

Dental caries and treatment needs of primary and permanent dentition for children attending pedodontics clinic.

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ABSTRACT

Aims: To determine the prevalence of dental caries in primary and permanent dentition (dmft, DMFT) and to investigate the reason for seeking dental treatment and the type of treatment carried out for children. **Material and Method:** The study includes (1178) case sheets which represent the total number of children attending the Pedodontics Department during the academic year of (2004 – 2005). The WHO methodology was used to assess the individual tooth status. **Results:** Indicated that the highest percentage group of attends was 11–12 years group, and the children attended to clinic seeking treatment for painful condition had higher percentage (60.10 %). The DMFT for the total sample was 2.68% and increased with increasing age with a statistically significant age differences, the percentage of caries free children for total sample was 10.3 %, while mean dmft for primary dentition was 3.05% and increasing from the first age group till the third age group and then decreased till the last age with no gender variation. **Conclusions:** The priority of dental health services for children attending Pedodontic clinic is primary prevention (fluoride application, scaling and polishing) followed by tertiary prevention (extraction) and then secondary prevention as a totally (amalgum, light cure and root canal filling).

Key Words: Dental Treatment Need, Dental Caries.

Saleh KM. Dental Caries and Treatment Needs of Primary and Permanent Dentition for Children Attending Pedodontics Clinic. *Al-Rafidain Dent J.* 2007; 7(1): 80–87.

Received: 19/1/2006

Sent to Referees: 22/1/2006

Accepted for Publication: 30/2/2006

INTRODUCTION

Dental caries is one of the most common oral diseases, it is a major problem in dentistry and should receive significant attention from a restorative and preventive stand point.⁽¹⁾ It is a multifactorial disease with predisposing factors such as socioeconomic status, and sex influence.⁽²⁾

The demand for dental treatment is considered to be an important parameter in the assessment of the requirement of the dental services and training of man power.⁽³⁾

Oral health considerably improved in industrialized countries mainly due to the wide spread use of fluorides and a change in dietary habits⁽⁴⁻⁶⁾, while developing countries have experienced a deterioration in oral health due to a change in socioeconomic condition, dietary habits and lack of education.⁽⁷⁾

Most of the epidemiological studies in our country, especially those involving children were directed to the estimation of the prevalence and severity of oral problems

rather than dental treatment demands and needs.

Aims of the study were to determine the prevalence of dental caries (dmft, DMFT), and the reasons of seeking treatment and treatment achieved for those children.

MATERIAL AND METHOD

The sample of this study included 1178 case sheets which represent the total number of children that attended to the Pedodontic clinic of the College of Dentistry in University of Mosul during the academic year of (2004 – 2005) with varying age (1–12 years old). The samples were divided into six age groups.

Fifth class students examined the patients under the supervision of senior staff. The examination included name, age, gender, chief complaint, condition of soft tissue and dmft / DMFT, were recorded on a special preventive case sheet form added to the original one.

Chief complaints of all patients were divided into five categories that include: 1.

Pain. 2. Check up. 3. Trauma. 4. Esthetic (staining, fluorosis). 5. Preventive measure.

The treatment achieved for patient was also studied which include: extraction, scaling – polishing, fluoride application, fissure sealent, temporary filling, amalgam restoration, light cure restoration, root canal filling and others (habit breaker, space maintenance, drug treatment, x-ray).

The number of visits for the patient was also recorded, dmft and DMFT were recorded according to WHO.⁽⁸⁾

The statistical analysis were carried out by using Z – test used to determine gender difference at $p < 0.05$. Analysis of variance (one ways) followed by Duncan's

multiple range test, were used to determine the significant differences among the different age groups. The differences were tested for their significance at $p \leq 0.05$.

RESULTS

Table (1) showed the distribution of children by age and gender, and demonstrated that the boys were slightly higher percentage (54.58%) than for girls (45.42%).

The results showed that the higher number of the attends was at age 9–10 years for girls and 11–12 years for boys, but the first age group (1– 2 years) showed that the lowest number in both genders.

Table (1): Distribution of children according to age and sex.

Age years	Boys		Girls		Total	
	No.	%	No.	%	No.	%
1 – 2	16	2.49	16	2.99	32	2.72
3 – 4	70	10.89	78	14.58	148	12.56
5 – 6	130	20.22	105	19.63	235	19.95
7 – 8	99	15.40	70	13.08	169	14.35
9 – 10	132	20.53	142	26.54	274	23.26
11 – 12	196	30.48	124	23.18	320	27.16
Total sample	643	54.58	535	45.42	1178	100.00

No: Number of cases

Table (2) represented the distribution of children according to their chief complaint in both genders. The result showed that the most frequent dental complaints were due to pain (60.0 %). The second complaint was check up, esthetic problem was rec-

orded to be the next dental complaint, while for trauma only 0.51 %. However, there were no significant different about attending boys and girls to dental clinic at $p < 0.05$ level.

Table (2): Distribution of children according to their chief complaint.

Age Chief complaint	Boys		Girls		Total	
	No.	%	No.	%	No.	%
1. Pain	383	59.56	325	60.75	708	60.10
2. Check up	183	28.46	178	33.27	361	30.65
3. Trauma	5	0.78	1	0.19	6	0.51
4. Esthetic	47	7.31	22	4.11	69	5.86
5. Preventive measure	25	3.89	9	1.68	34	2.89
Total	643	100.00	535	100.00	1178	100.00

Table (3) revealed that the higher percentage of treatment done for children attending the clinic was the fluoride application (27.8 %) then for scaling and polishing (25.2 %), extraction also represented a higher percentage of treatment done (22.2 %), while fissure sealent represented the lesser

percentage of treatment done in clinic for children (0.4 %).

Table (4) showed that more than ¾ of sample (86.3 %) attended one time only to seek the treatment, while only 0.2 % of sample attended about six or more for follow up.

Table (3): Distribution of children according to the type of treatment achieved for them.

Type of treatment	Number of cases	%
1. Extraction	261	22.2
2. Scaling and polishing	297	25.2
3. Fluoride application	327	27.8
4. Fissure sealant.	3	0.4
5. Temporary filling	16	1.4
6. Amalgum restoration	174	14.8
7. Light cure filling	37	3.1
8. Root canal filling	33	2.8
9. Others	30	2.5
Total	1178	100.00

Table (4): Distribution of patients according to the number of visits to the pedodontic clinic.

Numbers of visit	Number of cases	%
1	1017	86.3
2	110	9.3
3	34	2.9
4	11	0.9
5	4	0.3
6	2	0.2
Total	1178	100.00

Table (5) showed that mean dmft for the total sample is 3.05%, males showed higher mean dmft (3.14) than females

(2.94) but with no significant difference as totally.

Table (5): Caries experience (dmft) (mean and standard deviation) by gender.

Age (years)	Sex	No.	Mean±SD	P- value
1-2	Male	16	0.81±1.16	0.73
	Female	16	0.68±0.87	NS
	Total	32	0.75±1.01	
3-4	Male	70	3.07±2.56	0.83
	Female	78	2.97±2.39	NS
	Total	148	3.02±2.47	
5-6	Male	130	5.20±2.71	0.03
	Female	105	5.90±2.73	S
	Total	235	5.51±2.73	
7-8	Male	99	5.66±2.05	0.02
	Female	70	4.62±1.82	S
	Total	169	5.23±2.02	
9-10	Male	132	3.19±1.65	0.02
	Female	142	2.16±1.54	S
	Total	274	2.66±1.67	
11-12	Male	196	0.69±0.92	0.84
	Female	124	0.66±0.88	NS
	Total	320	0.68±0.90	
Total sample	Male	643	3.14±2.73	0.32
	Female	535	2.94±2.67	NS
	Total sample	1178	3.05±2.70	

SD: Standard deviation; NS: Not significant; S: Significant.

Significant difference between males and females at $p < 0.05$.

Tables (6 and 7) revealed that the mean dmft was increasing from the first age group till the third age (5 – 6 years old) then it started to be decreased till the last age (11–

12 years old). This difference between age group was found to be statistically significant.

Table (6): Analysis of variance of caries experience (dmft) according to age.

Sex	dmft	df	Sum of squares	Mean square	F-value	Significant
Male	Between groups	5	2443.076	488.615	131.406	0.000
	Within group	637	2368.591	3.718		
	Total	642	4811.667			
Female	Between groups	5	1932.040	386.408	108.011	0.000
	Within group	529	1892.495	3.577		
	Total	534	3824.535			

df: Degree of freedom;

Table (7): Duncan multiple range test of caries experience (dmft) according to age.

Age(years)	Sex	Number	Mean \pm SD	Duncan's group
1 – 2	Male	16	0.81 \pm 1.16	A
	Female	16	0.68 \pm 0.87	a
	Total	32	0.75 \pm 1.01	(A)
3 – 4	Male	70	3.07 \pm 2.56	B
	Female	78	2.97 \pm 2.39	c
	Total	148	3.02 \pm 2.47	(B)
5 – 6	Male	130	5.20 \pm 2.71	C
	Female	105	5.90 \pm 2.73	e
	Total	235	5.51 \pm 2.73	(C)
7 – 8	Male	99	5.66 \pm 2.05	C
	Female	70	4.62 \pm 1.82	d
	Total	169	5.23 \pm 2.02	(C)
9 – 10	Male	132	3.19 \pm 1.65	B
	Female	142	2.16 \pm 1.54	b
	Total	274	2.66 \pm 1.67	(B)
11 – 12	Male	196	0.69 \pm 0.92	A
	Female	124	0.66 \pm 0.88	a
	Total	320	0.68 \pm 0.90	(A)

SD: Standard deviation; Mean with same letters are statistically not significant at $p \leq 0.05$; Capital letters in brackets show Duncan results for totals between age groups; Capital letters show Duncan results for males between age groups; Small letters show Duncan results for females between age groups.

Table (8) showed that the mean DMFT for total sample 2.68. Males showed slightly higher mean DMFT (2.92) than for females (2.38), this gender difference was found to be statistically not significant.

Tables (9 and 10) showed that the mean DMFT for 5–6 years old is zero as the first permanent molar is either partially erupted or non – erupted. The mean DMFT appeared to be increasing from 1.66 at the age 7–8 years to 2.20 at the age 9–10 years to 3.63 at the age 11–12 years. This differ-

ence was found to be statistically significant.

Table (11) showed the percentage of caries free children (DMFT = 0, dmft = 0) and found only 10.3 % of total sample was caries free and the highest number of caries free children was in the first age group (53.15%). The percentage appeared to be decreasing with increasing age till the fourth age group (7– 8years) then it started to be increasing with increasing age.

Table (8): Caries experience (DMFT) (mean and standard deviation) by gender.

Age(years)	Sex	No.	Mean+SD	P- value
5 – 6	Male	130	0.00±0.00	
	Female	105	0.00±0.00	
	Total	235	0.00±0.00	
7 – 8	Male	99	1.80±1.64	0.23
	Female	70	1.45±1.28	NS
	Total	169	1.66±1.51	
9 – 10	Male	132	2.11±1.45	0.63
	Female	142	2.28±1.85	NS
	Total	274	2.20±1.67	
11 – 12	Male	196	4.02±2.14	0.03
	Female	124	3.01±1.85	S
	Total	320	3.63±2.09	
Total sample	Total Male	557	2.92±2.10	0.23
	Total Female	441	2.38±1.83	NS
	Total sample	998	2.68±2.00	

SD: Standard deviation; NS: Not significant.

Table (9): Analysis of variance of caries experience (DMFT) according to age.

Sex	dmft	df	Sum of squares	Mean square	F-value	Significant
Male	Between groups	2	447.771	223.886		
	Within group	424	1443.521	3.405	65.761	0.000
	Total	426	1891.293			
Female	Between groups	2	111.167	55.583		
	Within group	333	1020.072	3.063	18.145	0.000
	Total	335	1131.238			

df: Degree of freedom

Table (10):Duncan multiple range test of caries experience (DMFT) according to age.

Age (years)	Sex	Number	Mean ± SD	Duncan's group
5 – 6	Male	130	0.00±0.00	
	Female	105	0.00±0.00	
	Total	235	0.00±0.00	
7 – 8	Male	99	1.80±1.64	A
	Female	70	1.45±1.28	a
	Total	169	1.66±1.51	(A)
9 – 10	Male	132	2.11±1.45	A
	Female	142	2.28±1.85	b
	Total	274	2.20±1.67	(B)
11 – 12	Male	196	4.02±2.14	B
	Female	124	3.01±1.85	c
	Total	320	3.63±2.09	(C)

SD: Standard deviation; Mean with same letters are statistically not significant at $p \leq 0.05$; Capital letters in brackets show Duncan results for totals between age groups; Capital letters show Duncan results for males between age groups; Small letters show Duncan results for females between age groups.

Table (11): Caries free children by age and sex (expressed as number (No.) and percentage (%)).

Age (years)	Sex	Total Number	Caries free children	
			Number	%
1 – 2	Male	16	9	56.3
	Female	16	8	50.0
	Total	32	17	53.15
3 – 4	Male	70	17	24.3
	Female	78	19	24.4
	Total	148	36	24.35
5 – 6	Male	130	10	7.7
	Female	105	5	4.8
	Total	235	15	6.4
7 – 8	Male	99	3	3.0
	Female	70	0	0.0
	Total	169	3	1.8
9 – 10	Male	132	6	4.5
	Female	142	13	9.2
	Total	274	19	6.9
11 – 12	Male	196	18	9.2
	Female	124	13	10.5
	Total	320	31	9.7
Total sample	Total male	643	63	9.8
	Total female	535	58	10.8
	Total sample	1178	121	10.3

DISCUSSION

The results of this study showed that the number of boys and girls attended to clinic was nearly in equal percentage with slightly higher percentage for boys than girls. This result is in agreement with the results of other studies.⁽⁹⁻¹¹⁾

The number of the children attended to the clinic was increased as the age increased except the fourth age group; this finding could be due to that children from the third age group have mixed dentition. Since, dental caries is irreversible, and the prevalence and severity of dental caries in permanent teeth is increased.^(9, 12-14)

Data of this study showed that relief of pain was the most frequent dental treatment demand, this is in agreement with work of other researchers.^(3, 9, 10) This will indicate that parents brought their children to the clinic when only there is painful or necessary condition in addition to poor dental knowledge and a negative attitude toward oral health with not knowing the importance of the primary dentition, this is in agreement with Khamrco and Al-Naimi.⁽¹⁵⁾

The result revealed that large number of children attended the clinic for extraction due to painful or badly carious teeth, th-

is result is in agreement with many studies carried out in Iraq.^(16, 17) This picture indicates that restorative dentistry is much restricted, while the highest percentages of dental services achieved for children by the department was fluoride application, scaling-polishing, this indicates that preventive dentistry occupy the vast majority because it is a restrict for fifth class student to fill the preventive program.

The number of visit of children attended to the clinic to complete the treatment plan showed that the most children attended only one time to relief the chief complaint or sometimes came two or three time till they finish the necessary complaint, but they hadn't any interest to come again to complete their preventive program that is necessary for them, this finding is in agreement with Al-Mukhtar.⁽⁹⁾

The study showed that the mean dmft for the total sample was decreased from the third age group till the last age, this may be attributed to the exfoliation of the primary at older age, the mean dmft differences between the different age groups was statistically significant, this is in agreement with other studies.^(9, 18-22)

Boys slightly higher dmft than girls although the difference was not significant, this is in agreement with other studies.^(21, 23)

The results of this study had shown that caries prevalence and severity among permanent dentition was increasing with advancing age with statistically significant differences found between the last three age group, this may attributed to the irreversibility of the caries process and accumulative nature of the caries disease. This finding is in agreement with many studies in the developing countries.^(20, 22, 24-28)

As in many studies caries experience in the primary dentition was more than that recorded for permanent dentition, this is in agreement with other studies.^(12, 20, 25, 26)

The percentage of caries free children for the total sample was 10.3 %, and the highest one is in the 1st age group, this may be due to early erupted primary teeth, while the lowest percentage in the 4th age group (1.8 %) which was attributed to mixed dentition.

The increase in the caries free children among 12 years old, related to the reduction in the caries experience of the primary dentition as the exfoliated and the low prevalence of caries attack to the permanent dentition, the first goal of the WHO for the year 2000 is that 50% of 5 – 6 years old children will be caries free, the result of this study regarding 6 years old children is much lower than this goal and is much lower than that reported in some developed countries.⁽²⁹⁻³⁴⁾ The decline in prevalence of dental caries among these countries is probably due to the cumulative effect of various preventive measures and the availability of water fluoridation.

The percentage of caries free children found by Mahmood⁽²¹⁾ among primary school children in Baghdad was 23.8% for the total sample while that found by Khamarco and Al – Salman⁽²⁸⁾ among 4th – 8th school children in Mosul center was 16.7% for the total sample. The decrease in the percentage of caries free children in this study may be due to lack of awareness, limited available preventive reasons.

To compare this study with that of Al –Mukhtar⁽⁹⁾ that study carried out in Pedodontic clinic before 7 years, found nearly same result about sample distribution, main causes, type of treatment and number of vi-

siting of children to the clinic. This indicates that the approach achieved for treatment procedures is nearly the same without significant differences.

So improvement of dental health attitudes and perception of parents and children toward dentistry is very essential which may increase the demand for treatment and encourage parents to attend dental clinic with their children regularly.

CONCLUSION

This study was found caries experiences in permanent dentition increasing with age while for primary dentition decreasing with increasing age with no gender variation and the majority of treatment achieved for them was primary prevention (fluoride application, scaling and polishing) followed by tertiary prevention (extraction) and then secondary prevention (amalgam, light cure and root canal filling).

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