



Özgün Araştırma/Research Article

Knowledge and awareness levels of dentists' about the endo-perio lesions: the questionnaire-based research

Diş hekimlerinin endo-perio lezyonlar hakkında bilgi ve farkındalık düzeyleri: anket çalışması

Neslihan YILMAZ ÇIRAKOĞLU¹ , Fatih KARAYÜREK² 

¹Faculty of Dentistry, Department of Endodontics, Karabük University, 78050, Karabük-Turkey

²Faculty of Dentistry, Department of Periodontology, Çankırı Karatekin University, 18200, Çankırı-Turkey

Atıf gösterme/Cite this article as: Yılmaz Çırakoğlu N, Karayürek F. Knowledge and awareness levels of dentists' about the endo-perio lesions: the questionnaire-based research.. *ADYÜ Sağlık Bilimleri Derg.* 2021;7(1):64-70. doi:10.30569.adiyamansaglik.815597

Abstract

Aim: The aim of this study was to determine level of knowledge and awareness of the dentists in Turkey about the endo-perio lesions.

Materials and Methods: 225 dentists who answered the questionnaire from 387 dentists were included in the study. In the survey consisting of two parts, 12 questions were asked on demographic information, risk factors and the definition of the disease. The data obtained were analysed with Minitab 17 statistical software using T test, Chi-square test and Mann-Whitney U test.

Results: Endodontics ($p=0.001$) and periodontists ($p<0.001$) were found to be significantly aware of EPL. It was observed that general practitioners did not have significant awareness about EPL ($p<0.001$)

Conclusion: The level of awareness about EPL in specialist dentistry other than endodontists and periodontologists was found to be lower in non-specialist dentists.

Keywords: Dentist; Endo-perio lesion; Awareness.

Öz

Amaç: Bu çalışmanın amacı, Türkiye'deki diş hekimlerinin endo-perio lezyonlar (EPL) hakkında bilgi ve farkındalık düzeylerini belirlemektir.

Gereç ve Yöntem: 387 diş hekiminden ankete cevap veren 225 diş hekimi çalışmaya dahil edilmiştir. İki bölümden oluşan anket formunda demografik bilgiler, risk faktörleri ve hastalığın tanımı hakkında 12 soru sorulmuştur. Elde edilen veriler T testi, Ki-kare testi ve Mann-Whitney U testi kullanılarak Minitab 17 istatistik yazılımı ile analiz edilmiştir.

Bulgular: Endodontist ($p=0,001$) ve periodontistlerde ($p<0.001$) farkındalık anlamlı bulundu. Pratisyen hekimlerin ise EPL konusunda anlamlı olarak farkındalıklarının olmadığı görüldü ($p<0.001$).

Sonuç: EPL hakkındaki farkındalık düzeyi uzman olmayan diş hekimlerinde ve endodontist ve periodontologlar dışındaki diğer uzman diş hekimlerinde daha düşük bulunmuştur.

Anahtar Kelimeler: Diş hekimi; Endo-perio lezyon; Farkındalık.

Yazışma Adresi/Address for Correspondence: Neslihan YILMAZ ÇIRAKOĞLU, Faculty of Dentistry, Department of Endodontics, Karabük University, 78050, Karabük-Turkey, E-mail: neslihan.yilmazcirakoglu@karabuk.edu.tr

Geliş Tarihi/Received:28.10.2020

Kabul Tarihi/Accepted:16.01.2021


Yayın Tarihi/Published online:23.04.2021



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Introduction

The tooth, the supporting tissues around it and the pulp in it are a biologic complex that should be regarded together. The connection of these constructions' effects each other during health, function and disease. The relationship between the periodontium and the dental pulp appears through various pathways consisting of the exposed dentinal tubules, lateral and accessory canals or apical foramen. These anatomical buildings facilitate improvement of diseases with synchronous pulpal tissue and periodontal connection termed endo-perio lesions (EPL).^{1,2}

Identification of primary endodontic lesions and primary periodontal lesions usually exhibit no clinical challenge. In primary periodontal disease, the pulp is vital and respond to vitality testing. In primary endodontic disease, the pulp is infected and devital. But, primary endodontic disease with secondary periodontal relationship, primary periodontal disease with secondary endodontic relationship, or combined diseases are clinically and radiographically very identical and very difficult their diagnosis.³ Etiologic causes, for instance viruses and bacteria, likewise promoting factors, such as trauma, root resorptions, perforations, cracks and dental abnormalities, play an important role in the development and progression of such lesions. Prognosis and management of endodontic-periodontal lesions alter, subject to the aetiology, pathogenesis and impeccable diagnosis of each specific condition.⁴

Dental injuries or trauma may occur in many forms but commonly may be categorized as enamel fractures, crown fractures without pulp association, crown fractures with pulp association, crown-root fracture, root fracture, luxation, and avulsion. Management of dental injuries differs depending on the kind of injury and it will state pulpal and periodontal ligament healing prognosis.⁵ For these reasons, trauma is one of the important causes of EPL. Iatrogenic factors such as root canal perforations are serious complications during dental treatment and have a rather poor prognosis. It may also be a causative factor for the EPL.⁶

The treatment of these lesions is a challenge and treatment planning need to consider the involvement of the periodontal and pulpal compartment. Considering all of these; Pulpal and periodontal problems are responsible for more than 50% of tooth mortality.⁷

In the microbiology of EPL, it was observed that the pathogens that cause disease in the root canal and periodontal pocket are similar to each other. These bacteria, also known as red and orange complex, include *Porphyromonas gingivalis*, *Tannerella Forsythia* and *Fusobacterium*, *Prevotella* and *Treponema* species.⁸

The objectives of the present study were as follows:

- To evaluate the knowledge, attitude, and awareness about the EPL among general dental practitioners and specialists.
- To assess what might be done to increase the level of knowledge about EPL by general practitioners and specialists and indirectly reduce tooth loss.

Therefore, the primary objective of this research was to determine and measure the current level of knowledge and awareness of the dentists who served in Turkey's about the EPL.

Materials and Methods

Research design

In this research, a self-administered questionnaire was sent to general dentists and specialist working in Turkey,

Population and sample

Sample size was determined using Power analysis. The dentists interested in the study were selected from private and public dental clinics and dental colleges in the Turkey. The total number of questionnaires distributed among the dentists was 387 of which the total number of dentists who answered the questionnaire was 225, comprising of 115 general dentists, 14 oral surgeons, 22 endodontists, 13 orthodontists, 23 periodontists, 12 pedodontics, 12 prosthodontists and 14 oral radiologist. Therefore, the participation rate was calculated as 58.13%.

Data collection

The questionnaire form was read 20 dentists as a pilot study in order to test its intelligibility. Questionnaires were distributed to the dentists either by 'WhatsApp' application and e-mail or handed over personally. The study was conducted, and the data were compiled within a period of two months.

Information request form

The questionnaire had two main parts, a total of 12 questions, and took nearly 10 minutes to complete. The first part was on the respondents' demographic information. The second part was descriptive questions about risk factors and description of disease for evaluating the dentists' knowledge and educational experience. It has been prepared in such a way as to allow participants to choose more than one factor after they are listed other factors that will not lead to this condition together with the situations that have the potential to cause EPL. In addition, according to the classification of the EPL by Simon *et al.* descriptions of the disease were directed to the participants in writing as multiple choice questions. It was decided that the participants who answered these risk factors and the definition of the disease correctly were aware of the EPL.⁹

Statistical analysis

The statistical analysis of the data was performed using MiniTab 17 Statistical Software (Statistical Software Release, Version 17.3.1. Minitab Inc. USA). Descriptive statistics were obtained in frequency and percentage. T test was used for multiple comparisons of normally distributed variables with continuous variation. Mann-Whitney U test was used for non-normally distributed variables. Chi-square test used in the evaluation of the binary comparisons. *p* values <0.05 were used for indication of statistical significance for all tests.

The ethical aspect of research

Ethical approval for the study was obtained from the Ethics Committee of University with the decision (2020/203). This study was conducted in compliance with the Helsinki Declaration.

Results

The average age of 225 dentists included in the study was found to be 33.6 ± 7.187 . Of the dentists participating in the research, 111 (49.4%) work in public hospitals, 48 (21.3%) in the private clinics and 66 (29.3%) as university members. Also 115 general dentists, 14 oral surgeons, 22 endodontists, 13 orthodontists, 23 periodontists, 12 pedodontics, 12 prosthodontists and 14 oral radiologist participated in the study. The demographic data of the participants are shown in Table 1.

The thirty-five of the male participants were aware of the EPL (39.77 %) and the sixty-two (45.25%) of the female participants were aware. There was no statistically significant difference between the gender and the level of knowledge and aware in the study ($p=0.417$) (Table 2). The forty-five of the married people were aware of EPL (35%), the forty-eight of the single individuals were found to be aware (54.54%). A statistically significant difference was found between the marital status of the participants and the level of knowledge and awareness of the EPL ($p=0.002$) (Table 2). Along with these results, there was no statistically significant difference between gender by following scientific publications and journals. On the other hand, there is a significant relationship with the marital status (Table 3).

The dentists who agreed to participate in the study were divided into 3 groups by age such as 23-35, 36-45 and 46-70. There was no statistical difference between the ages of the participants and the knowledge and awareness levels of the EPL ($p=0.102$, $p>0.05$) (Table 2).

The one hundred and sixty-five of the dentists who participated in the study stated that they followed scientific publications and journals (72.89%), the sixty-one of them did not (27.11%). It was found that the eight-two of the followers (50%) and the fifteen of those who did not follow were aware of EPL (24.5%). A statistically significant difference was found between the participants' following scientific publications and the level of knowledge and awareness of EPL ($p=0.001$) (Table 2).

Table 1. The demographic data of the participants.

		Number	Percent
Gender	Male	88	39.1
	Female	137	60.9
Age	23-35	164	72.9
	36-45	46	20.4
	46-70	15	6.7
Marital status	Single	85	37.8
	Married	140	62.2
Service institutions	Public Hospital	111	49.4
	Private Clinics	48	21.3
	University	66	29.3
Speciality	General Dentistry	115	51.1
	Oral Surgery	14	6.2
	Periodontist	23	10.2
	Endodontist	22	10
	Orthodontist	13	5.8
	Pedodontist	12	5.3
	Prosthodontist	12	5.3
Oral Radiologist	14	6.2	

Table 2. The comparison of knowledge level with demographic data.

		Knowledge (+)	Knowledge (-)	Percent	<i>p</i> value
Gender	Male	35	53	39.77	0.417
	Female	62	75	45.25	
Marital status	Single	48	37	54.54	0.002
	Married	49	91	35	
Following Scientific article and Journals	Yes	82	82	50	< 0.001
	No	15	46	24.59	
Service institutions	Public Hospitals	37	74	33.33	0.001
	Private Clinics	20	28	41.66	
	University	40	26	66.60	
Age	23-35	76	88	46.34	0.002
	36-45	18	28	39.13	
	46-70	3	12	20	
Speciality	General Dentistry	33	82	28.69	< 0.001
	Oral Surgery	3	11	21.42	
	Periodontist	17	6	73.91	
	Endodontist	16	6	72.72	
	Orthodontist	9	4	69.23	
	Pedodontist	8	4	66.67	
	Prosthodontist	6	6	50	
Oral Radiologist	5	9	35.71		

*Chi-square test used for *p* values; *p* values <0.05 were used for indication of statistical significance.

Table 3. The comparison of gender and marital status with scientific publication and journal follow-up

		Yes	No	<i>p</i> value
Gender	Male	61	27	0.336
	Female	103	34	
Marital Status	Single	72	13	0.001
	Married	92	48	

*Chi-square test used for *p* values; *p* values <0.05 were used for indication of statistical significance.

When the awareness of dentists participating in the study about EPL is evaluated in terms of the institutions they work with; the thirty-eight of those serving in public hospitals (33.33%), the twenty of those serving in private clinic (41.66%) and the forty of those

serving at university were aware (60.6%). According to these results, a statistically significant difference was found between the institution where the participants worked and the knowledge and awareness levels of the EPL. The dentist serving public hospitals ($p=0.001$) and the university members ($p=0.000$) were evaluated among themselves in terms of awareness, so statistically significant differences were found. While the awareness of those working in the public hospital was significantly low, those working at the university were significantly higher. The dentists serving in the private clinics showed

no significant difference comparing university members and dentists serving in the public hospitals in the levels of knowledge and awareness.

In evaluating the awareness of specialist dentists about EPL according to their areas of expertise; endodontics ($p=0.001$) and periodontists ($p<0.001$) were found to be significantly aware of EPL comparing other expert dentists. It was observed that general practitioners did not have significant awareness about EPL ($p<0.001$) comparing other expert dentists. There was no significant difference in terms of awareness among dentists in other specialties.

Discussion

In this context, in order to evaluate the level of knowledge and awareness of physicians about EPL, nineteen options were presented that dentists may be among the risk factors of EPL, and dentists had the option to choose more than one of these options. In addition, a four-question mini test was also directed on the definition of the disease.

One of the most casual difficulties in today's clinical practice is to management EPL. Synchronized presence of pulpal diseases and inflammatory periodontal diseases can elaborated diagnosis and treatment planning and influence the sequence of care to be performed.¹ This is generally appropriate for patients of progressive periodontitis, tooth loss and pulpal diseases. An accurate anamnesis and conscientious clinical and radiographic examination are essential to describe and exactly decide the addition of each lesion to patient's problem.^{10,11}

Endodontic periodontal lesions are an acute or chronic form that also affects both pulp and periodontal tissues. Trauma or iatrogenic factors occurring in the teeth can manifest as painful abscesses in EPL.⁸ These lesions can also cause periodontal tissue loss, pulp inflammation or necrosis due to bacterial origin.¹² It has been stated that endodontic infections increase periodontal pocket formation and are a risk factor for the formation of periodontitis.¹³ While periodontitis, trauma and iatrogenic conditions are evaluated as the main risk group for EPL,

dental caries, porcelain prostheses, furcation and grooves are among the other risk group.⁸ Accessory (or lateral) channels, dentin tubules, and apical foramen serve as a bridge that allows the pulp and periodontium to communicate with each other and other tissues. pathogenic bacteria, using these passages, affect other tissues and spread the infection.^{14,15}

Simon et al. has developed a classification system for EPL. These are classified as follows: (1) primary endodontic lesions, (2) Primary endodontic lesions with secondary periodontal relationship, (3) primary periodontal lesions, (4) primary periodontal lesions with secondary endodontic relationship; and (5) "true" combined lesions (9). In the classification of periodontal diseases, announced by the American Academy of Periodontology in 1999, a separate section on EPL was opened. According to this classification, besides the definitions of EPL, the classification was made according to the symptoms of the disease. Thus, it is aimed to make the diagnosis of the disease easier by the clinicians.¹⁶

Considering demographic data, it was seen that there was no significant relationship between gender and awareness level, but there was a significant difference with marital status. Accordingly, the knowledge and awareness of single individuals about EPL was higher than married individuals. This result can be thought to be due to the fact that married individuals can spend less time for vocational training and courses because of their family responsibilities.

In this study, the number of clinicians aware of risk factors and disease definition for EPL was 97 out of 225 participants (43.11%). This rate is higher for specialist dentists working at the university (60.6%). This rate is even lower for clinicians working in the private clinic and dentists working in the public hospital (41.66%, 33.33%). The higher rate of specialist dentists working at the university can be attributed to following current publications and to high communication between the departments.

Following the diagnosis of endodontic-periodontal lesions clinically, correct prognosis is very important. The correct prognosis also depends on a reasonable treatment plan.^{17,18} The fact that clinicians are convicted about EPL as a result of their experience leads to inadequate treatments. sometimes it causes loss of labor and time as a result of starting treatment of desperate teeth.¹⁹ In this study, it is considered that the level of awareness and knowledge is lower in dentists serving in the public hospital and private clinic, since the rate of following current scientific publications and journals is lower than the dentists serving in the university.

Similar to results our study, knowledge and awareness levels of dentists' about EPL was found to be quite low in previous studies.^{20,21} Khandelwal et. al was reported that a lack of experience was evident amongst the participants except endodontists and periodontists.²¹ Also the previous studies were investigated the awareness and knowledge levels of general dentists' other diseases such as oral cancer, medication-related osteonecrosis of the jaw and temporomandibular disorders, where general dentists are less frequently encountered in dentistry. In these studies, the knowledge and awareness levels of general dentists against these diseases were found low.²²⁻²⁴

Among dentists who are specialists, periodontists and endodontists have higher awareness and knowledge level than other dentists in other specialties. This is one of the expected results of the study. The high level of awareness of endodontics and periodontists about EPL is thought to be due to possibility that these lesions are consistently a subject within their specialty.

Study Limitation

Substantially, the limitation in this study is that the number of specialist dentists returning to the survey is less than that of general dentists.

Conclusion

In this study, the level of knowledge and awareness about EPL was higher in dentists who continue their academic studies at the

university than dentists working in the public hospital and private clinics. Specialist dentists showed more positive results than general dentists. Contrary to expectations; the awareness and knowledge levels were low in other specialist dentists except for endodontist and periodontists. Also, the awareness and knowledge level of single dentists was higher than married dentists.

In order to increase the knowledge level of dentists in the diagnosis and treatment of EPL, holding periodic seminars and courses for dentists working in public hospitals and private clinics might give more successful results with the increase of knowledge in dentists who encounter these lesions. The possibility that dentists who are trained in specialties receive lessons about EPL during their specialization training might prevent the loss of labor and time in the prognosis of possible EPL in the future.

Ethics Committee Approval

Approval was obtained from the Karabük University Non-Interventional Clinical Research Ethics Committee (no:2020/203) for the research. The study was also carried out in accordance with the Helsinki Declaration of Principles.

Informed Consent

All participants in this study were informed both verbally and in written. Informed consent was signed by all participants.

Author Contributions

Study design: NYÇ, FK; Data collection: NYÇ, FK; Data analysis: NYÇ; Manuscript writing: NYÇ, FK.

Acknowledgements

We gratefully thanks who participated in this study.

Conflict of Interest

There are no conflicts of interest.

Financial Disclosure

This study has not been financially supported.

Statements

This study has not been presented in any National or International Meeting.

Peer-review

Externally peer-reviewed.

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