Available online www.ijpras.com

International Journal of Pharmaceutical Research & Allied Sciences, 2020, 9(2):189-194

Research Article

ISSN : 2277-3657
CODEN(USA) : IJPRPM

Reasons for Third Molars Extraction by Different Health Care Providers

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ABSTRACT

Background: Third molars extraction is one of the most common surgical procedures in daily dental practice. However, the reasons for extraction varies in the literature. Objectives: The primary objective of this study was to investigate the reasons for the extraction of third molars. The secondary objectives were to evaluate if patient- and dentist- related factors affect the reasons for extraction. Methodology: A questionnaire was completed by health care providers in four dental centers in Jeddah, Saudi Arabia. A total of 195 patients (118 females and 77 males), who had their third molars extracted (n=227) were included in this study. Statistical analysis was performed using Fisher's exact test. Results: Caries (42.3%) and prophylaxis (39.2%) were the most common reasons for the extraction of third molars. Extraction for prophylactic reasons was significantly higher among female patients and patients younger than 40 years old ($p<0.01$ and $p<0.05$, respectively). Furthermore, the decision to extract for prophylactic reasons was significantly higher among specialists or consultants as compared to students, interns or residents (74.0% vs. 26.0%; $p<0.001$). No difference was found between maxillary and mandibular third molars extraction. Conclusion: This study identified caries and prophylaxis as the most common causes of third molars extraction. It was also found that patients' age, gender, as well as dentists' qualification were factors influencing the reasons for extraction.

Key words: *Extraction, wisdom teeth, Incidence of extraction, reasons for extraction.*

INTRODUCTION

The extraction of third molars is one of the most common procedures performed by maxillofacial surgeons [1]. Ninety percent of oral and maxillofacial surgeon clinics' waiting lists are for third molar cases [2]. A study conducted among 1554 Saudi patients in Riyadh, Saudi Arabia showed that approximately 32.5% of all extractions accounted for third molars [3]. Similarly, third molars were the most commonly extracted teeth among the western German population [4]. Likewise, third molars extraction accounted for 95% of all extractions for patients between 16-21 years old in the United States [5]. Despite the fact that third molars extraction is a common procedure, there is a debate in the literature regarding the decision either to extract or to maintain third molars. The pivot of the scientific discussion is the presence or absence of pathology. Proponents for the removal of third molars in the absence of pathology believe that these third molars will cause problems in the future, and if they do, there will be greater costs, risk of complications, and morbidity in older patients [6]. In contrast, opponents

for the removal of third molars, in the absence of pathology, believe that the procedure involves unnecessary expenditure to all parties involved and unnecessary time off work and postoperative complications [7, 8].

Pathologies that have led to extraction of third molars were summarized by Kandasamy and his co-workers [6] based on the guidelines published earlier by the National Institute of Clinical Excellence (NICE) in 2000 [9], and the Scottish Intercollegiate Guidelines Network (SIGN) in 1999, which was also reviewed in 2005 [10]. Accordingly, the most common pathologies associated with third molars extraction are un-restorable caries, periodontal diseases, recurrent pericoronitis, non-treatable pulpal and/or periapical pathology, cellulitis, abscess and osteomyelitis, internal/external resorption of the tooth or adjacent teeth, fracture of tooth, presence of cyst or tumour and when the third molar is involved in or within the field of tumour resection [6, 11].

Non-pathological reasons for the extraction of third molars include prophylaxis and orthodontic reasons among several other reasons. Prophylactic extraction of third molars is a common practice among the general dentists, when the tooth is asymptomatic, mainly to prevent the occurrence of pathology; to reduce operative; and postoperative complications [12]. Extraction of third molars for orthodontic reasons, i.e. prevention of anterior teeth crowding, is an area of debate in the literature [13-15].

The role of health care providers in third molars extraction has been discussed. Generally, oral surgeons recommend third molar extraction significantly more than general dentists [16, 17]. A great variation among oral surgeons and general dentists was noticed in their judgment for the extraction of asymptomatic mandibular third molars [18]. Up to date, recommendations for third molar extractions by general dentists are not well-established [2].

This study was designed to identify the most common reasons for third molars extraction and to evaluate patients'- and dentists'-related factors that might affect the reasons for extraction among a subset of Saudi patients in Jeddah, Saudi Arabia.

PATIENTS AND METHODS

Patients and data collection

In this cross-sectional study, a total of 195 patients (118 females and 77 males) participated with the total extracted third molars (n=227).

A questionnaire was distributed to four major dental centers in Jeddah, Saudi Arabia namely: Faculty of Dentistry, King Abdulaziz University; King Fahad General Hospital; King Fahad Armed Forces Hospital; and King Abdulaziz Medical City under the period of November 2015 to March 2016. The questionnaires were completed by dental interns, general dentists, and assistants in order to provide the following data: age, gender, nationality, hospital name, tooth number (using binomial system), operator (i.e. student, intern, resident, specialist or consultant) and reason for extraction (i.e. caries either in second or third molar, periodontal disease either in second or third molar, orthodontic reasons, prophylactic/eruption problems, cyst/tumor, pericoronitis, trauma, and non-specific pain). This study was approved by the Research Ethics Committee at the Faculty of Dentistry, King Abdulaziz University, Jeddah, Saudi Arabia (Permit no. 083-10-17).

Statistical analysis

The Statistical analysis was performed using Fisher′s exact test, with a p-value < 0.05 being considered statistically significant. GraphPad Prism version 6.0 for Mac OS X, GraphPad Software, La Jolla California, USA was used for the analysis.

RESULTS

Demographic data

The majority of patients were females (60.5%), younger than 40 years old (79.5%), and having Saudi nationality (95.0%). However, there was no predominance of maxillary or mandibular extracted third molars (Table 1).

Reasons for extraction of third molars

Caries in the third molars was the most common cause for extraction (42.3%), followed by prophylactic reason/eruption problems (39.2%). Orthodontic reasons accounted for (8.8%) of all extractions. Other reasons were less common causes for extraction as presented in Table 2.

Factors affecting the most common reasons for extraction (caries vs. prophylactic/eruption)

The most common reasons for third molars extraction in this study (i.e. caries and prophylactic/eruption) were compared in terms of patient-related factors (age, gender, and maxillary or mandibular teeth) and dentist-related factors (qualification i.e. educational degree) as shown in Table 3. Among male patients and patients who were older than 40 years, third molars had been extracted due to caries significantly more than prophylactic/eruption reason (72.2% *vs.* 27.3%; p=0.008 and 70.3% *vs.* 29.7%; p=0.0003, respectively). No differences were found between maxillary and mandibular third molars extraction either for caries or prophylactic reasons. Regarding dentists' qualification, our results showed that students, interns, and general dentists extracted third molars due to caries significantly more than prophylactic/eruption reasons (82.6% *vs.* 17.4%; p<0.0001) compared to specialists and consultants. In contrast, the frequency of third molars extraction due to prophylaxis/eruption was higher among specialists and consultants compared to students, interns, and general dentists (58.3% *vs.* 41.7%; albeit not statistically significant).

Table 1: Characteristics of the study population (n=195)

Characteristics	n	%
Gender		
Females	118	60.5%
Males	77	39.5%
Age		
> 40 years	155	79.5%
< 40 years	40	20.5%
Nationality		
Saudi	185	95.0%
Non-Saudi	10	5.0%
Extracted teeth		
Maxillary	89	45.6%
Mandibular	91	46.7%
Both	15	7.7%

Table 2. Reasons for third molars extraction (n=227)

Reason for extraction	n	%
Caries in 3rd molar	96	42.3%
Prophylactic / eruption	89	39.2%
Orthodontic	20	8.8%
Pericoronitis	7	3.1%
Non-specific pain	7	3.1%
Cyst/tumor	4	1.8%
Periodontal	3	1.3%
Caries in 2nd molar	1	0.4%

Table 3. Factors affecting the most common reasons for extraction (caries *vs.* prophylactic/eruption)

	Reasons for extraction		
	Caries in 3rd molars	Prophylactic/eruption	p-value
Age			
Younger than 40 years	47.0%	53.0%	0.008
Older than 40 years	72.2%	27.3%	
Gender			
Males	70.3%	29.7%	0.0003
Females	42.2%	57.8%	
Extracted teeth			
Maxillary	51.6%	48.4%	ns [a]
Mandibular	52.2%	47.8%	
Dentist's qualification			
Student/Intern/GD[b]	82.6%	17.4%	<0.0001
Specialist/consultant	41.7%	58.3%	ns [a]

[a] ns; non-significant [b] GD; General dentist

DISCUSSION

In the current study, we identified caries as the most common reasons for third molars extraction, which comes in line with several other studies. Caries was considered as the main reason for teeth removal regardless the age, gender, and socioeconomic status [19-21]. It has been shown that inadequate tooth brushing causes dental caries [22, 23], which in turn resulted in 15.0% of third molars to be removed among Swedish patients [24]. Inadequate tooth brushing could be due to inaccessibility to clean and maintain good oral hygiene in this region [22]. In the present work, the extraction of third molar teeth as a result of caries in the second molar was found to be the least common cause for extraction (0.4%). This finding is in agreement with Chu *et al*. who reported that only 7.0% of second molars adjacent to impacted third molar teeth were affected by caries [25]. However, a study conducted among Tanzanian patients demonstrated that the extraction of mandibular third molars was mostly due to carious lesions either in the third molar or in the adjacent tooth [26]. In contrast to our findings, a practice-based Cohort study found that caries was not the main reason for extraction (4%), and the main reason for extraction was to prevent future problems (79%) [12].

The second most common reason for third molar extraction among our patients was found to be prophylactic reasons and eruption problems (39.2%). According to the National Institute for Health and Care Excellence (NICE), it was declared that 20.0-50.0% of third molars were extracted for prophylactic reasons [9]. Prophylactic reasons for the extraction of third molars are mainly to prevent the occurrence of pathology, to reduce operative, and post-operative complications [12]. However, prophylactic extraction of the asymptomatic third molar is a controversial topic in the literature. A systematic review conducted by the Cochrane Review Group concluded that the removal of third molars when there is no pathology is not indicated [27]. On the contrary, a systematic review by Bouloux *et al.* recommended the removal of asymptomatic third molars, given that the annual risk of extraction is 3.0%. Subsequently, the cumulative lifetime risk for extraction is greater [28]. To date, there is a deficiency in randomized controlled studies [12] and there is a lack of scientific evidence regarding the prophylactic extraction of third molars [29]. By this far, counseling patients regarding asymptomatic and disease-free third molars should assess the risks and benefits of extraction and retention individually [28].

In the present study, orthodontic reasons were ranked down the list among the causes of third molars extraction (8.8%). Similar to our results, third molars extraction for orthodontic reasons accounted for 5.3% among patients in Jordan [21]. The lowest percentage (1.0%) of permanent teeth was extracted due to orthodontic reasons among patients in New Zealand and Japan [30, 31]. The extraction of third molars in order to prevent late lower incisors crowding is a controversial topic in the literature [6]. A randomized controlled trial showed that third molars extraction reduced the lower labial segment irregularity only by 1.1mm, which is not significant both statistically and clinically [32]. The disagreement between orthodontists and oral and maxillofacial surgeons regarding the association between third molar eruption and the development of crowding has been reported. Orthodontists are less likely to recommend prophylactic extraction of third molars to prevent crowding, while surgeons are more likely to recommend the extraction [13].

Pericoronitis and other pathologies such as the presence of cysts and tumors were found to be less common reasons for third molar extraction (4.9%) among our patients, which is in line with the results of the study of Joana Cunha-Cruz (5%) [12]. In the current work, periodontal diseases were found to be one of the least common causes of third molar teeth extraction (1.3%). A similar result was reported by the American Association of Oral and Maxillofacial Surgeons (AAOMS), which stated that periodontal ligament damage is considered one of the least common causes for third molar teeth extraction (4.5%) [33]. Regarding the presence of third molars related pathologies such as cysts and tumors, low incidence (1-2% only) developing from impacted third molars. Thus, it would seem difficult to justify the removal of asymptomatic third molars routinely to avoid future occurrence of cysts and tumors [34, 35].

Regarding our patients′ age, the results showed that patients younger than 40 years were found to have their third molars extracted more than patients older than 40 years. This observation was also found in a previous study, which advocated that the main age range for third molar extraction was from 21 to 30 years [3]. Female patients (60.5%) tend to have their third molar teeth extracted more than male patients. Similar results were reported by Aleisa and Khalil [3]. Our explanation for age and gender is that young age and female patients may seek dental care more often compared to older age and male patients. Byahatti and Ingafou attributed that less commitment of male patients toward dental visits explains the male predominance for extracting more teeth than female patients due to the occurrence of more carious lesions [21].

CONCLUSION

This study identified caries and prophylaxis as the most common causes of third molars extraction. It also identified differences in patients' age and gender as factors influencing the reasons for extraction. We need to improve patients' attitudes toward regular dental check-ups, treatment, and follow-up. Guidelines for prophylactic extraction of third molars are highly in demand.

REFERENCES

1. Sharifishoshtari S, Razavi M, Afzoon A, Rohani A. Comparison of panoramic and reconstructed panoramic through CBCT and cross-sectional CBCT imaging modality in measurement of the follicle size of impacted mandibular third molar. Ann. Dent. Spec. 2018;6(4):406-10.
2. Westcott K and Irvine GH. Appropriateness of referrals for removal of wisdom teeth. Br J Oral Maxillofac Surg. 2002;40(4):304–6.
3. Alesia K and Khalil HS. Reasons for and patterns relating to the extraction of permanent teeth in a subset of the Saudi population. Clin Cosmet Investig Dent. 2013;5:51–6.
4. Reich E and Hiller KA. Reasons for tooth extraction in the western states of Germany. Community Dent Oral Epidemiol. 1993;21(6):379–83.
5. Eklund SA and Pittman JL. Third-molar removal patterns in an insured population. J Am Dent Assoc. 2001;132(4):469–75.
6. Kandasamy S, Rinchuse DJ, Rinchuse DJ. The wisdom behind third molar extractions. Aust Dent J. 2009;54(4):284–92.
7. Lopes V, Mumenya R, Feinmann C, Harris M. Third molar surgery: an audit of the indications for surgery, post-operative complaints and patient satisfaction. Br J Oral Maxillofac Surg. 1995;33(1):33–5.
8. Hu ML, Perrott DH, Greene MG, Rinaldi RC, Andresen R V. Development of an oral and maxillofacial surgery outcomes system for anesthesia and third molar removal: Results of alpha and beta testing. J Oral Maxillofac Surg. 2001;59(5):554–60.
9. Guidance on the Extraction action of Wisdom Teeth. Natl Inst Heal Care Excell. 2000;(August):19.
10. Management of Unerupted and Impacted Third Molar Teeth. (SIGN Guideline No 43). Scottish Intercoll Guidel Netw. 1999;(43).
11. Nadershah M, Zahid TM. Use of Autogenous Dentin Graft in Mandibular Third Molar Extraction Sockets: A Split-Mouth Randomized Double-Blind Study. Int. J. Pharm. Res. Allied Sci. 2019 Jul 1;8(3):73-79.
12. Cunha-Cruz J, Rothen M, Spiekerman C, Drangsholt M, McClellan L, Huang GJ. Recommendations for third molar removal: A practice-based cohort study. Am J Public Health. 2014;104(4):735–43.
13. Lindauer SJ, Laskin DM, Tüfekçi E, Taylor RS, Cushing BJ, Best AM. Orthodontists' and surgeons' opinions on the role of third molars as a cause of dental crowding. Am J Orthod Dentofac Orthop. 2007;132(1):43–8.
14. Friedman JW. The prophylactic extraction of third molars: A public health hazard. Am J Public Health. 2007;97(9):1554–9.
15. Southard TE. Third molars and incisor crowding: when removal is unwarranted. J Am Dent Assoc. 1992;123(8):75–9.
16. Hazelkorn HM, Macek MD. Perception of the need for removal of impacted third molars by general dentists and oral and maxillofacial surgeons. J Oral Maxillofac Surg. 1994;52(7):681–6.
17. Weiss J, Yablon P, Glatzer MJ. The third molar question: to extract or not to extract. ASDC J Dent Child. 1984;51(4):277–81.
18. Knutsson K, Brehmer B, Lysell L, Rohein M. Asymptomatic mandibular third molars:oral surgeons' judgement of the need for extraction. J Oral Maxillofac Surg. 1992;50:329–33.
19. Caldas AF, Marcenes W, Sheiham A. Reasons for tooth extraction in a Brazilian population. Int Dent J. 2000;50(6):267–73.
20. Haddad I, Haddadin K, Jebrin S, Ma'Ani M, Yassin O. Reasons for extraction of permanent teeth in Jordan. Int Dent J. 1999;49(6):343–6.
21. Byahatti SM and Ingafou MSH. Reasons for extraction in a group of Libyan patients. Int Dent J. 2011;61(4):199–203.

22. Steed MB. The indications for third-molar extractions. J Am Dent Assoc. American Dental Association; 2014;145(6):570–3.
23. Agarwal RR, Khan F, Singh PK, Bhatnagar A, Thakur RK, Arora VK. Comparision of the efficacy of manual toothbrush to powered toothbrush. Ann. Dent. Spec. 2015;3(4):93-5.
24. Nordenram A, Hultin M, Kjellman O, Ramström G. Indications for surgical removal of the mandibular third molar. Study of 2,630 cases. Swed Dent J. 1987;11(1-2):23–9.
25. Chu FCS, Li TKL, Lui VKB, Newsome PRH, Chow RLK, Cheung LK. Prevalence of impacted teeth and associated pathologies — a radiographic study of the Hong Kong Chinese population. Hong Kong Med J. 2003;9(3).
26. Msagati F, Simon ENM, Owibingire S. Pattern of occurrence and treatment of impacted teeth at the Muhimbili National Hospital, Dar es Salaam, Tanzania. BMC Oral Health. 2013;13(1).
27. Mettes TG, Nienhuijs MEL, Van Der Sanden WJM, Verdonschot EH, Plasschaert A. Interventions for treating asymptomatic impacted wisdom teeth in adolescents and adults. Cochrane Database of Systematic Reviews 2005. Art No.:CD003879. DOI:003810.001002/1465181858.CD14003879. pub14651852.
28. Bouloux GF, Busaidy KF, Beirne OR, Chuang SK, Dodson TB. What is the risk of future extraction of asymptomatic third molars? A systematic review. J Oral Maxillofac Surg. 2015;73(5):806–11.
29. Costa MG Da, Pazzini CA, Pantuzo MCG, Jorge MLR, Marques LS. Is there justification for prophylactic extraction of third molars? A systematic review. Braz Oral Res. 2013;27(2):183–8.
30. Morita M, Kimura T, Kanegae M, Ishikawa A, Watanabe T. Reasons for extraction of permanent teeth in Japan. Community Dent Oral Epidemiol. 1994;22(5):303–6.
31. Barclay JK. A survey of dental extractions in New Zealand. II. Reasons for tooth loss. N Z Dent J. 1974;70(319):25–38.
32. Harradine NW, Pearson MH, Toth B. The effect of extraction of third molars on late lower incisor crowding: a randomized controlled trial. Br J Orthod. 1998;25(2):117–22.
33. Pogrel MA, Dodson TB, Swift JQ, Bonine FL, Rafetto LK, Kennedy JE, et al. White Paper On Third Molars. 2007;(March):1–25.
34. Marciani RD. Third Molar Removal: An Overview of Indications, Imaging, Evaluation, and Assessment of Risk. Oral Maxillofac Surg Clin North Am. 2007;19(1):1–13.
35. Adeyemo WL. Do pathologies associated with impacted lower third molars justify prophylactic removal? A critical review of the literature. Oral Surgery, Oral Med Oral Pathol Oral Radiol Endodontology. 2006;102(4):448–52.