

## Original Research Article

# Awareness and knowledge of endo-perio lesions among fifth year students and interns at King Saud Dental College: a questionnaire-based study

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## ABSTRACT

**Background:** This study aims to assess the diagnostic knowledge and understanding of endo-perio lesions among senior dental students and interns enrolled at King Saud College of Dentistry.

**Methods:** A cross-sectional questionnaire-based study was conducted using Google Forms. The questionnaire included two radiographic case images and assessed participants' experience with endo-perio lesions, confidence in diagnosis, and familiarity with treatment approaches. The study included 200 participants, consisting of 140 interns and 60 5th-year students.

**Results:** The majority of participants (61%) reported encountering endo-perio lesions in their clinics. Among the participants, 50% expressed confidence in diagnosing these lesions. Intern students demonstrated higher knowledge and awareness of endo-perio lesions compared to 5th-year students. Statistically significant differences were observed in the awareness of endo-perio lesions and confidence in diagnosis between the two groups. However, both groups showed room for improvement in their diagnostic and treatment capabilities.

**Conclusions:** The findings indicate a need for enhanced education and training in this area, particularly for 5th-year students. Incorporating comprehensive theoretical education, clinical case management, and continuing education courses may help improve students' diagnostic skills and treatment outcomes for endo-perio lesions.

**Keywords:** Endo-perio, Intern's knowledge, Fifth year student's knowledge, Lesions

## INTRODUCTION

The pulp and the periodontium exhibit obvious relationships, which have been shown in several studies. The periodontal tissues may potentially get an infection when the pulp becomes infected. Endodontic or periodontal disease alone are less likely to cause tooth loss than endo-perio lesions. To successfully treat

endodontic and periodontal illnesses, endodontists and periodontists must work together.<sup>1,2</sup> Nearly 50% of all cases of tooth loss (EPL) are caused by endodontic infection, periodontal disease, or a combination of the two in the form of endo-perio lesions. The development of combined EPL is a result of the tight anatomical and functional ties between periodontal and endodontic tissues. From the same embryological and morphological predecessor, the pulp and periodontium grow. Due to the

similarities in the pathophysiology of the two illnesses and the numerous pathways that connect them, a multidisciplinary approach is required. Even though there has been a lot published about these lesions throughout the years, clinicians still struggle to recognize and treat them.<sup>3,4</sup> The endodontic therapy's success rates when used in routine dental practice. Many cross-sectional studies carried out on populations in different countries have shown that apical periodontitis is common among root-filled teeth (22-61%), and radiographically insufficient root fillings are common (47-86%).<sup>5,6</sup> Endodontic-periodontal disorders are characterized by the involvement of the pulp and periodontal disease in the same tooth. It may be challenging to diagnose a single lesion since it may display signs of both endodontic and periodontal involvement. This questionnaire-based study designed to assess the endo-perio diagnostic information that senior students and interns at King Saud collage of dentistry already had.<sup>7</sup>

## METHODS

A cross-sectional questionnaire-based study (Google forms) contains two questions asking the participants if they had seen an endo perio lesion in their clinic and are they confident to diagnose the case correctly. Two radiographic photos. The first case clearly shows an endo-perio lesion the second case clearly shows a perio-endo lesion. The participants will be asked about the diagnosis and the first line of treatment. All cases were taken from published case reports.<sup>8,9</sup> The questionnaire was conducted among interns and undergraduate students at King Saud University (KSU). Our sample consisted of 2 different groups representing different levels and their respective clinical knowledge, Intern and 5<sup>th</sup> year students. A total of 200 participant's responses were analyzed, 140 responses were among interns group and the rest 60 responses were among 5<sup>th</sup> year students.

### *Inclusion criteria*

Inclusion criteria were; dental students currently enrolled in the fifth year of their dental program. Dental interns currently undergoing their internship program at Dental university hospital at king Saud university. Participants who provided informed consent to participate in the study. Participants willing to complete the questionnaire and be part of the knowledge assessment regarding endo-perio lesions.

### *Exclusion criteria*

Exclusion criteria were; Dental students or interns who were not enrolled in the fifth year or were not part of the internship program at Dental university hospital at king Saud university. Participants who did not provide informed consent to participate in the study. Participants unwilling or unable to complete the questionnaire or knowledge assessment regarding endo-perio lesions. Participants with a history of prior training or coursework

specifically focused on endo-perio lesions or those who had completed courses or training in advanced endodontics and periodontics.

These inclusion and exclusion criteria were established to ensure that the study included participants with the appropriate background and experience to evaluate their knowledge and awareness of endo-perio lesions. The criteria were designed to minimize any potential bias and ensure the relevance of the study results to the target population of dental students and interns at Dental university hospital at king Saud university.

### *Study duration and future implications*

The data for this study were collected from May 2023 to August 2023. Future implications would be determining the current knowledge of interns and dental students by using clinical cases and possible reform of the university curriculum to be more focused on the subject.

### *Data analysis*

After data collection, the raw data was checked, cleaned, and analyzed using SPSS software version 25. Frequencies and percentages were calculated to describe respondents' profiles and questionnaire questions. Chi-square was utilized for significant relationships between variables. A p value <0.05 was considered significant.

## RESULTS

A total of 200 participants were investigated in this study, 140 (70%) were interns and 60 (30%) were 5<sup>th</sup> year students. The majority, 61% of them, had seen an endo-perio lesion in their clinics. However, 39% of them had never seen an endo-perio lesions in their clinics. But half of them 100 (50%) agreed that they had the confidence to diagnose endo-perio lesions, while 39% of participants do not give an exact response whether they confident to diagnose endo-perio lesions or not and only 11% of participants they declare clearly that they hadn't the confidence to say that they can diagnose endo-perio lesions.

### *Knowledge of endo-perio lesions among 5<sup>th</sup> year students and interns in dental college*

5<sup>th</sup> year students result: Knowledge of endo-perio lesions was measured by testing students' awareness about the diagnosis and first line of treatment for endo-perio lesions. Students were given a photo for teeth 37 and 46 to select the correct diagnosis and first line treatment for the case. As shown in (Table 2), regarding 5<sup>th</sup> year students' knowledge of endo-perio lesions, the overall percentage of correct answers was (50.8%). The majority of 5<sup>th</sup> year students wrongly diagnosed tooth number 37 (Upon seeing radiographic photo of tooth No #37).

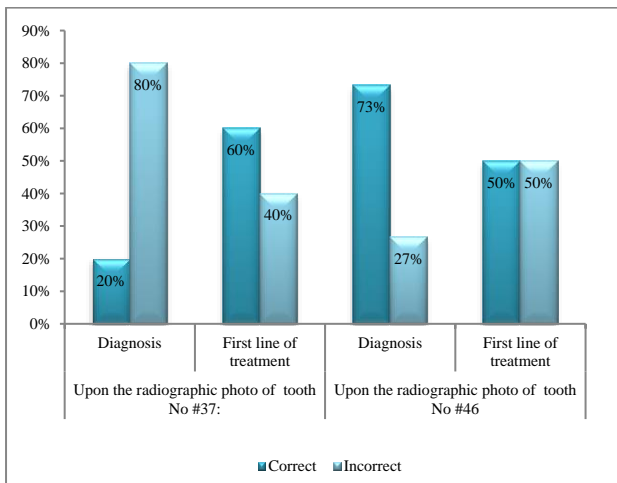
**Table 1: Awareness about endo-perio lesions (n=200).**

Parameters	N	%
<b>Have you ever seen an endo-perio lesion in your clinic?</b>		
Yes	122	61.0
No	78	39.0
<b>Are you confident to diagnose endo Perio lesions</b>		
Not agree	22	11.0
May be	78	39.0
Agree	100	50.0

**Table 2: Knowledge of endo-perio lesions among 5<sup>th</sup> year students (n=60).**

Variables	Answers			Rank
	Correct	Incorrect		
<b>Upon the radiographic photo of tooth No #37:</b>				
Diagnosis: (CA: Primary endo secondary perio)	N 12	48		4
	% 20	80		
First line of treatment (CA: endo then perio)	N 36	24		2
	% 60	40		
<b>Upon the radiographic photo of tooth No #46:</b>				
Diagnosis: (CA: primary perio secondary endo)	N 44	16		1
	% 73.3	26.7		
First line of treatment (CA: endo then perio)	N 30	30		3
	% 50	50		

CA; correct answer



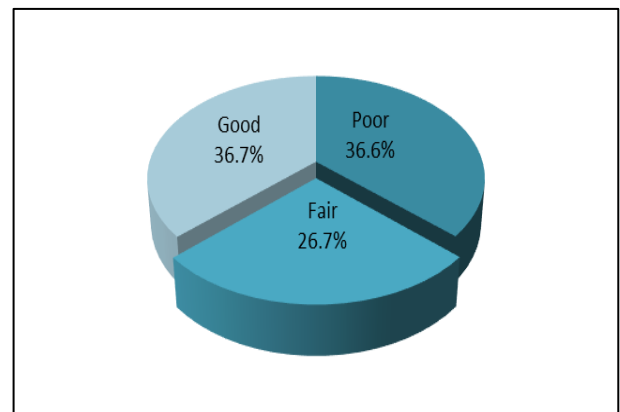
**Figure 1: Knowledge of endo-perio lesions among 5<sup>th</sup> year students (n=60).**

But 20% got the correct answer or diagnosis. However, 60% of 5<sup>th</sup> year students correctly choose the right first line treatment i.e., endo then perio. In regards to tooth number 46, The 5<sup>th</sup> year students show a high knowledge about the diagnosis of tooth number 46, the majority 73.3% correctly diagnosed the case of tooth number 46,

while 26.7% failed to get the correct diagnosis (Upon seeing radiographic photo of tooth No #46).

**Table 3: Knowledge scores of 5<sup>th</sup> year students (n=60).**

Knowledge level	N	%		
Poor (0-1)	22	36.7		
Fair (2)	16	26.7		
Good (3-4)	22	36.7		
Total	60	100		
Correct answers	Min.	Max.	Mean	SD
	0	4	2.03	1.02



**Figure 2: Knowledge scores.**

On the other hand, half of 5<sup>th</sup> year students correctly choose the right first line treatment i.e., endo then perio. Knowledge levels: to simplify the interpretation of the results, the knowledge score was classified as follows: Poor knowledge (≤1) (0-1), Fair knowledge (2) and good knowledge (3-4). As shown in the above (Table 3), that the average knowledge was 2.03 (SD=1.02). The maximum score obtained by 5<sup>th</sup> year students was 4 out of 4, the minimum was 0. As presented in Table 3 and Figure 4, that 36.7% of 5<sup>th</sup> year students have good knowledge pertained to endo-perio lesions. Similarly, 36.7% of 5<sup>th</sup> year students had poor knowledge regarding endo-perio lesions. However, 26.7% of 5<sup>th</sup> year students had a fair knowledge regarding endo-perio lesions.

Intern students results: as shown in (Table 4), regarding intern's knowledge of endo-perio lesions, the overall percentage of correct answers was (68.6%). The majority of the intern students wrongly diagnosed tooth number 37 (Upon seeing radiographic photo of tooth No #37). But, 31% got the correct answer or diagnosis. On the other hand, 82.9% of the intern students correctly chose the right first line treatment i.e. endo then perio. In regards to tooth number 46, the interns shows a high knowledge about the diagnosis, the majority 88.6% correctly diagnosed the case of tooth number 46, while 11.4% failed to get the correct diagnosis (Upon seeing radiographic photo of tooth No #46). However, the

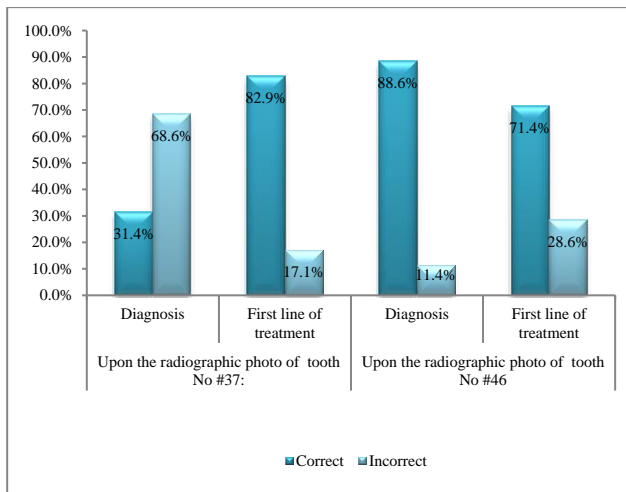
majority of intern correctly choose the right first line treatment i.e., endo then perio for tooth number 46.

**Table 4: Knowledge of endo-perio lesions among intern students (n=140).**

Items	Answers	
	Correct	Incorrect
<b>Upon the radiographic photo of tooth, No #37:</b>		
Diagnosis: (CA: Primary endo secondary perio)	N 44 % 31.4	96 68.6
First line of treatment (CA: endo then perio)	N 116 % 82.9	24 17.1
<b>Upon the radiographic photo of tooth, No #46:</b>		
Diagnosis: (CA: primary perio secondary endo)	N 124 % 88.6	16 11.4
First line of treatment (CA: endo then perio)	N 100 % 71.4	40 28.6

**Table 5: Knowledge scores of interns (n=140).**

Knowledge level	N	%
Poor (0-1)	24	17.1
Fair (2)	19	13.6
Good (3-4)	97	69.3
<b>Total</b>	140	100
<b>Correct answers</b>	<b>Min.</b>	<b>Max.</b>
	0	4
	<b>Mean</b>	<b>SD</b>
	2.74	0.92



**Figure 3: Knowledge of endo-perio lesions among intern students (n=140).**

Knowledge levels: as shown in the above (Table 5), that the average knowledge was 2.74 (SD=0.92). The maximum score obtained by intern students was 4 out of 4, the minimum was 0 As presented in Table 5 and Figure 4, that 69.3% of intern students have good knowledge pertained to endo-perio lesions, while 17.1% had poor knowledge regarding endo-perio lesions. However, 13.6% of intern students had a fair knowledge regarding endo-perio lesions.

**Inferential statistics**

As shown in (Table 6), that intern students had a higher knowledge than 5<sup>th</sup> year students regarding awareness about endo- perio lesion. 82.2% of intern students had a good knowledge about endo- perio lesion, in contrast to 17.8% for 5<sup>th</sup> year students (Chi-square=20.41, p=0.000). That 74% of intern students reported confident enough to diagnose endo-perio lesions, only 26.2% of 5<sup>th</sup> year students were confident to do that. Also, for the first line treatment of tooth number 37 and diagnosis and first line treatment of tooth 46, the intern students show a statistically higher awareness than 5<sup>th</sup> year students (p<0.05). However, no significant difference observed in diagnosis of tooth number 37 (p>0.05).

**DISCUSSION**

An adequate Endo-Perio relationship knowledge is required for proper diagnosis and clinical management of Endo-Perio lesions. One of the most casual difficulties in today’s clinical practice is managing 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. 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. subsequently, decide the appropriate sequence of treatment. Unfortunately, the majority of our 5<sup>th</sup> year students participants failed to diagnose Endo-Perio cases and to demonstrate a proper treatment knowledge; similarly, very minority of our 5<sup>th</sup> year students participants were able to demonstrate proper treatment knowledge, however majority of our dental interns participants shows good knowledge level regarding Endo-Perio cases and were able to demonstrate proper treatment knowledge; similarly, very minority of our dental interns participants shows low knowledge level and were not able to diagnosis and demonstrate a proper treatment knowledge. The overall knowledge concerning Endo-Perio relationship among most of our dental interns' participants was good, however regarding 5<sup>th</sup> year students participants the overall knowledge was deficient. This could be related to the involvement of mainly theoretical education regarding Endo-Perio relationship in our undergraduate curriculum through lectures and seminars with limited clinical training involvement of Endo-Perio cases, these clinical cases are usually referred to postgraduate clinics. Alsharif SB study shows a low level of knowledge regarding Endo-Perio relationship among their participants.<sup>10</sup> Also other cross-sectional studies have found comparable results.<sup>11,12</sup> In addition, our study reported no significant association between participants’ knowledge and gender, which is similar to Yılmaz Çirakoğlu and Karayürek’s study.<sup>12</sup>

**Table 6: comparison between 5th year students and interns based on their knowledge of endo-perio lesion.**

Parameters	Academic level N (%)		Chi-square	P value
	5 <sup>th</sup> year	Intern		
<b>Seeing an endo- perio lesion in your clinic</b>				
Yes	22 (18)	100 (82)	21.33	0.000**
No	38 (48.7)	40 (51.3)		
<b>Confident enough to diagnose endo-perio lesions</b>				
Not agree	14 (63.6)	8 (36.4)	13.32	0.001**
May be	20 (25.6)	58 (74.4)		
Agree	26 (26.0)	74 (74.0)		
<b>Diagnosis of tooth No #37.</b>				
Primary endo secondary perio	12 (21.4)	44 (78.6)	2.72	0.099
Primary perio secondary endo	48 (33.3)	96 (66.7)		
<b>The first line of treatment</b>				
Endo then perio	36 (23.7)	116 (76.3)	12.03	0.001**
Perio then endo	24 (50)	24 (50)		
<b>Diagnosis of tooth No #46.</b>				
Primary endo secondary perio	16 (50)	16 (50)	7.26	0.007**
Primary perio secondary endo	44 (26.2)	124 (73.8)		
<b>The first line of treatment</b>				
Endo then perio	30 (23.1)	100 (76.9)	8.48	0.004**
Perio then endo	30 (42.9)	40 (57.1)		
<b>Overall knowledge</b>				
Poor	22 (47.8)	24 (52.2)	20.41	0.000**
Fair	17 (47.2)	19 (52.8)		
Good	21 (17.8)	97 (82.2)		

Chi-square test: \*\*p<0.01, \*p<0.05

Our study revealed that the majority of our participants had 5th year students deficient knowledge regarding Endo-Perio relationship. As adequate Endo-perio relationship knowledge is essential for proper clinical management of Endo-Perio lesions and in order to compensate for this reported deficiency, changing teaching strategies to include not only comprehensive theoretical education but also management of clinical cases and implementing continuing education courses are suggested.

### CONCLUSION

This study highlights the importance of adequate knowledge and understanding of the endo-perio relationship for accurate diagnosis and management of endo-perio lesions. The findings indicate a need for enhanced education and training in this area, particularly for 5<sup>th</sup> year students. Incorporating comprehensive theoretical education, clinical case management, and continuing education courses may help improve students' diagnostic skills and treatment outcomes for endo-perio lesions.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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