

REASONS FOR EXTRACTION OF PRIMARY TEETH IN JORDAN — A STUDY

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ABSTRACT

The purpose of this study was to identify the causes of primary teeth extraction, and the most frequently extracted tooth among Jordanian children who were seen at pedodontic clinic at King Hussein Medical Center (KHMC) in Amman – Jordan. Two hundred fifty pediatric patients formed the study group. Their ages ranged from 3 to 13 years. They had one primary tooth extracted under local anesthesia.

The reasons for extraction of teeth in these children seen over a period of 2 months and their ages, gender and the tooth extracted were recorded. The results revealed that the most common cause of primary tooth extraction was dental caries (57%) and the first primary molars were the most commonly extracted teeth (40%). No gender differences were noticed but there was obvious difference in age. In subjects (3-6) years, primary central incisors were the most common teeth extracted (54%), while in patients (7-9) and (10-13) years the first primary molars were the most common extracted (52% and 43%) respectively.

The results of this survey indicated that dental caries was the leading cause of extraction of primary teeth in Amman – Jordan

Keywords: Primary teeth, extraction causes.

INTRODUCTION

A very limited number of epidemiological studies have been carried out to determine the frequency and reasons of primary teeth extraction in Amman – Jordan. Preservation of both primary and permanent teeth in children is of great importance; this is because teeth are important for stimulating the development of the dental arches, maintaining normal occlusal relationship, and playing a role in speech development.¹ Early loss of primary dentition can result in delayed eruption, drifting, tilting or malpositioning of permanent teeth, thus causing malocclusion. It may affect esthetics, mastication and speech. Loss of several teeth in children can result in psychological disturbances.²

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In order to develop strategies for the reduction of tooth loss, it is important to understand the factors which lead to such loss and the relative contributions of caries, periodontal disease, trauma, orthodontic considerations and other reasons. In this study, extractions due to caries predominated all, and as shown in other studies done in developing countries, dental caries remain the main cause of tooth extraction irrespective of the age.³ Other recent studies show that in older age (higher than 40 years) there is a shift from caries to periodontal disease being the primary reason for tooth extraction.^{4,5,6,7}

METHODOLOGY

Two hundred and fifty healthy pediatric patients who attended pedodontic clinics at King Hussein Medical Center (KHMC) over two months period, with age ranged between 3 to 13 years formed the study group. The medically compromised patients were excluded from the study. Data taken from parents were recorded including patients' date of birth, gender, any significant medical findings followed by clinical examination done by the investigator on a dental chair under direct light illumination using diagnostic instruments.

Reasons for extraction were divided into the following categories based on those described by Kay and Blinkhorn et al:⁸

Caries; primary and secondary caries plus all squeale including periapical abscess and failed pulpotomy.

Orthodontic; tooth removed to prevent or correct malocclusion.

Trauma; tooth extracted as a direct result of acute trauma.

Mobility; tooth extracted because of it's mobility; time for exfoliation.

Over-retention; prolonged retention of primary teeth.

Root resorption.

Other reasons; includes periodontal disease and parent's requests.

Statistical analysis (including chi-square test) was performed on the collected data using a 0.05 significant level to test the data reliability. The test performed was considered statistically significant since the probability showed less than 0.05.

RESULT

Table 1 show distribution of patients. After performing the chi-square test and Hypothesis studies, it was confirmed that the patient gender and the reasons for extraction were two independent factors, proving that there was no statistical difference in the assessment by gender.

The overall distribution of reasons for extraction for all tooth types are shown in Table 2. Dental caries was the predominant cause of tooth extraction among patients and comprised (57%) of them.

Table 3 provides details about type of teeth extracted. There were differences in the extraction of the tooth type by the patient age (Table 4). Between ages 3 to 6 years, almost half of primary teeth extracted were central incisors (54%) while for the patients aged between (7-9) and (10 -13) years the first primary molars were the most common tooth type extracted (52% and 43% respectively).

While extractions were mainly due to caries, it was not the case for all teeth. Table 5 shows the percentage distribution of primary teeth type according to the reason of extraction. For both central and lateral incisors dental caries, followed by mobility were the most common reasons of extraction. While for primary canines they are most commonly extracted for orthodontic reasons (65%). First and

second molars were more commonly lost due to caries (72% and 38%).

DISCUSSION

Understanding the reasons of tooth mortality in a population can be a reflection of the prevalence of dental disease, and it provides information regarding the attitudes toward tooth loss and availability of dental care. A better knowledge of the reasons for extraction can help to optimize dental care and treatment planning. The majority of previous studies regarding reasons for extractions have been performed among adults,^{3,5,6,7,8,9} but few publications have presented reasons for extractions of primary teeth.^{10,11,12}

There was no significant difference between the total number of teeth extracted from male or female, yet differences have been observed in terms of reasons for extraction. The reasons for tooth extractions were

TABLE 1: DISTRIBUTION OF PATIENTS WHO HAD ONE PRIMARY TOOTH EXTRACTED

Gender	Count	Percentage %
Male	130	52.00%
Female	120	48.00%

TABLE 2: REASONS FOR EXTRACTION OF PRIMARY TEETH

Reason	Count	Percentage %
Dental Caries	142	57%
Ortho Reason	40	16%
Trauma	9	4%
Mobility	29	12%
Over Retention	20	8%
Root Resorption	6	2%
Others	4	2%
Total	250	100%

TABLE 3: TYPE OF TEETH EXTRACTED

Tooth Type	Total	Percentage %
Central Incisor	62	25
Lateral Incisor	20	8
Canine	26	10
First Molar	100	40
Second Molar	42	17
Total	250	100

TABLE 4: DISTRIBUTION OF EXTRACTION OF PRIMARY TEETH BY TOOTH TYPE AND AGE

Tooth Type	Age Group (Count)			Age Group (%)		
	3-6	7-9	10-13	3-6	7-9	10-13
Central Incisor	35	16	11	54%	18%	11%
Upper	15	7	6			
Lower	20	9	5			
Lateral Incisors	12	5	3	18%	6%	3%
Upper	5	3	3			
Lower	7	2	0			
Canines	0	8	18	0%	9%	19%
Upper	0	3	11			
Lower	0	5	7			
First Molars	13	46	41	20%	52%	43%
Upper	6	25	28			
Lower	7	21	13			
Second Molars	5	14	23	8%	16%	24%
Upper	5	11	17			
Lower	0	3	6			
Total	65	89	96	100%	100%	100%

TABLE 5: DISTRIBUTION OF PRIMARY TOOTH TYPE ACCORDING TO THE REASONS OF EXTRACTION

Reason	Tooth Type (Count)					Total
	Central Incisor	Lateral Incisors	Canines	First Molars	Second Molars	
Dental Caries	43 (69%)	7 (35%)	4 (15%)	72 (72%)	16 (38%)	142 (5%)
Ortho Reason	0	0	17 (65%)	12 (12%)	11 (26%)	40 (16%)
Trauma	6 (10%)	2 (10%)	1 (4%)	0	0	9 (4%)
Mobility	8 (13%)	5 (25%)	2 (8%)	8 (8%)	6 (14%)	29 (12%)
Over Retention	3 (5%)	3 (15%)	2 (8%)	6 (6%)	6 (14%)	20 (8%)
Root Resorption	2 (3%)	0	0	2 (2%)	2 (5%)	6 (2%)
Others	0	3 (15%)	0	0	1 (2%)	4 (2%)
	62	20	26	100	42	250

based on the criteria proposed by Kay and Blinkhorn et al⁸ which includes extraction due to caries, trauma, orthodontic considerations, mobility, over retention, root resorption and other reasons. It was evident from the data that caries was considered the major cause of extraction comprising (57%). This is in agreement with the findings reported by other researchers.^{10,11,12}

A study by Rajab et al on the prevalence of dental caries in Jordan showed that preschool children dmft indices increase by the increase in age.¹³ It also shows that dental caries level was slightly higher than that of children in industrialized countries, but lower than that of children in the neighboring Arab countries. Another study done by A. Sayegh et al showed that

there is high prevalence of caries and caries severity among children aged 4 to 5 years in Amman – Jordan.¹⁴ Data from surveys carried out in the Arabian countries have shown that there is a change in dietary patterns of mothers and children, with a trend towards the consumption of food rich in fat and refined sugar.¹⁵ In addition to the type of food consumed, feeding practices, snacking habits and pattern of dental visits have an important role in increasing caries level. The delayed visits to the dental clinic for routine checkup, and if the attendance is only promoted by symptoms; carious teeth are often treated by radical treatment which is extraction. Also, the lack of awareness of the importance of daily brushing plays an important factor in increasing the prevalence of dental caries.

The second most common reason for extraction is due to ortho consideration (16%), since careful timing of extraction may result in spontaneous correction of malocclusion in some situations.

The first primary molars were the most common tooth type lost in the study and comprised of (40%) of the total. This finding is in accordance with previous studies reported by Alsheneifi et al,¹¹ and Sayed Ahmed et al.¹⁶ The first molars have occlusal fissures that are more readily colonized by mutans streptococci than smooth surfaces, this might result in caries, which if not treated might result in extraction. The frequency of extraction of the primary first molar is more than the primary second molar. This is similar to the findings of some previous studies as reported by Syed Ahmed¹⁶ and Alamoudi N et al.¹⁷ This can be attributed to the chronology of tooth eruption, where the first primary molars have been present in the oral environment for a longer period than the second molars.

However, differences exist within different age groups with regard to the specific teeth extracted. In the age group (3-6) years, primary central incisors were the most commonly extracted teeth (54%). This can be attributed to the pattern of early childhood caries (ECC) and as a consequence of dental trauma.¹¹ While in older ages (7-9 and 10-13 years), the first primary molars were more frequently extracted due to the frequent involvement of these teeth in dental caries. Also, the chronology of eruption and exfoliation should be taken into consideration. Due to the relatively late eruption of primary second molars, they were rarely extracted in youngest age groups. Also from a clinical point of view, many clinicians would restore grossly carious second primary molars in order to maintain space, especially before the eruption of first permanent molars, while they extract the carious first primary molars as the success rate of root canal therapy is considered lower.¹⁷

There were differences in the reasons of extraction of various tooth types, and while extractions due to

caries had the highest percentage, this was not the case for all tooth types. Primary canines were mostly extracted due to ortho considerations (65%). This is in accordance to a study done by Kuthy et al.¹⁸ They reported that orthodontic considerations are more frequently the reason for extraction of primary canines, which are rarely extracted as a consequence of caries or trauma.

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