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Comfort Level and Knowledge of General Dental Practitioners Regarding Third Molar Extraction

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ABSTRACT

Introduction: *One of the most commonly performed procedures in dentistry is third molar removal and it is the most commonly extracted permanent tooth. Most of the patient's first visit was with general dental practitioners about third molar extraction. Hence the possibility of surgical complications must be evaluated against the benefits of the extraction.* ***Aims and Objectives:*** *To assess the level of comfort and knowledge among general dental practitioners regarding third molar extractions.* ***Materials and methods:*** *It is a descriptive cross-sectional study using a questionnaire-based survey. The questionnaire consisted of questions regarding demographic characteristics of general dental practitioners and also their level of comfort and knowledge regarding third molar extractions.* ***Results:*** *Total 142 general dental practitioners out of 177 have completed the questionnaire with a response rate of 80.22%. There was a statistically significant difference between the level of comfort score (H(2)=11.964, p=0.003), with a median of 24 for general dental practitioners with an experience of more than 10 years, and median of 18 for those with an experience between 5-10 years and median of 12 for those with an experience up to 5 years. There was a statistically significant difference (p=0.001).* ***Conclusion:*** *General dental practitioners in Riyadh, Saudi Arabia have reported a very low level of comfort regarding third molar extraction. They reported infrequent training and education in third molar extraction skills and knowledge. Those who attended continuous dental education courses and workshops related to third molar extraction in the past 2 years and those with more than 5 years of experience were significantly associated with a higher level of comfort among general dental practitioners.*

Keywords: Distoangular impaction, General dental practitioners, Mesio-angular impaction, Questionnaire, Third molar

INTRODUCTION

One of the most common problems for which patients come to a general dental practitioner routinely is a pain in relation to the third molar region. Third molars are the commonest teeth removed in dental practice [1]. The recommendation of third molar extraction by general dental practitioners (GDP) is usually for reasons not related to symptoms or pathology but to avoid possible problems in the future. It has been found that more than half of the patients follow the recommendations of GDP about third molar extractions. Hence the possibility of surgical complications must be assessed against the benefits of the extractions. A previous study reported that GDPs have poor specificity about referral decision making [2].

In the USA about 10 million third molar had been extracted annually, with a cost of over $3 billion each year. More than half of these extractions related cost and injuries were found to be unnecessary [3]. Dentist's lack of experience was found to be the main cause of postoperative complications [4]. A study reported that GDPs usually do not follow uniform guidelines while making a recommendation of third molar removal [5]. It has been reported that not all impacted teeth cause a problem of clinical significance, but each does have that potential. Literature suggested that the percentage of impacted teeth with associated pathology does not exceed 12%. This incidence rate is the same for appendicitis and cholecystitis and yet prophylactic appendectomies and cholecystectomies are not the standards of care [4-6]. Preventive extraction of asymptomatic and disease-free impacted teeth, also endangers the patient to

unnecessary discomfort, entails the risk of causing serious local complications (e.g. nerve damage, displacement of the tooth into the maxillary sinus, fracture of the maxillary tuberosity, loss of support of adjacent teeth, etc.) therefore leaving asymptomatic, non-pathologic teeth *in situ* is less traumatic and painful than early removal of third molars. Hence the decision to extract a given impacted tooth must be based on a careful evaluation of the potential benefits versus risks [6,7].

MATERIALS AND METHODS

Study Design and Area/Setting

This is a descriptive questionnaire-based survey. The study settings are Prince Sultan Military Medical City, King Abdulaziz Medical City Ministry of health, Health Care Centers, Private Dental Clinics, King Saud University (College of Dentistry), King Saud Medical City, King Saud bin Abdulaziz University for Health Sciences (College of Dentistry) in Riyadh region, Saudi Arabia. However, the responses were collected from each site.

Identification of Study Participants

The total population in the designated hospitals and medical cities was 177.

Inclusion Criteria

All GDP working in the designated centers in Riyadh, Saudi Arabia.

Exclusion Criteria

- GDPs working in the administration
- GDPs outside Riyadh

The sample size included the complete population which was 177 GDPs working at the designated centers in Riyadh, Saudi Arabia. Assuming 75% response rate and comparing the level of comfort as comfortable vs not comfortable between 2 groups, the expected difference was identified as 20% at the 95% confidence level and power of 80%.

Data Collection Process and Data instrument

The instrument was a questionnaire of 23 questions, which had 3 parts:

- GPD demographic data (6 questions)
- The level of knowledge regarding third molar extraction (10 questions)
- Comfort level regarding third molar extraction (7 questions)

The questionnaire was developed and reviewed by a consultant OMFS. Initially, the questionnaire was piloted on 50 respondents and every item was evaluated for clarity by read-aloud sessions by the investigators. The questionnaire reliability was significant with Cronbach's alpha of 940.

The first part of the questionnaire was about demographic data including age group, gender, level of training, years experience, lectures or training received recently regarding third molar extraction and workplace. The second part of the questionnaire was regarding the level of knowledge of the general practitioner regarding third molar extraction and the answer choices were agree, uncertain, disagree. The last part was regarding the level of comfort of the general practitioner regarding third molar extraction rated using a 5-point Likert scale (very uncomfortable to very comfortable). The questionnaires were administered as hand-out to all the dental health care providers working as a general practitioner in the designated study and later were collected back by the same investigator.

Data Analysis

All the data collection sheets were entered, coded, and analyzed in SPSS version 21 program. Data of all the 7 questions of the 5-points Likert-scale regarding the level of comfort was presented as frequency, percentage, Likert scale mean and standard deviation. The 5-points Likert-scale score was used to compare between variables in which very comfortable was given a score of 5 and very uncomfortable as 1, with a minimum score of 7 and a maximum of 35. Chi-square test was used to compare categorical outcomes between years of experience and level of training. The 7 Likert-scale questions regarding comfort levels were averaged and compared between age and continuous medical

education regarding third molar extractions using a Kruskal Wallis test. Comparison between gender and the level of comfort score was done using the Mann-Whitney U test. Comparison between the years of experience was presented as 3 groups and the level of comfort score was analyzed using the Kruskal-Wallis H test.

RESULTS

Total 142 GDPs out of 177 did complete the questionnaire in Riyadh region, Saudi Arabia with a response rate of 80.22%. The majority of the sample (65%) were males, 85% of the GDPs were between 24-30 years of age, 10% were 31-36 year old and only 5% were more than 37 years old. The majority of the participants (33%) worked at the private clinics, 30% worked at tertiary hospitals, 30% worked at primary health care centers and only 7% worked at academic centers (Table 1).

Table 1 Demographic details of the study participants

Characteristic		Number of GDPs	Percentage of GDPs
Age (Years)	24-30	121	85%
	30-37	15	11%
	>37	6	4%
Gender	Male	92	65%
	Female	50	35%
Years of Experience	0-5	113	80%
	6-10	18	12%
	>11	11	8%
Continuous Dental education hours in the last 2 years?	Yes	59	41%
	No	83	59%
Have you trained in oral and maxillofacial service?	Yes	70	49%
	No	72	51%
Working place	Private clinics	47	33%
	Primary health care centers	43	30%
	Tertiary hospitals	43	30%
	Academic clinical centers	9	7%

Regarding the level of the experience, 80% of the GDPs had 0-5 years of experience, 12% had 6-11 years of experience and only 8% had more than 11 years experience.

Regarding education and training in third molar extraction, 59% of the GDPs had answered with no when asked if they have received any continuous dental education regarding third molar extraction in the last 2 years. Moreover, 51% of the respondents haven't got trained in any oral and maxillofacial departments or service. Furthermore, 51% answered that they haven't had any training or attended lectures regarding basic surgical skills in the last 2 years. Finally, when asked if they received training in any oral and maxillofacial service, 51% stated that they didn't receive any training in oral maxillofacial service.

Level of Comfort

The majority of respondents have shown a low level of comfort regarding third molar extraction. Moreover, the lowest level of comfort from the respondents was regarding the distoangular third molar impacted teeth removal, with only 15% of GDPs answered that they are comfortable to perform the procedure, with a mean Likert score of 1.8. Whereas regarding the mesioangular impacted third molar extraction only 15% were comfortable in performing the procedure with a mean Likert scale of 1.8. However, the majority (56%) of the GDPs were comfortable regarding fully erupted third molar extractions with a mean Likert scale of 3.5. Only 17% were comfortable regarding fully impacted third molar extractions with a mean Likert scale of 1.9.

Regarding complications, respondents reported a very low level of comfort in a fully erupted third molar for patients with a history of complications during the last extraction procedure. Only 18% answered that they were comfortable with Likert scale mean of 2.16% of the respondents were comfortable regarding partially erupted third molar extractions with a mean Likert scale of 1.8 (Table 2).

Table 2 Level of comfort reported by GDPs regarding third molar extraction

Level of Comfort	Comfortable and somehow comfortable	Neutral	Uncomfortable and very uncomfortable	Likert-Scale Mean (SD)
Fully erupted third molar extraction	79 (56%)	50 (35%)	13 (9%)	3.5 (1)
Soft tissue impaction third molar	44 (32%)	46 (33%)	52 (36%)	3.1 (1)
Fully impacted third molar extraction	24 (17%)	24 (17%)	94 (66%)	1.9 (1.1)
Mesio-Angular impacted third molar extraction	22 (15%)	31 (22%)	89 (63%)	1.8 (1)
Disto-angular third molar impaction	22 (15%)	24 (17%)	96 (68%)	1.8 (.9)
Fully erupted third molar for patient with history of complication during last extraction procedure	26 (18%)	34 (24%)	82 (58%)	2 (1.1)
Partially erupted third molar extraction	23 (16%)	47 (33%)	72 (51%)	1.8 (1.1)

Knowledge Level

In this study, there were 10 questions to assess the knowledge regarding third molar extraction among GDPs. It was found that the knowledge of GDPs was estimated to be average. About 6 questions out of 10 were answered correctly by the majority of the respondents, the other 4 questions were answered incorrectly by the majority of the respondents. When asked about if asymptomatic impacted third molar means it is disease free (no pathology) and so is not indicated for extraction, only 35% have answered correctly. Furthermore, when asked about if Pell and Gregory's classification was about the position of the long axis of the impacted mandibular third in relation to the long axis to the second molar, only 12% have answered correctly. Moreover, only 36% have answered correctly by disagreeing that mesioangular impacted third molar is the most difficult to extract. However, the majority have answered correctly when asked if periodontal pathology can be associated with asymptomatic third molars by answering "agree''. Finally, when asked about if symptoms and pathological factors are the only reasons of third molar extraction, 40% have answered with agree and 42% have answered with disagree which is the correct answer (Table 3).

Table 3 Knowledge level of GDPs regarding third molar extraction

Knowledge level	Agree	Uncertain	Disagree
Symptoms and Pathological factors are the only reasons for third molar extraction	0.40	0.18	0.42 Correct answer
The only cause of postoperative swelling after third molar extraction is spreading of the infection	0.20	0.28	0.52 Correct answer
Periodontal pathology can be associated with asymptomatic third molars	0.61Correct answer	0.28	0.12
Pell and Gregory's classification it is about the position of the long axis of the impacted mandibular third in relation to the long axis to the second molar	0.42	0.46	0.12 Correct answer
Impacted Third molars mostly have a high incidence of pathology	0.49	0.28	0.23 Correct answer
Asymptomatic impacted third molar means its disease free (no pathology) so it is not indicated for extraction	0.44	0.21	0.35 Correct answer
Winter's Classification is based on the inclination of the impacted wisdom tooth 3rd molar to the long axis of the 2nd molar	0.48 Correct answer	0.39	0.13
Each type of impaction has some definite path of withdrawal of the teeth.	0.64 Correct answer	0.27	0.09
Antibiotic/s is indicated post any third molar extraction:	0.40	0.19	0.49 Correct answer
Mesio-angular impacted third molar third is the most difficult to extract	0.44	0.19	0.36 Correct answer

Comparing the Comfort Level Scores between the Years of Experience using Kruskal Wallis Test

There was a statistically significant difference between the level of comfort score ($H(2)=11.964$, $p=0.003$), with a median of 24 for general dental practitioners with an experience of more than 10 years, and median of 18 for those with an experience between 5-10 years and median of 12 for those with an experience up to 5 years.

Comparing the Comfort Level Scores and Recent Continuous Dental Education (Courses and Workshops) Regarding Third Molar Extraction

A Mann-Whitney test indicated that the score of the comfort level is greater for GDPs who had continuous dental

education regarding third molar extraction in the last 2 years compared with those who didn't receive any recent continues dental education. The score of the comfort level was greater for GDPs who were attending continuous dental education courses and workshops regarding third molar extraction in the last 2 years (median of 28) compared with those who didn't receive any recent continues dental education (median of 21). The difference is statistically significant (p=0.001).

DISCUSSION

Our findings indicate that the majority of respondents have shown a low level of comfort regarding third molar extractions, especially when the third molar is in any type of impaction situations. This finding of low comfort level might be due to the perception of possible complications that are thought to be difficult to manage for non-specialized oral surgeons i.e GDPs. However, the distoangular third molar impaction showed the lowest level of comfort from the respondents. This might be due to the fact that it is considered as the most difficult type of impaction as shown by many difficulty assessment indices. Mesioangular impacted and fully impacted teeth were relatively close [8,9].

Soft tissue impaction and partially erupted third molars also have shown a low level of comfort regarding third molar extractions by the majority of the respondents. In contrast, the majority (56%) of the GDPs were comfortable regarding fully erupted third molar extractions, with a significant difference among GDPs regarding the comfort level of various types of impacted teeth. The comfort level can be affected by possible postoperative complications such as injuries or damage to the inferior alveolar and lingual nerves, alveolar osteitis, postoperative infection, hemorrhage, oro-antral communication, damage to adjacent teeth and displaced teeth. The other complications after surgical extraction of third molars were a pain, swelling, and trismus [10-13].

Effects thought to influence the incidence of complications after third molar removal included gender, age, medical history, presence of pericoronitis, poor oral hygiene, impaction type, procedure time, surgical technique, use of perioperative antibiotics and dentist experience [8]. We found a high level of comfort for GDPs with more years of experience. A study related to the experience of dentists showed that less-experienced surgeons had a significantly higher incidence of postoperative complications. Ideally, third molar extractions should be done by experienced practitioners [9]. The decision to extract symptomatic third molars is easy, but the decision to extract asymptomatic third molars is occasionally less clear and needs a clinical experience [10]. Comfort level also was related to continuous dental education in this study, the score of the comfort level was greater for GDPs who had continuous dental education courses and workshops regarding third molar extractions in the last 2-years compared with GDPs who didn't receive any recent continuous dental education [11,12,14].

Regarding knowledge levels of GDPs, this study indicated that a low level of knowledge could be the main reason for inappropriate third molar management such as inaccurate diagnosis, improper dentist recommendation for extraction and postoperative complications. The knowledge of obtaining accurate diagnosis, indications and potential complications after extraction of third molars and adequate risk assessment is necessary for the third molar extraction procedure. One must always consider the influence of different parameters, such as the age, gender and medical history of the patient to minimize any possible complications [9-11,15,16]. The findings of this study have shown that GDPs knowledge was estimated to be average, 6 questions out of 10 were answered correctly by the majority of the respondents, the other 4 questions were answered incorrectly by the majority of the respondents.

CONCLUSION AND RECOMMENDATION

GDPs in Riyadh, Saudi Arabia have reported a very low level of comfort regarding third molar extractions. They reported infrequent training and education in third molar extraction skills and knowledge. Continuous dental education in the past 2 years in third molar extraction and more than 5 years of experience were significantly associated with a high level of comfort among GDPs.

Proposed recommendations to enhance the low level of comfort in GDPs is to adopt more course and continuous dental education in third molar extraction and to increase the exposure to third molar extraction procedure in dental colleges training sessions and internship.

DECLARATIONS

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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