

# REASONS FOR EXTRACTION OF TEETH IN CENTRAL REGION OF JORDAN

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## ABSTRACT

*A survey was carried out to determine the reasons for extractions of teeth in the middle (central) region of Jordan. Data was obtained from 80 dentists practicing general dentistry over a period of 2 weeks of their practice. The results revealed that out of the 1030 teeth extracted, 39.7% were removed due to extensive caries, 20.9% due to periodontal diseases, 13.4% at the patient's request, 10.1% for pericoronitis of third molars. 4.1% were removed for prosthetic reasons, 2.5% for orthodontic purposes, 2.03% due to endodontic failure, 1.4% for fractured teeth, 1.3% for impacted teeth, and 0.19% of the extracted teeth were in fracture line. Trauma was the reason for 1.16% of the extractions while other reasons formed 1.6%. Posterior teeth were extracted more than anterior teeth.*

*The results of this survey demonstrated that in the middle (central region) of Jordan, extensive caries was the leading cause for the removal of teeth and periodontal disease was the next most common reason.*

**Key words:** *Extraction causes, extensive caries, Periodontal disease*

## INTRODUCTION

There have been no recent studies regarding the current reasons for dental extractions in middle (central) region of Jordan. Patterns of dental diseases and treatment are changing, a decline in dental caries<sup>1-5</sup> has been accompanied by a shift in emphasis from extraction to prevention that is for preserving as much tooth substance as possible. Such changes may have had an effect on causes of the removal of the teeth.

Surveys to determine the reasons for tooth extractions have been carried out in many countries (Agerholm D 2003<sup>6</sup>, Richards et al 2005<sup>7</sup>, Jun et al 2006<sup>8</sup>, Shammari et al 2006<sup>9</sup>, Folayan et al. 2005<sup>10</sup>, Corbet & Davies 1991<sup>11</sup> and Klock and Haugejordan 1991<sup>12</sup>. Caries and its sequel have been cited as the main cause for tooth loss in these studies. Recent studies<sup>1,9,13,14</sup> question the shift from caries as the primary reason for tooth loss below 40 year of age to periodontal disease in older age, besides the extent of these diseases, the types of dental treatment<sup>2-4</sup> as well as social and behavioral factors<sup>15</sup> influence the pattern of tooth extractions in industrialized countries.

The purpose of this study was to determine reasons for extraction of permanent teeth in Zarqa City (Jordan). For this purpose the patients who came for treatment to the Department of Dentistry in Prince Hashem Ben Al Hussein Hospital, to private dental clinics and

the clinics run by Ministry of Health were included in this study.

## METHODOLOGY

Eighty dentists (out of 264) in private and public sectors practicing dentistry in the middle (central part) of Jordan were selected to participate in this study. Data collected forms were distributed to those dentists and were asked to record the reasons for dental extractions. The questionnaire consisted of three parts: 1. Age and sex of the patient. 2. Main cause determined by the dentist for extraction. 3. Which teeth were to be extracted.

The dentists recorded their reasons for tooth extraction, which included caries, periodontal disease, trauma, prosthetic or orthodontic reasons, third molar extractions, and others. We included third molar extractions as a reason, when caries, periodontal diseases, or others were not indicated. Every patient having a permanent and deciduous tooth extracted was included in the study, up to a maximum number of 10 patients within 2 weeks of their practice for each dentist.

Data was entered into SPSS computer system analysis. Chi - square analysis system was used because the data obtained were categorical. The test was considered statistically significant when probability were less than 0.05.

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**RESULTS**

Out of the 1030 teeth extracted, 39.7% were removed because of extensive caries and 20.9% because of periodontal disease, 13.4% at the patient's request, 10.1% for pericoronitis of third molars, 4.1% for prosthetic reasons, 2.03% for endodontic failure, 1.3% for impacted teeth, 2.5% for orthodontic reasons, 1.4% for fractured teeth, 1.6% due to trauma, 0.58% for extensive external and internal resorption, 0.2% were in the fracture line, 1.9% for inadequate capability of the operator, and 0.8% for unspecified reasons (Table 1). Out of the total number of teeth removed, 0.77% were extracted from the male patients, of whom 26.9% were irregular attendants and 73.1% were regular attendants. Female patients accounted for 41.6% of whom 32.2% were irregular attendants and 67.8% were regular attendants. 730 patients were regular attendants; where as 300 patients were irregular attendants.

Figure 1 shows the overall distribution of reasons for extraction for all tooth types. The figure shows that caries is the predominant cause of tooth extraction.

Table 2 shows the distribution of extraction according to tooth type. Data were originally analyzed by quadrant, but the numbers of each tooth type extracted were similar in both sides of the mouth. The teeth, which were most frequently extracted overall were first molars followed by third molars, premolars, incisors and canines respectively. The differences in number and types of teeth extracted from upper and lower jaws were relatively small.

Table 3 Shows that the first and second molars were extracted most often because of caries in (60.96%) and because of periodontal diseases 32.19%. Where as the third molars was extracted due to pericoronitis in 38.52% and due to impaction in 13.33% of cases of removal for this tooth.

The first and second premolars were extracted most often because of caries (49.06%). Periodontal diseases were the reason for 21.7% of extractions of these teeth, while 6.6% of these teeth were removed due to orthodontics reasons. The incisors and canines were mainly extracted for periodontal reasons (53.52% and 60.98%) respectively. The majority of teeth removed for prosthetic reasons were first and second premolars and first and second molars.

**Causes for extraction according to age**

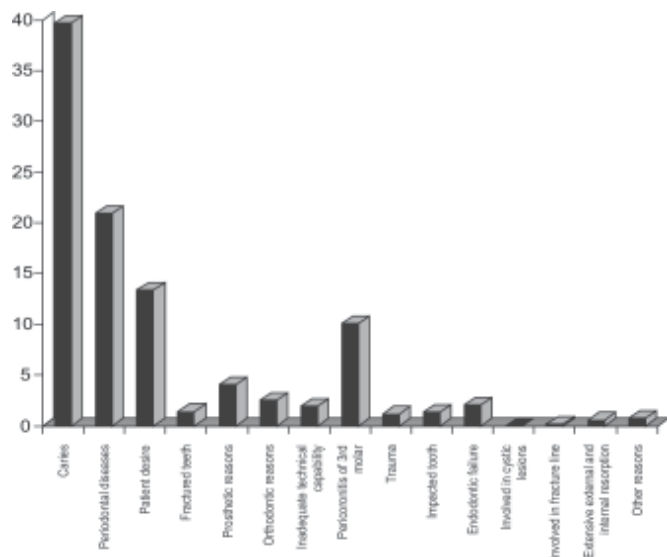
In patients below the age of 20 years, extensive caries accounted for 54.28% of extractions followed by orthodontic reasons 31.43% of the total extractions for this age group. Within age frequency, caries was more important reason for tooth extraction than periodontal disease up to 59 years of age.

Few extractions of deciduous teeth were carried out for children less than 12 years, 3.4% of the overall

extractions. For adults in the age group 13-19, and 20-39, and 40-59, and above 60 years extensive caries was the predominate reason given for extraction accounting for 44.62% of all teeth removed. The next most common reason for extractions for patients aged 20-39 years was extraction due to patient desire (20.09%), followed by pericoronitis and periodontal reasons accounting for 18.8% and 8.12% of teeth removed respectively. Amongst 40-59 years olds, the commonest reasons for extraction are extensive caries and periodontal diseases accounted for 57.14% and 37.76% respectively. Over the age of 60 years, periodontal reasons become the predominant reasons for extraction 68.24%,

**TABLE 1: DISTRIBUTION OF TEETH EXTRACTED ACCORDING TO CAUSES**

| Reasons for Extractions                    | Number | (%)   |
|--|--------|-------|
| Caries                                     | 409    | 39.7  |
| Periodontal diseases                       | 215    | 20.9  |
| Patient desire                             | 138    | 13.40 |
| Fractured teeth                            | 14     | 1.40  |
| Prosthetic reasons                         | 42     | 4.10  |
| Orthodontic reasons                        | 26     | 2.50  |
| Inadequate technical capability            | 20     | 1.9   |
| Pericoronitis of 3rd molar                 | 104    | 10.1  |
| Trauma                                     | 12     | 1.16  |
| Impacted tooth                             | 13     | 1.3   |
| Endodontic failure                         | 21     | 2.03  |
| Involved in cystic lesions                 | 0      | 0.00  |
| Involved in fracture line                  | 2      | 0.19  |
| Extensive external and internal resorption | 6      | 0.58  |
| Other reasons                              | 8      | 0.77  |



**Fig 1:** The overall distribution of causes for extraction for all tooth types

TABLE 2: DISTRIBUTION OF EXTRACTION BY TOOTH TYPE

| Tooth type       | Number of teeth | Percentage of extraction | Total percentage of extraction |
|------------------|-----------------|--------------------------|--------------------------------|
| Permanent teeth  |                 |                          |                                |
| Incisors         |                 |                          |                                |
| Uppers           | 88              | 8.54%                    | 13.78%                         |
| Lowers           | 54              | 5.24%                    |                                |
| Canines          |                 |                          |                                |
| Uppers           | 50              | 4.85%                    | 7.96%                          |
| Lowers           | 32              | 3.11%                    |                                |
| Premolars        |                 |                          |                                |
| Uppers           | 116             | 11.26%                   | 20.59%                         |
| Lowers           | 96              | 9.33%                    |                                |
| 1st & 2nd Molars |                 |                          |                                |
| Uppers           | 132             | 12.82%                   | 28.35%                         |
| Lowers           | 160             | 15.53%                   |                                |
| Third molars     |                 |                          |                                |
| Uppers           | 114             | 11.07%                   | 26.22%                         |
| Lowers           | 156             | 15.15%                   |                                |
| Total            | 998             | 96.89%                   |                                |
| Deciduous teeth  |                 |                          |                                |
| Incisors         |                 |                          |                                |
| Uppers           | 2               | 0.19%                    | 0.19%                          |
| Lowers           | 0               | 0%                       |                                |
| Canines          |                 |                          |                                |
| Uppers           | 10              | 0.97%                    | 1.75%                          |
| Lowers           | 8               | 0.78%                    |                                |
| Molars           |                 |                          |                                |
| Uppers           | 6               | 0.58%                    | 1.16%                          |
| Lowers           | 6               | 0.58%                    |                                |
| Total            | 32              | 3.11%                    | 100%                           |

TABLE 4: PERCENTAGE DISTRIBUTION OF DECIDUOUS TOOTH TYPE ACCORDING TO REASON FOR EXTRACTION

| Causes for extractions | Tooth type |         |                  |
|------------------------|------------|---------|------------------|
|                        | Incisors   | Canines | 1st & 2nd molars |
| Caries                 | 0          | 11.11   | 83.33            |
| Orthodontic reasons    | 0          | 55.56   | 16.67            |
| Trauma                 | 100        | 0       | 0                |
| Other reasons          | 0          | 33.33   | 0                |

but caries still accounted for 23.65% of teeth removed in this age group.

**DISCUSSION**

It is interesting to make a comparison between studies, but caution must be used in interpretation because of cultural differences in the dental services available. Care is needed when comparing results of independent studies carried out at different points of time as various sources of bias may invalidate the comparisons. Important sources of bias in the context of this study may be as given below;

- The exclusion and non-response of dentists
- The age of patients and dentists
- The classification and definition of reasons for extraction
- Availability of dental services
- Treatment philosophy
- Attitudinal and cultural factors associated with patients and dentists

TABLE 3: PERCENTAGE DISTRIBUTION OF PERMANENT TOOTH TYPE ACCORDING TO REASONS FOR EXTRACTION

| Reason for extractions           | Tooth type (%) |         |           |                  |           |
|----------------------------------|----------------|---------|-----------|------------------|-----------|
|                                  | Incisors       | Canines | Pre-molar | 1st & 2nd molars | 3rd molar |
| Caries                           | 11.27          | 17.07   | 49.06     | 60.96            | 51.11     |
| Periodontal diseases             | 53.52          | 60.98   | 21.7      | 32.19            | 18.52     |
| Patient desire                   | 23.49          | 24.39   | 14.15     | 7.53             | 11.85     |
| Fractured teeth                  | 0              | 0       | 3.77      | 2.83             | 0         |
| Prosthetic reasons               | 1.14           | 4.88    | 7.55      | 4.79             | 2.22      |
| Orthodontic reasons              | 0              | 0       | 6.6       | 0                | 0         |
| Inadequate technical capability  | 0              | 0       | 0         | 1.41             | 0         |
| Pericoronitis of 3rd molar       | 0              | 0       | 0         | 0                | 38.52     |
| Trauma                           | 7.04           | 0       | 0         | 0                | 0         |
| Impacted tooth                   | 0              | 0       | 0         | 0                | 13.33     |
| Endodontic failure               | 2.82           | 0       | 1.89      | 8.9              | 0.74      |
| Involved in fracture line        | 0              | 0       | 0         | 0.34             | 0.37      |
| Extensive ext. & int. resorption | 2.82           | 0       | 0         | 1.41             | 0         |
| Other causes                     | 0              | 0       | 0         | 0                | 0.74      |

Because it was difficult or impossible to control adequately for these and other potential confounding factors, the comparisons have been restricted to marked differences and obvious time trends. Other precautions include comparison of age or sector-specific rates and exclusion of subgroups of dentists or patients to minimize confounding. The present study confirms other reports that the most frequent reason given by dentists for extraction is caries, with periodontal diseases being the next most frequent reason<sup>6-9, 16</sup>

The results for this survey demonstrate that in middle region of Jordan extensive caries was the leading reason for extraction and continues throughout life with an overall prevalence accounting for 39.7% of the teeth lost, whereas periodontal disease being the next most common cause (20.9%). This finding is in accordance with other previous studies from industrialized countries<sup>8-12</sup>, but present study prevalence was considerably lower than the 59% reported in South Wales<sup>7</sup>, the 55.4% in Japan<sup>17</sup>, the 49% in France<sup>18</sup>, and 47.5% found in England and Wales<sup>19</sup>. Our results were considerably higher compared with the prevalence of 35% in Norway<sup>20</sup> and 20.7% found in the western regions of Germany<sup>21</sup>, and 21% in U.K<sup>22</sup>. That the contribution of caries as a cause of extraction was lower in the present study than those reported in other surveys from industrialized countries most of which conducted several years ago, was expected. Indeed this may be explained with the very encouraging and continuing decline in dental caries activity of the permanent dentition among populations of many areas of the developed world especially in those younger than 30 year of age<sup>2-5</sup>, and with the only moderate prevalence of destructive periodontitis<sup>9,13,15</sup>.

In the present study more posterior than anterior teeth were extracted, a finding consistent with that of others<sup>6,9</sup>. Approximately 39.7% of teeth were extracted due to caries.

So far, studies of the causes for tooth loss or extraction have not examined the relative impact of disease on patients, and treatment philosophy on tooth loss<sup>16</sup>, that was patient's wishes, which the dentists of this study could choose. No meaningful analysis was, however, possible because this reason accounted for only 7.7% of all extractions performed on patients older than 20 years of age.

## CONCLUSIONS

The results for this survey revealed that in middle region (central part) of Jordan extensive caries was the leading cause for extractions with periodontal disease being the next most common cause (20.9%).

Further studies are recommended to see whether there is any variations in tooth extraction patterns between different parts of Jordan.

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