

## COMMON CAUSES OF EXTRACTION OF TEETH IN SAUDI ARABIA

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اختيرت عينة عشوائية من أطباء الأسنان بالمملكة وطلب منهم تدوين قصة الأسنان التي قلعوها طوال شهرين مع تحديد جنس المريض وعمره ورقم السن وسبب القلع .

وعند تحليل النتائج لكافة الأعمار في كل من الأسنان اللبنية والدائمة وجد أن نخر الأسنان هو سبب القلع في 62.7% من الحالات جميعاً ولكن بعد سن الأربعين تصبح أمراض النسيج المحيطة بالأسنان هي السبب الرئيسي للقلع 51%.

وكانت نسبة قلع الأسنان في الذكور بسبب إصابة النسيج المحيطة بالأسنان 21.82% وهي أكثر مما هي عليه في الإناث 15.22%. وأن القلع لإسباب تقويمية بلغت نسبه 6.76% في الإناث في حين بلغت نسبه 2.02% في الذكور. وكانت نسبة القلع بالنسبة للعمر تختلف بين الذكور والإناث. إذ أن نسبة القلع لدى الذكور الذين تجاوزت أعمارهم الخمسين سنة كانت 19.9% وهي أكبر بشكل واضح مما هي عليه في الإناث والتي بلغت 8.9%.

A random sample of dentists practising in the Kingdom of Saudi Arabia was requested to record all teeth extracted over a 2-month period specifying the patient's age, sex, tooth number and reason for extraction and type of dental practice. When all age-groups were pooled in both primary and permanent teeth, caries was the cause for extraction in 62.7% of cases. However, periodontal disease was the major factor in patients over 40 years of age, accounting for 51 %. More teeth were extracted in males because of periodontal disease (21.82%) than females (15.22%). Orthodontic reasons accounted for 6.76% of the extraction in females and only 2.02% of that in males. There was a different age distribution for extraction between males and females. Males, over 50 years of age, experienced significantly more extractions (19.9%) than females (8.9%).

### Introduction

A very limited number of epidemiological studies have been carried out to determine the prevalence of oral diseases in the Kingdom of Saudi Arabia.<sup>1-6</sup> Tooth mortality, which is mainly a reflection of untreated dental caries and periodontal disease, is considered as a crude but useful measure for the dental status of a community.

Causes for tooth extraction had a large geographical and cultural differences between various countries. Caries appears to be the main cause of tooth loss in a large number countries as for example in New Zealand<sup>7</sup>, Australia<sup>8</sup>, Canada<sup>9</sup>, Finland<sup>10</sup>, Norway<sup>11</sup>, Sri Lanka<sup>11</sup>, Scotland<sup>12</sup>,

Malaysia<sup>13</sup>, France<sup>14</sup>, and Sweden<sup>15</sup>. In India, periodontal diseases are the main cause of dental extractions.<sup>16,17</sup> In another group of countries, caries and periodontal disease seem to cause almost equal percentage of tooth as is in the United States of America.<sup>18</sup> The present study was designed to examine tooth mortality in the Kingdom of Saudi Arabia.

### Materials and Methods

In 1990, there were 560 dentists registered by the Saudi Dental Society. A random sample of 400 dentists were contracted by letters which included a covering letter, a record form and a stamped self-addressed return envelope. The form for recording the data for the study was designed such that as little a time of the dentists' working day would be used. Each dentist was requested, during a period

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of two months, to record the information on every tooth extracted. This information included the patient's age, sex, tooth number, type of dental office, and the reasons for extraction. These reasons were assigned to six groups: caries, periodontal diseases, orthodontics, prosthetics, impaction and other reasons.

The forms were sent to the dentists in August 1990. The time for the actual field study was set for October and November 1990, a time when it was assumed that the greatest possible number of dentists would be receiving patients. After the data had been collected for two months, the dentists returned the record forms which were then checked to eliminate any extraction record that does not have the full information. The patients' age records were grouped as: under 5, 6-12, 13-20, 21-30, 31-40, 41-50, 51-60, 61-70 and over 70 years old.

Teeth were also grouped into upper and lower first and second molars, upper and lower premolars, upper and lower anterior teeth which include centrals, laterals, and cuspids, and finally, upper and lower third molars.

**Results**

Sixty-two dentists from various regions of the Kingdom contributed to the survey with 3059 forms correctly completed. None of the unresponsive dentists contacted us to explain why they had not been able to answer the inquiry.

When the entire sample of all teeth extracted was considered, including both permanent and primary teeth [Fig. 1], caries was the most frequent reason for tooth removal (62%), followed by

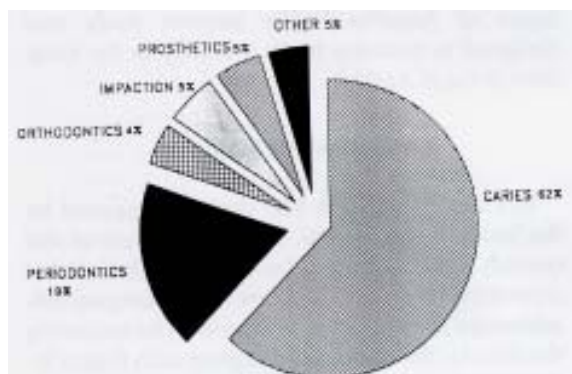


Figure 1. A pie histogram comparing reasons for tooth extraction.

periodontal disease (19%). Only 4% of the total number of extractions were due to orthodontic indications. As for the rest of the reasons, impaction, prosthetics, and other reasons each accounted for 5%.

The reasons for extraction varied in different age-groups (Fig. 2). Extraction, due to caries, had the highest percentage of all extractions in the age-group under 5 years. This percentage decreased gradually until it accounted for only 10% of the extractions in the age-group over 70 years. On the other hand, extraction due to periodontal disease accounted for most of the extraction in age-group over 70 years. This, however, decreased gradually with decreasing age until it accounted for less than 2% of the extracted teeth in age-group 13-20 years. In age-group 41-50 years, the proportions of extraction due to caries and to periodontal diseases were almost equal. Other causes of tooth extraction showed a low incidence at all ages, except for orthodontically related reasons among the 13-20 years age-group, impaction of teeth in the 21-30 years age-group, and for prosthetic reasons among the 51 and 70 years age-group [Fig. 2].

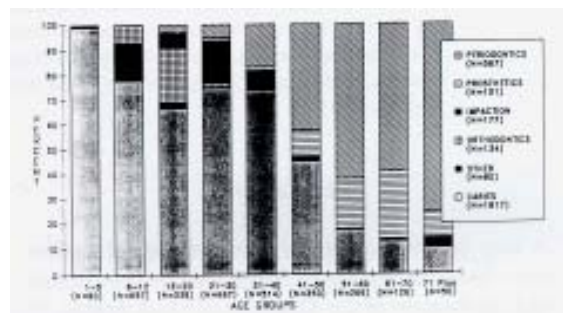


Figure 2. Distribution of causes for tooth extraction in various age-groups.

For permanent teeth, caries was the most frequent reason for extraction (57.5%) followed by periodontal involvement (24.1%). Caries, as a reason for extraction in different age-groups, showed some peculiar findings. Twenty-seven percent of the extractions occurred in age-group 6-12 years and 25% in age-group 21-30 years. In the age-group 51 years and over, extractions due to caries accounted for only 4%.

There was no significant difference between the total number of teeth extracted from male (50.2%) or female patients(49.8%). However, the teeth that



### Discussion

A number of authors have recorded the reasons for teeth extractions in different countries.<sup>7-18</sup>. There have been considerable variation in their findings, particularly with respect of whether caries or periodontal disease was the most important cause of tooth loss. The figures for caries, as a cause for extraction, vary from 26% in India to 87% in other countries. Periodontal diseases as a cause ranged from 5% in other countries to 66% in India<sup>12</sup>. Extractions for prosthetic reasons varied from 2% in India to 34% in Sweden<sup>15</sup>.

These differences should be viewed with caution since some of the studies reported the reason for extraction considering only the permanent teeth, others considered both permanent and primary dentition.

The present study showed that caries is the leading cause of extraction in both, primary and permanent teeth in Saudi Arabia.

In some of the reports, caries was the leading cause of extraction in all age-groups<sup>10</sup>. This finding was not confirmed in our study, as periodontal disease was found to cause more extraction in the later stages of life. This finding is comparable to most of those in other studies. Caries accounted for more than triple the number of extractions caused by the second leading cause which is periodontal disease (18.5%).

The need for extraction due to caries decreased with advancing age, while that due to periodontal causes increased with age and reached its highest level in the over 71 years age-group. These patterns may reflect the contrasting natural history of the two diseases.

A notable feature of the results was finding that 21.5% of all extractions occurred in the age-group 6-12 years. The cause of this high tooth mortality rate during the early part of life is, without a doubt, the high incidence of dental caries. In fact, 80% of the extraction performed at this age-group was due to caries compared with 25% in the French studies in which orthodontic indications account for 72%<sup>14</sup>.

Males experienced the majority of extractions later in life than females. This may be due to males' tendency to delay their dental visits until pain and discomfort are perceived. Males have higher percentage of extraction because of periodontal dis-

ease than females. The lower percentage of extraction because of caries, in private offices, may be explained by the fact that heavy schedules of dentists in polyclinics and hospitals encourage the extraction of badly decayed teeth. In private practice, however, dentists may tend to restore the teeth in a more conservative, expensive, and time consuming procedures, such as endodontic treatment.

Retention of a complete dentition throughout life should be one of the main goals of the dental profession. Extending the life span of the dentition, either by prevention or treatment of dental disease, is a major objective of dental care. Dental caries in the Kingdom is perhaps, the main obstacle for achieving such a goal. Various methods should be available to prevent or decrease the impact of the disease. Community water fluoridation continues to be the most cost-effective method for preventing decay. Numerous studies have documented dental caries reduction of 40 to 50% in primary teeth and 50 to 65% in permanent dentition. Also, a 75% fewer extracted first permanent molar was noted in children drinking fluoridated water from birth<sup>19</sup>. An extensive study on the relationship between fluoride and caries in the Kingdom was sponsored by King Abdulaziz City for Science and Technology. The results of this study showed variation in the amount of fluoride in the water in various locations in the Kingdom<sup>4,6</sup>. The addition of fluoride to the water in the needed area should be considered as an urgent matter.

Increasing the number of dentists and dental auxiliaries is another important factor for both prevention and treatment of oral disease. While dental hygienists and dental nutritionists would help in the development of a sound oral hygiene and diet modification, dentists could play an important role in oral disease prevention and, prompt treatment.

### Acknowledgement

The author would like to express her sincere thanks and gratitude to all dentists who responded to the survey. Special thanks are due to the Director of Dental Clinics in the Eastern Province, Dr. Saeed Ahmed Alghamdy for his utmost care and concern in collecting and sending the survey forms. I also thank Mr. Don Strand who helped in the data analysis and Mrs. Maria Arceo for typing the manuscript.

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