on age, gender, education level and income level of the participants were obtained (Table 1). The survey contained 12 multiple-choice questions to assess participants' knowledge, awareness, and attitudes (experiences, expectations, and concerns) towards RCT (Table 2). The inclusion criteria for the study were male or female patients between the ages of 15-70. Exclusion criteria were mentally disabled patients, pediatric patients, and patients over 70 years of age.

### Ethical Committee

Approval numbered 2021/5-277 was obtained from Afyonkarahisar Health Sciences University Clinical Research Ethics Committee. Participants consent was received.

### Statistical Analysis

A three-stage analysis was performed to determine the level of knowledge about RCT. First, the demographic characteristics of the patients participating in the study were analyzed with descriptive statistics. Then, the questions asked to determine the level of knowledge of the participants about RCT were analyzed with descriptive statistics. In the last analysis step, regression modeling was used to determine whether demographic characteristics create any difference in the level of knowledge about RCT.

## RESULTS

In order to determine the demographic characteristics of these 500 patients who participated in the survey, the results obtained according to gender, age, educational status, and income le-

vel are given in Table 1. When Table 1 is examined, a homogeneous distribution is observed according to gender. Of the 500 patients who participated in the survey, 247 were female and 253 were male. In order to determine the age of the participants, this part of the questionnaire was asked open-endedly and then scaled. It is determined from the questionnaire forms obtained that a significant portion of the participants are relatively middle-aged. In particular, the fact that 324 out of 500 participants are in the 31-50 age group is proof of this judgment. While the number of participants under the age of 18 is 9, the number of participants over the age of 61 is only 18 (**Table 1**).

**Table 1:** Analysis of Demographic Variables

Demography		Frequency	Percentage
Gender	Female	247	49.4
	Male	253	50.6
Age	18 and below	9	1.8
	19-30	74	14.8
	31-40	153	30.6
	41-50	171	34.2
	51-60	75	15.0
	61 and above	18	3.6
Education Level	Primary School	70	14.0
	Middle School	15	3.0
	High School	158	31.6
	University	252	50.4
Income Level	Postgraduate	5	1.0
	Below Minimum Wage	15	3.0
	Minimum Wage	181	36.2
	3600-5000	209	41.8
	5001-6500	75	15.0
	8650 and above	20	4.0

As a result of the answers given to the question posed to determine the educational level of the participants, it is seen that more than 80% of the participants have high school and higher education. In particular, the fact that 50.4% of the participants, in other words, more than half of the participants, have a bachelor's degree reveals that the participant profile is an educated segment. When the question regarding income level is asked, it is evidenced that more than half of the participants have an income above the minimum wage. It can be said that the group declaring income below the minimum wage stems from the unemployed group under the age of 18 and the middle-aged group consisting of retirees (Table 1).

After determining the demographic characteristics, questions related to this field were asked to the participants in order to determine the level of knowledge about RCT (**Table 2**). In addition, if the participant had a history of treatment related to RCT, their experiences and preferences were asked. In this section, if the patient had no previous experience and

treatment history related to RCT, they were asked to leave the question blank. The responses to the questions in this group, which consisted of a total of 12 questions, were reported using the frequency analysis method (Table 2).

**Table 2:** Knowledge Level of Root Canal Treatment

Question	Presented Option	Frequency
Do you have any information about root canal treatment?	Yes, I have sufficient information.	110
	I have partial information.	225
	No, I do not have any information.	165
How did you get the information you have about root canal treatment?	From friends and/or acquaintances.	42
	By researching on the internet and/or social media.	34
	From my dentist	264
What do you think is the name of the department that deals with root canal treatment?	Endodontics	150
	I don't know	350
How many years do you think a root canal treatment will be valid?	1-5 Years	88
	6-10 Years	133
	11-20 Years	44
	Lifetime	70
If a tooth that has undergone root canal treatment hurts, why/who do you think it is caused by?	My Dentist	104
	Poor Oral Hygiene	153
	I consider such a situation normal and I don't blame anyone.	78
Do you think root canal treatment is a difficult procedure?	Yes, I see it as a difficult process.	200
	No, I do not see it as a difficult process.	120
	I don't have any information.	180
Have you had root canal treatment before?	Yes	290
	No.	184
If you have had root canal treatment before, how would you describe the experience?	Good.	134
	Normal	36
	Bad	120
Where did you have your root canal treatment?	Private Examination/Private Clinic	180
	Ministry of Health Affiliated Hospital/Mouth and Dental Health Center	40
	University Hospital/Dental Hospital	70
Do you know the title of the physician who performed your root canal treatment?	Dentist	110
	Endodontics Specialist	44
	Intern	26
Would you choose root canal treatment or one of the alternative treatments listed below?	I don't know	110
	Root Canal Treatment	304
	Tooth Extraction	10
	Tooth Extraction + implant	1
If you prefer extraction instead of root canal treatment, what is the reason?	I don't have any idea	185
	Root canal treatment is not a successful treatment	6
	A previous bad treatment experience	4
	The implant is a healthier procedure after extraction	1

In the last stage, regression model was used. The main purpose of the regression model is to determine which one(s) of the demographic characteristics have a statistical effect on the level of knowledge of RCT. For this purpose, 12 questions measuring the knowledge level of the participants were included in the analysis as dependent variables, and the gender, education level, age, and income level of the participants were included as independent variables. As a result of the analysis performed by establishing a Least Squares regression model, the  $R^2$  (74.71%) and adjusted  $R^2$  (50.40%) figures, which measure the model significance, show that the model is significant.

Then, as a result of the analysis conducted with the help of the E-views program, it was determined that three of the four variables (age, education level and income level), which were determined as independent variables, statistically affected the level of RCT knowledge at 5% significance level (**Table 3**).

**Table 3:** Results of the Regression Model

VARIABLE	Coefficient	Std. Error	T-statistic	Probability (P Value)
C	3.189	0.195	16.361	0.000
Gender	-.006	.063	-.093	.926
Age	-.063	.031	-2.021	.044
Education Level	.147	.036	4.127	.000
Income Level	.130	.036	3.652	.000
R-squared	0.747166	Mean dependent exists	9.032326	
Adjusted R-squared	0.504039	S.D. dependent exists	0.859375	
S.E. of regression	0.605211	Akaike info criterion	1.933808	
Sum squared resid	15.38376	Schwarz criterion	2.130632	
Log likelihood	-40.44448	Hannan-Quinn criter.	2.007874	
F-statistic	12.68732	Durbin-Watson stat	2.208878	
Prob(F-statistic)	0.000001			

According to the results of the regression model in Table 3, the gender status of the participants does not statistically affect the level of RCT knowledge at 5% significance level ( $p=0.926$ ). On the other hand, all other independent variables (age, education level and income level) affect the dependent variable RCT since the p value is lower than 5% significance level. The p-values and model coefficient values show that RCT knowledge decreases with age, but increases with income and education level (Table 3).

## DISCUSSION

Endodontics is a specialty that has been constantly evolving over the last fifty years, incorporating a variety of modern tools that help to preserve the patient's natural teeth, thus helping to ensure the patient's normal function and aesthetics. The knowledge of patients planning to undergo endodontic treatment can be influenced by different information they receive from friends, family members, media, or visits to dental clinics. The aim of this study was to examine the level of knowledge and attitudes of dental school patients toward RCT.

The first question that comes to mind when assessing patients' knowledge and awareness of RCT is whether patients have knowledge about RCT. In studies that have examined this question, it was found that the proportion of patients who stated that they had no idea about RCT to the relevant question varied between 24% and 72% (9, 11, 13 - 15). The fact that this range is wide suggests that it depends on the population studied. Similarly, 33% of the patients in the current study reported that they did not have any information about RCT. Even in patients who come to the dental school for routine dental examination, the fact that

a significant proportion of patients responded that they did not have any information draws attention to the necessity of informing patients. In previous studies, the proportion of those who reported receiving information about RCT from dentists ranged from 13.5% to 64.9% (6, 16, 17).

According to the results of the current study, 77.6% of those who answered the question of where they obtained information about RCT from stated that they obtained it from their dentist. While the patients' main source of information about RCT was dentists (77.6%), there was no significant difference between obtaining information from social media or the internet (10%) and from friends (12.4%). The source of information obtained from the internet can be of varying quality, ranging from professional reviews by colleagues to personal opinions and anecdotes of patients. As a result, information obtained from the internet may lead to misinformation, stress, and increased tendency to self-diagnosis or self-treatment (18). In the current study, although the rate of information acquisition from the internet or social media was not very high, it was still found to be effective. It is very likely that the effectiveness of these sources will increase over time. However, although these sources have the advantage of easy accessibility, it should not be ignored that their reliability is questionable.

Taşsöker et al. (1) asked about the specialty where RCT was performed and 27.6% of the participants answered that it was the endodontic department. In the current study, 30% of the patients answered the similar question as an endodontic department.

RCT is a successful treatment method when performed by both dentists and endodontists, with a retention rate of 98% in the first year and 86% in the 10th year (19 - 21). Among those who answered the question of how many years the RCT would be valid, 34% said up to 10 years, and 66% said more than 10 years. It is understood that the majority of the participants expect a long life expectancy from the RCT.

A question similar to the question of why/whom it is caused by in case of pain in a tooth that has undergone RCT was not seen in similar studies

we examined (9 - 10, 12, 17). When asked who or why they would blame for the pain in a tooth with RCT, 31% said the dentist, 45.7% said poor oral hygiene, and 23.3% said they would not blame anyone. Informing the patients before and after the application of RCT may reduce the 31% who may blame the dentist.

In the current questionnaire, when asked if RCT was a difficult procedure, 40% responded that it was a difficult procedure, 24% that it was not a difficult procedure and 36% had no idea. Jancezarek et al. (22) asked about the experience of RCT and 34% answered that the experience was poor. Iyer et al. (6) reported that 43.75% reported anxiety during the RCT experience. Although these studies were conducted in different countries and by different physicians, similar results were obtained. As a result of the current study, in accordance with the literature, the necessity of studies aimed at relieving anxiety in patients and the need for advanced training in RCT is evident.

Iyer et al. (6) reported that 51.69% of middle-aged people preferred private clinics over public hospitals. The reasons for this were that private clinics were cleaner and appointments could be made in a shorter time. According to Al Johara's study (23), the factors that determine patients' approach when choosing an institution are the level of knowledge of the physician, communication, convenience, cost, and clinical facilities. According to the results of the study by Iqbal et al. (24) it was stated that professional experience, staff courtesy and sincere behavior were effective in patients' choice of institution. In the current study, the majority of the participants preferred private clinics in line with the literature. These findings suggest that state-sponsored dental health services should be improved.

When the participants were asked if they knew the title of the physician who performed their treatment, 180 patients (62%) stated that they knew and 110 patients (38%) stated that they did not know. Of those who indicated that they knew, 110 patients indicated that they had undergone RCT with a dentist, 44 with an endodontic specialist and 26 with a dental intern. It is seen that most of the patients who underwent

RCT have information about the title of the physicians who performed this treatment. In the study by Jancezarek et al. (22) it was reported that 95% of the participants had information about the titles of the physicians who performed RCT.

Past experiences or pain expectations are considered to be an important factor in patients avoiding dental treatments (25). Bansal and Jain (15) reported in their study that 16% of patients preferred tooth extraction instead of RCT. In the current study, the preference for tooth extraction over RCT was found to be lower at 2.2%. This can be attributed to the 37% who stated that they had no opinion. In order to improve the treatment approach, especially in patients who state that they have no idea, it is necessary to prevent misconceptions such as misinformation, fear and anxiety, that is, to increase knowledge and awareness about RCT.

It is noteworthy that patients' knowledge levels and perspectives on RCT may vary according to socioeconomic factors. It appears that the majority of patients receive information about RCT from their dentist. So that informing the patients before and after RCT is an issue that should be emphasized. More effective information may be beneficial in raising awareness on this issue. In addition, although it is less preferred by patients as a source of information, the use of mass media such as social media with the right strategies can help to increase awareness on this issue.

This study is a self-report survey. Therefore, there is a possibility of response bias in the data obtained. The more specific questions of the survey led to a reduction in the number of participants answering these questions, so not all participants were able to answer all the questions. This study is limited in its generalizability as it only represents the views of patients who visited AFSU Faculty of Dentistry. Patients in other regions of Türkiye may have different views. Further studies on the level of knowledge and awareness of RCT should be conducted on a larger scale, taking into account possible variations in responses among populations from different socioeconomic strata and different regions of the country.

## REFERENCES

1. Taşşöker, M., Kök H, Özcan Şener S. Knowledge on dental specialties among dental patients who referred to a dental faculty. *Yeditepe J Dent.* 2017;13(3): 25-30.
2. Kakoei S, Parirokh M, Nakhaee N, et al. Prevalence of toothache and associated factors: a population-based study in southeast iran. *Iranian Endodontic Journal.* 2013;8(3):123.
3. Treatment Standards. American association of Endodontists. Available from: [https://www.aae.org/specialty/wp-content/uploads/sites/2/2018/04/TreatmentStandards\\_Whitepaper.pdf](https://www.aae.org/specialty/wp-content/uploads/sites/2/2018/04/TreatmentStandards_Whitepaper.pdf), Access date: 20.05.2024.
4. Cohen S, Hargreaves KM, Keiser K (Edited by). *Pathways of the Pulp.* 9 th ed, St Louis: Mosby. 2006:786-821.
5. Pak JG, White SN. Pain prevalence and severity before, during, and after root canal treatment: a systematic review. *Journal of endodontics.* 2011;37(4):429-38.
6. Iyer A, Nair R, Gupta P, Tavane PN, Pawar P. Dental patient's knowledge, awareness and attitude towards root canal treatment: a survey based research. *Int J Recent Sci Res.* 2018;9(1):23214-8.
7. Chen J, Ren C-J, Wu L, Xia L-Y, Shao J, Leng W-D, et al. Tooth loss is associated with increased risk of dementia and with a dose-response relationship. *Frontiers in Aging Neuroscience.* 2018;10:415.
8. Kaur P, Singh S, Mathur A, Makkar DK, Aggarwal VP, Batra M, et al. Impact of dental disorders and its influence on self esteem levels among adolescents. *Journal of Clinical and Diagnostic Research: JCDR.* 2017;11(4):5-8.
9. Sisodia N, Yadav S, Nangia T, Singh P, Yadav M, Singh H. Dental Patients' knowledge and attitude towards Endodontics–A survey. *J Pharm Biomed Sci.* 2015;5(01):80-3.
10. Doumani M, Habib A, Qaid N, Abdulrab S. Patients' awareness and knowledge of the root canal treatment in Saudi population: survey-based research. *Pain.* 2017;5(2):89-92.
11. Habib A, Doumani M. Al saysd T, Shamsy E, Heskul M, Abdulrab S, et al. Dental patients' knowledge and awareness about root canal treatment in Syrian population: Survey-based research. *Int J Recent Sci Res.* 2017;8(10):20583-20586.
12. Pommer B, Zechner W, Watzak G, Ulm C, Watzek G, Tepper G. Progress and trends in patients' mindset on dental implants. I: level of information, sources of information and need for patient information. *Clinical oral implants research.* 2011;22(2):223-9.
13. Satpathy S, Gupta R. Knowledge and awareness of root canal treatment therapy in the eastern Indian population: A cross-sectional study. *Journal of Oral Research.* 2022;11(2):1-9.
14. Qasim M, Anjum O, Das G, Naz F, Khan SR, Ahmed AR, et al. Root canal treatment from patients' perspective: Knowledge, awareness, and expectations. *Vojnosanitetski pregled.* 2022;79(4):325-9.
15. Bansal R, Jain A. An insight into patient's perceptions regarding root canal treatment: A questionnaire-based survey. *Journal of family medicine and primary care.* 2020;9(2):1020-7.
16. Dhanalakshmi M, Balaji A. Patients knowledge and attitude in endodontic treatment: A questionnaire-based study. *International Journal of Social Rehabilitation.* 2021;6(1):22.
17. Mirza MB. Assessment Of Knowledge, Past Experience And Attitude Regarding Root Canal Treatment. An Original Research-Based Survey. *International Journal of Medical Dentistry.* 2022;26(1): 51-57.
18. Tan SS-L, Goonawardene N. Internet health information seeking and the patient-physician relationship: a systematic review. *Journal of medical Internet research.* 2017;19(1):e9.
20. Nejad PA, Fathi M, Nejad RK, Nejad MJ. Study patterns of referring to root canal treatment professionals by general dental practitioners. *J Res Med Dent Sci.* 2018;6:36-42.
20. Sjögren U, Hägglund B, Sundqvist G, Wing K. Factors affecting the long-term results of endodontic treatment. *Journal of Endodontics.* 1990;16(10):498-504.
21. Burry JC, Stover S, Eichmiller F, Bhagavatula P. Outcomes of primary endodontic therapy provided by endodontic specialists compared with other providers. *Journal of Endodontics.* 2016;42(5):702-5.
22. Janczarek M, Cieszko-Buka M, Bachanek T, Chałas R. Survey-based research on patients' knowledge about endodontic treatment. *Polish Journal of Public Health.* 2014;124(3):134-7.
23. Al Johara A. Factors affecting utilization of dental health services and satisfaction among adolescent females in Riyadh City. *The Saudi Dental journal.* 2010;22(1):19-25.
24. Iqbal M, Jameel A, Mohsin G. Factors affecting patients' choice of dental services. *PODJ.* 2014;34(4):691-95.
25. Armfield JM. What goes around comes around: revisiting the hypothesized vicious cycle of dental fear and avoidance. *Community Dentistry and Oral Epidemiology.* 2013;41(3):279-87.