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Assessment of the Awareness of General Practitioners and Newly Graduate Dentists in Diagnosing, Managing and Evaluating the Significance of Periodontal Abscess Cases in Dental Office (A Qualitative Study)

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Abstract

The purpose of this study was to evaluate the knowledge of general dental practitioners regarding the signs and symptoms, diagnosis, and management of periodontal abscesses. The study included 250 general dentists in Saudi Arabia graduated within the last five years from both governmental and private schools. A questionnaire that included questions regarding the personal data, awareness of signs and symptoms, predisposing factors, clinical and radiographic examination, and management of periodontal abscess; was distributed by hand, and some were sent by email. The result of the survey showed that overall 53.6% of participated dentists were aware of the diagnosis and treatment of periodontal abscess as an emergency occurring frequently in dental offices. The highest score was in clinical examination, where 64.1% of the participants were aware of the clinical findings. The lowest score was in signs and symptoms recognition, where the score was 45.7%. Based on the result of this study, it has been concluded that the awareness of general dentists need to be improved through frequent continuous education lectures and workshops since periodontal abscess is a common emergency that may impact teeth prognosis and the overall systemic health of affected patients.

Keywords: Awareness, General dentist, Periodontal emergencies, Periodontal abscess

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Introduction

Several acute periodontal lesions may affect the periodontium and result in symptoms ranging from slight discomfort to severe pain. These conditions include abscesses of the periodontium, necrotizing ulcerative periodontal diseases, endo-perio lesions, and muco-cutaneous lesions. Dental practitioners consider periodontal abscess a clinically significant condition since it represents one-third dental emergency affecting 6-7% of all dental patients. The periodontal abscess may result in rapid destruction of the periodontium in a limited period, which may compromise the prognosis of the affected tooth. Therefore, meticulous care and attention are needed to reach the diagnosis and to prevent systemic problems as a result of the spread of infection. After reaching a definitive diagnosis, implementation of appropriate treatment at proper time may play a vital role in improving the long-term prognosis and preventing tooth loss. [2].

The periodontal abscess is a common finding in patients with an advanced form of periodontal disease, and it is usually seen in teeth with preexisting deep pockets. The formation of periodontal abscess starts with accumulation of pus in a localized area within the gingival wall of the pocket, which destroys the collagen fiber attachment causing loss of the adjacent alveolar bone. Clinically, its presentation can vary depending on the shape of the pocket, and the anatomy of the tooth. It may appear as an oval swelling related to the lateral wall

of the gingiva of the affected tooth, or when it is deeply seated, it may result in a diffuse, red swelling. Diagnosis of the periodontal abscess can be made based on signs and symptoms, and radiographic findings. Patients may have slight discomfort to severe pain associated with the swelling. The affected tooth is usually tender to percussion with increased mobility, and patients may feel that the tooth has a sensation of elevation in the socket. Suppuration and oozing of pus are usually present. The pus discharge may drain through the sulcus or a fistula on the gingival mucosa. Assessment of the pulp of the tooth affected by swelling may help to reach a definitive diagnosis. The periodontal abscess is usually associated with a vital tooth. Radiographic examination may show normal appearance or an intrabony defect may be present. [4].

Periodontal abscess can also be seen in other circumstances like, dislodgment of calculus fragments into the periodontal tissues following supportive periodontal therapy (SPT) [9]. Acute exacerbation of a chronic case of periodontitis [10]. Following periodontal surgery with the placement of foreign body i.e. grafting material of membrane [11]. Also use of systemic antimicrobial therapy without debridement of the pocket, which leads to changes to the host defense mechanism and overgrowth of opportunistic organisms [12].

The primary cause of the periodontal abscess is infection by anaerobic bacteria, most commonly belongs to the following species: Fusobacterium, Streptococcus viridans, Actinomyces, Prevotella oralis; these are common oral commensals [7]. Recent studies have reported the involvement of other species including Treponema species, Cryptobacterium curtum, Mogibacterium species, as well as Bulleidia extructa. One-third of these species have been reported to release Beta-Lactamases that cause significant resistant to therapeutic options [8].

According to the previously mentioned information, it has been crucial to evaluate the ability and awareness of general dentists; especially the newly graduates, to examine their level of expertise in diagnosing and management of such a critical and common emergency case, which he plays a huge role and has a great significance in both Oral and general health of the affected patients.

Subjects and methods:

This study was conducted after the approval of the ethical committee in Faculty of Dentistry, Cairo University, Egypt. Under the code number 171015.The study included newly graduated general practitioners, who completed their undergraduate dental training within five years of the study. These dentists had no previous experience in the periodontology territory other than their graduate knowledge.

The study is descriptive and qualitative included 250 dentists working in governmental and private dental clinics in Jeddah--Saudi Arabia. The dentists were asked to answer a questionnaire designed to cover the main points needed to examine the adequate knowledge of a dentist when dealing with a case of emergency especially; cases of periodontal abscesses. The questionnaire was distributed by hands among the dentists, some dentists received it via E-mails, and others were filled during face to face interviews.

Results:

Sample size calculation was calculated based upon the number of working dentist which is 11,924 dentists and results of the pilot study that showed an awareness level of 42%. Using alpha level = 0.05 and 7% margin of error; the minimum estimated sample size is 188 dentists.

Sample size calculation was performed using StatCalc formulas of Epi Info 7.2.2.2 software.

Statistical analysis

Data were presented as mean, standard deviation (SD), range values for quantitative data; frequencies (n) and percentages (%) for qualitative data.

Pearson's correlation coefficient was used to determine significant correlation between knowledge scores and age. Student's t-test was used to compare between knowledge scores among participant who had governmental or private education as well as participant who had governmental or private practice.

Data analysis was performed using the IBM® SPSS® (Statistical Package for the Social Sciences) software (Version 20.0).

Results were calculated on the basis of the following criteria:

Response rate:

The questionnaire was distributed to 250 dentists; 232 dentists responded giving a response rate of 92.8%.

1. Personal data

Age:

The mean ± standard deviation values for age were 25.6 ± 2.3 years with a minimum of 22 and a maximum of 40 years old.

Gender:

Forty-two dentists (18.1%) were males, 187 dentists (80.6%) were females while 3 dentists (1.3%) didn't report their gender.

Type of education:

Forty-four dentists (19%) had governmental dental education, 186 dentists (80.2%) had private dental education while 2 dentists (0.9%) didn't report their type of education.

Type of practice:

Thirty-eight dentists (16.4%) had governmental practice, 191 dentists (82.3%) had private dental practice while 3 dentists (1.3%) didn't report their type of practice.

® IBM Corporation, NY, USA.

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General data:

The results of responses to general data questions are presented in Table 1. The average of correct responses is 45.2%.

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Question	Correct		Incorrect		No answer	
	n	%	n	%	n	%
1. Do you treat periodontal cases in your practice?	0/232	0	231/232	100	1/232	0.4
2. What type of periodontal treatment do you do in your practice?	225/232	97	5/232	2.2	2/232	0.9
3. Do you encounter periodontal emergency cases in your office?	180/232	77.6	52/232	22.4	0/232	0
4. What type of periodontal emergency do you most commonly encounter in your practice?	11/180	6.1	169/180	93.9	0/232	0
Average of Correct Scores (%)	45.2%					

Table 1: Frequencies (n) and percentages (%) of the responses to general questions.

Awareness of signs and symptoms of periodontal abscesses

The results of responses to awareness of signs and symptoms of periodontal abscesses questions are presented in Table 2. The average of correct responses is 45.7%. The highest knowledge was related to character of pain (60.8%) while the lowest knowledge was about severity of pain (12.9%).

Question	Correct		Incorrect		No answer	
	n	%	n	%	n	%
5. Onset	106/232	45.7	123/232	53	3/232	1.3
6. Duration	138/232	59.5	86/232	37.1	8/232	3.4
7. Severity of pain	30/232	12.9	197/232	84.9	5/232	2.2
8. Course of pain	115/232	49.6	110/232	47.4	7/232	3
9. Character of pain	141/232	60.8	87/232	37.5	4/232	1.7
Average of Correct Scores (%)	45.7%					

Table 2: Frequencies (n) and percentages (%) of the responses to signs and symptoms of periodontal abscesses questions

Awareness of clinical examination of patients with periodontal abscesses:

The results of responses to awareness of clinical examination of patients with periodontal abscesses questions are presented in Table 3. The average of correct responses is 64.1%. The highest knowledge was about the usually affected teeth (93.5%) while the lowest knowledge was about location of the abscess (31.4%).

Question	Correct		Incorrect		No answer	
	n	%	n	%	n	%
10.Teeth usually affected by periodontal abscess.	217/232	93.5	12/232	5.2	3/232	1.3
11.Location of the Abscess.	73/232	31.4	154/232	66.4	5/232	2.2
12.Probing Depth in tooth affected with periodontal abscess.	121/232	52.2	106/232	45.6	5/232	2.2
13.Pain on percussion.	171/232	73.7	56/232	24.1	5/232	2.2
14.Is there any oozing of Pus?	157/232	67.7	68/232	29.3	7/232	3
15.Sensation of tooth elongation.	116/232	50	107/232	46.2	9/232	3.9
16.Tooth with periodontal abscess is usually vital or non-vital?	186/232	80.2	41/232	17.7	5/232	2.2
Average of Correct Scores (%)	64.1%					

Table 3: Frequencies (n) and percentages (%) of the responses to clinical examination questions

Other questions:

The results of responses to other questions are presented in Table 4. The average of correct responses is 59.3%. The highest knowledge was related to type of treatment, prescription of antibiotics and need for follow up (100% for each item) while the lowest knowledge was about radiographic examination of a periodontal abscess (16.3%).

Question	Correct		Incorrect		No answer	
	n	%	n	%	n	%
17.Radiographic examination of a Periodontal Abscess	38/232	16.3	194/232	83.6	0/232	0
18.Cases are most likely seen in.	39/232	16.8	193/232	83.2	0/232	0
19.Do you treat or refer a case with periodontal abscess?	121/232	52.2	111/232	47.8	0/232	0
20.What type of treatment do you perform?	121/121	100	0/121	0	0/121	0
21.Would you prescribe antibiotics?	121/121	100	0/121	0	0/121	0
22.Antibiotic type.	36/121	29.8	107/121	70.2	0/121	0
23.Need for follow up.	121/121	100	0/121	0	0/121	0
Average of Correct Scores (%)	59.3%					

Table 4: Frequencies (n) and percentages (%) of the responses to clinical examination questions

Overall awareness:

The results revealed that the awareness results were 45.2%, 45.7%, 64.1% and 59.3% regarding general knowledge, signs and symptoms, clinical examination and other questions related to periodontal abscesses, respectively. So, the average awareness is 53.6%.(Figure 1).

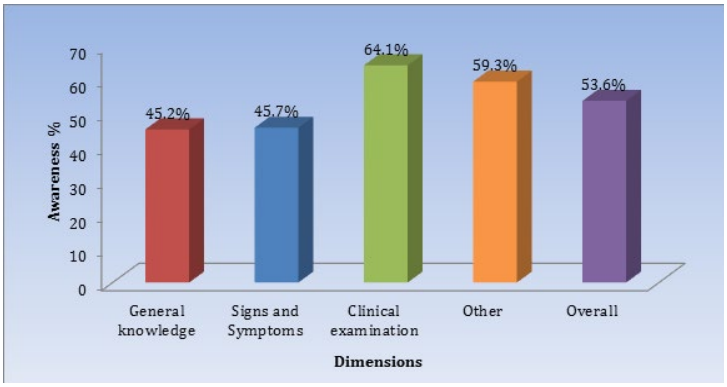

Figure 1: Bar chart representing awareness of different dimensions of the questionnaire as well as the overall awarness %

V.Correlation between knowledge and personal data

Each question was scored [1] for correct answer and (0) for wrong answer. The sum of the [23] questions' responses for each participant was calculated and used for the comparisons and correlations.

Correlation between knowledge and age:

There was no statistically significant correlation between total knowledge score and age (r = 0.136, P-value = 0.073).

Correlation between knowledge and gender:

The mean ± standard deviation values for knowledge scores were 9.9 ± 2.3 and 10.2 ± 2 in males and females, respectively. There was no statistically significant difference between knowledge scores in males and females (P-value = 0.384).

Correlation between knowledge and education:

The mean ± standard deviation values for knowledge scores were 9.8 ± 2.6 and 10.3 ± 1.9 for subjects who had governmental and private education, respectively. There was no statistically significant difference between knowledge scores of subjects who had governmental and private education (P-value = 0.144).

Correlation between knowledge and practice:

The mean ± standard deviation values for knowledge scores were 9.6 ± 2.7 and 10.3 ± 1.9 for subjects who had governmental and private practice, respectively. There was no statistically significant difference between knowledge scores of subjects who had governmental and private practice (P-value = 0.082).

Discussion:

The purpose of this research was to assess and evaluate the general periodontal knowledge of general practitioners in the dental office. Of the 250 dentists included in this study,53.6%of them were found to be aware of the signs and symptoms, clinical examination, diagnosis of periodontal abscess cases. To our knowledge, this is the first study tried to highlight the importance and high significance of diagnosing a periodontal abscess when presented in the dental office. The periodontal abscess was found to be the main reason for extraction of teeth with questionable prognosis in a group of 166 patients examined over a 40-year period[13]. Usually, the loss of one or more natural teeth leads to decreased social interaction, and it can be an indicator of the overall oral health perception of the individual.[14,15]. Mcleod et al. found that among 114 treated periodontitis patients receiving supportive periodontal therapy (SPT), and examined over a period ranged from 5-29 years; periodontal abscesses were found in 109 teeth out of 2,899 teeth. In the study, the main factors that affected tooth survival were the recurrence of infection, and the degree of clinical attachment loss together with the severity of the periodontal condition of the patient. They found that the presence of periodontal abscess was not the only reason that renders the tooth hopeless[16].

The periodontal abscess is an acute condition, which occurs due to changes in the tissue response towards an infection that alter the host response [17]. Patients with uncontrolled diabetes are highly susceptible to develop periodontal abscess [18]. In a previous study, evaluating 27 patients with type II diabetes mellitus, 17 lost their tooth; proving that uncontrolled diabetes can aggravate periodontitis, together with increasing the risk of tooth loss. These oral complications due to diabetes can be controlled by proper diagnosis and management, along with keeping good oral hygiene[19,20,21]. Therefore, it's crucial for dentists to know how to diagnose such cases.

Poulias et al [22], reported a case of 55 year- old patient presented to the office with diffuse swelling in the posterior right mandible. Intraorally, a periodontal pocket of 6m.m depth with suppuration, and swelling resembling periodontal abscess were found. The radiograph showed evidence of alveolar bone loss. They obtained a biopsy, and the histologic evaluation revealed a metastatic carcinoma of the breast. This case illustrates the great importance of the awareness of general dentists of the diagnosis and management of intraoral swelling for the well -being of the patients and the prevention of further harm.

Conclusion:

The study proved that about 53.6% of general dentists participated in the survey are aware of the diagnosis and management of emergency periodontal cases that attend the dental offices. The most important of those emergencies is periodontal abscess due to its strong correlation with the overall systemic health of patients. Needless to say that more efforts should be carried out to carry out several workshops and training programs that provide all the information on how to deal with the simple periodontal conditions non surgically and also with minor surgical procedures, as this will be of great benefit to general dentists to provide satisfactory services to their patients.

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