

## Reasons for Third Molar Teeth Extraction in Jordanian Adults

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### Abstract

**Aims:** To assess reasons for third molar teeth extractions in a sample of Jordanian dental patients and to evaluate the association of extractions with other independent variables.

**Methods and Materials:** The study sample was comprised of dental patients in North Jordan who had third molar extractions. Data were collected from 36 dentists who were instructed to administer questionnaires to their adult patients undergoing third molar extractions and then to record the primary reason for those extractions. The data in this study was analyzed using a descriptive summary and chi square statistics.

**Results:** Dentists performed 810 extractions for 648 patients. The reasons for the extractions were: dental caries and its consequences about 42%, eruption problems 39%, periodontal diseases about 7%, and approximately 9% of extractions were a result of the dentist's choice. The percentage of extractions due to dental caries significantly increased with increasing age. However, significant numbers of teeth were extracted due to eruption problems (51%-69%) in young adults. For 46+ year olds, 23% of extractions were caused by periodontal diseases. Extraction due to dental caries was distributed equally among the sexes. Persons with irregular tooth brushing and fewer dental visits had significantly more third molar teeth extracted due to caries and periodontal diseases compared to persons with regular tooth brushing and dental visits.

**Keywords:** Third molar extractions, eruption problems, dental caries, periodontal disease

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## Introduction

Reasons for tooth extraction in general have been reported from different countries of the world.<sup>1-6</sup> Studies indicate dental caries is the primary reason for teeth extractions in youngsters and in adults.<sup>1,2,7-10</sup> Furthermore, some studies indicated periodontal disease, which is more prevalent in the elderly, was not serious enough to cause tooth loss.<sup>4</sup>

Investigating the reasons for tooth extraction in a population is a very important measure to provide information about the prevalence of dental disease, availability of dental care services, and attitude towards dental extraction.<sup>4</sup> However, decision-making regarding extraction of many teeth are influenced by many non-disease factors<sup>11</sup> including dental visits, habits,<sup>12</sup> and the socioeconomic status of patients.<sup>11</sup> In reviewing the dental literature no studies were found to address the reasons for third molar teeth extractions or to investigate the effect of associated independent factors on the decision to extract third molars. Furthermore, no studies regarding the reasons for third molar extractions in Jordan were found.

The purpose of this study was to investigate the reasons for extractions of erupted third molar teeth. It also addressed the effect of patient's age, gender, oral hygiene, and dental attendance pattern on the reason for third molar extraction.



## Methods and Materials

The sample in this study consisted of dental patients who had third molar extractions in North Jordan . A list of six governmental and 68 private



dental practices providing dental extraction services in the Irbid governorate was obtained from the Jordan Dental Association. While all dentists in the area were invited to participate in the study, participants were from three governmental and 33 private practices. The study was approved by the Jordan University of Science and Technology (JUST) Ethics Committee of the Deanship of Scientific Research.

Participating dentists were visited by one of the research team members and briefed about the purpose of this study and methods of data collection. Dentists were instructed to distribute questionnaires to their adult patients (18+ years) undergoing surgical or non-surgical third molar extraction and then record the primary reason for the extraction on the forms. The questionnaires provided detailed information regarding age, patient demographics, dental visits, and oral hygiene practices. A list of reasons for extraction along with their descriptions was distributed to the dentists. No attempt was made to select or exclude any subject from this study.

Reasons for third molar extractions in this study were grouped into five main categories: (1) caries and its consequence, (2) eruption problems, (3) periodontal diseases, (4) dentists choice, and (5) miscellaneous reasons (Table 2).

Data were recorded on paper forms, double entered into a SPSS 9.0 software program, then verified and analyzed. The statistics used in this study were descriptive summary statistics and chi square statistics. The probability level for statistical significance was set at  $\alpha = 0.05$ .

## Results

The study sample consisted of 648 patients, of which 56% (n=452) were females and 44% (n=358) were males. The mean and median ages were 37 and 36 years, respectively, with a range from 18 to 74 years. A total number of 810 third molar teeth were extracted; approximately 82% of patients had a single extraction, 13% had two extractions, and 5% of patients had three to four third-molar teeth extracted.

Approximately 50% of the extractions were performed on younger adults (18-35 years). Females had about 56% of the extractions, and 62% of the extracted teeth were mandibular third molars (Table 1). Current smokers comprised 27% of the sample, 70% reported visiting dentists during that year, and only 65% claimed to brush their teeth regularly.

Distribution of the percentages of extracted third molar teeth based on the primary reasons for extraction is presented in Table 2. Of the reasons for third molar extractions dental caries and its consequences comprised about 42%, eruption problems comprised 39%, periodontal diseases about 7%, and approximately 9% of extractions were due to the dentist's choice.

Table 3 presents distribution of the primary reasons for third molar extraction among different groups by age and gender. The percentage of third molar teeth extracted due to dental caries significantly increased with increasing age, from 24% in the 18-25 year age group to 61% in the 36-45 year age group, and then decreased slightly in the older age group (38%). However, a higher percentage of third molar teeth in

the younger age groups were extracted due to eruption problems (51%-69%). Extractions due to periodontal diseases was negligible in the younger age groups (0%-6%), however, it comprised one-fourth of the reasons in the 46+ age group (23%) ( $\chi^2 = 282$ ). Equal percentages of males and females had third molar teeth extracted due to dental caries. Females had a slightly higher proportion of extractions due to eruption problems compared to males. A significantly higher percentage of males had extractions due to periodontal diseases and dentists' choice compared to females ( $p \leq 0.01$ ) ( $\chi^2 = 19$ ).

Table 4 presents the distribution of the primary reasons for third molar extraction among groups of regular and irregular users of toothbrushes and regular and irregular dental visits. It was found to be significant that persons with irregular tooth brushing habits (less than one visit/year) had their third molar teeth extracted more often due to caries (47% vs. 39%), periodontal diseases (10% vs. 6%), and dentists' choice (17% vs. 4%) compared to persons with regular tooth brushing habits (seven or more times/week), ( $p \leq 0.001$ ) ( $\chi^2 = 68$ ). Persons who visited dentists irregularly (less than one visit/year) had their third molar teeth more significantly ( $p \leq 0.01$ ) ( $\chi^2 = 19$ ) extracted due to caries and the dentists' choice compared to those with regular dental visits (one or more visits/year).

## Discussion

The list of reasons for third molar extractions presented in Table 2 was obtained from the literature.<sup>14-16</sup> Despite the instance of having more

**Table 1. Distribution of extracted third molar teeth by age and gender.**

Variable	Category	Percentage	Percentages of Extracted Teeth	
			Maxillary	Mandibular
Age	18-25	24.0	34.0%	66.0%
	26-35	22.8	37.3%	62.7%
	36-45	27.8	37.3%	62.7%
	46 +	25.4	43.2%	56.8%
Gender	Males	44.2	34.4%	65.6%
	Females	55.8	40.9%	59.1%
Total			38.0%	62.0%

Table 2. Reasons for third molar tooth extraction (N=810 teeth).

Category	Reason	Frequency	%
Dental caries and its consequences		336	41.5
	Badly carious tooth	238	29.4
	Remaining root	71	8.8
	Periapical lesion	16	2.0
	Failure of restoration	8	1.0
	Deep root caries	3	0.4
Eruption problems		318	39.3
	Impacted tooth	67	8.3
	Pericoronitis	123	15.2
	Cheek bite	33	4.1
	No opposing tooth	31	3.8
	Pressure on the adjacent teeth	23	2.8
	Impinging on opposing soft tissues	9	1.1
	Food impaction in wisdom area	8	1.0
	Eruption buccally or lingually	21	2.6
	Pericoronal abscess	3	0.4
Periodontal diseases		59	7.3
	Periodontitis	47	5.8
	Mobility	12	1.5
Dentists choice		69	8.5
	Prosthodontist request	51	6.3
	Prophylactic removal	6	0.7
	Investigating facial pain	8	1.0
	Orthodontists request	4	0.5
Miscellaneous		28	3.5
	Fractured teeth due to trauma	17	2.1
	Patient's choice	6	0.7
	Root resorption	3	0.4
	Attempt extraction elsewhere	2	0.2

Table 3. Distribution of the main reasons for third molar extraction among different age and gender groups.

	Category	Caries	Eruption	Periodontal	Dentist Choice	Miscellaneous
Age group*	18-25	24.2%	68.6%	0.0%	6.2%	1.0%
	26-35	39.5%	51.4%	1.1%	3.2%	4.9%
	36-45	61.3%	28.0%	6.7%	1.3%	2.7%
	46 +	37.9%	13.1%	20.4%	23.3%	5.3%
Gender**	Males	41.1%	37.4%	9.2%	11.2%	1.1%
	Females	41.8%	40.7%	5.8%	6.4%	5.3%
Total		41.5%	39.3%	7.3%	8.5%	3.5%

\* ( $p \leq 0.001$ ), ( $\chi^2 = 282$ ).

\*\* ( $p \leq 0.01$ ), ( $\chi^2 = 19$ ).

**Table 4. Distribution of the main reasons for third molar extraction among brushing and dental visits categories.**

	Category	Caries	Eruption	Periodontal	Dentist Choice	Miscellaneous
Brushing*	7 or more times/week	38.5%	48.0%	6.1%	4.2%	3.2%
	Less than 7 times/week	47.0%	23.2%	9.5%	16.5%	3.9%
Dental** visits	One or more visits/year	38.9%	41.2%	9.3%	7.2%	3.3%
	Less than one visit/year	47.5%	34.6%	2.5%	11.7%	3.8%
Total		41.5%	39.3%	7.3%	8.5%	3.5%

\* ( $p \leq 0.001$ ), ( $\chi^2 = 68$ ).

\*\* ( $p \leq 0.01$ ), ( $\chi^2 = 19$ ).

than one reason for extraction of a tooth, dentists were instructed to record only one primary reason in order to facilitate data analysis and decrease any inconsistency that might occur in adding more than one reason for extraction.

In this study most patients who had dental extractions of their third molar were relatively young (75% of patients were less than 45 years of age). This is explained by higher percentages of patients visiting their dentist at the time of their third molar teeth eruption at an early age (40% of patients at all ages). Furthermore, older people might have lost most of their teeth earlier in their life.<sup>17</sup> Most of the extracted teeth in younger age groups were mandibular third molars. These teeth are normally more prone to partial impaction, pericoronitis, and other related problems. The anatomy of the mandible and the discrepancy in the sizes of the teeth and jaw bone are more likely to predispose to these problems which eventually lead to extraction of the teeth.

The findings of this study indicate with increasing age extraction of third molar teeth, due to dental caries and periodontal diseases, increased. This is consistent with other findings in the literature.<sup>1,5,6</sup>

Addressing the reasons for third molar teeth extraction separately is very important because a high proportion of these teeth have different anatomy and function than other molars. Despite the possible complication during extraction of third

molar teeth, a higher proportion of dentists and patients elect extraction over treatment.

In this study less than half of the extractions were performed for teeth which were considered untreatable with dental caries and periodontal problems. However, more than half of the extractions were done for teeth with some eruption problems, the dentists' choice, and miscellaneous reasons. Relieving symptoms of pericoronitis by extraction or the extraction of symptom-free, partially erupted third molars might be considered extraction due to non-disease factors. Extractions of teeth that can be managed by conservative treatment are an important issue of cost-effectiveness of dental treatment. In addition, the wisdom of performing invasive traumatic procedures like surgical extractions of third molars for asymptomatic, partially erupted teeth is debated by many dentists. The importance of this study was to explore the proportion of extractions as a treatment modality for various reasons among different age, gender, and oral hygiene groups that led the dentist to choose such extractions as the treatment of choice.

### Conclusion

Third molar teeth were extracted for several reasons. Not all extractions were performed because of disease conditions affecting the teeth. Many extractions were performed due to conditions which could probably have been managed conservatively without extraction.

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