

Prevalence of Dental Caries in School Children from a Suburban Area in Tripoli, Libya

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Prevalencija zubnog karijesa u školske djece
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Summary

Seven hundred and twenty school children of primary school grades 5 and 6 in Hadba Sargia area in Tripoli were examined for dental caries. The mean DMFT index for the whole sample of children was 1.58. The DT component comprised 1.34 and MT component 0.21 of DMFT score, which made 42.22% and 13.33% of total children sample, respectively. The amount FT component was 0.03 (1.39%) of all children with DMFT examined. The number of children with at least one DMFT score was 410 (56.94%) of the total study sample. In children with poor oral hygiene, DMFT score was significantly higher (1.91) than in those with good oral hygiene (0.85) ($P < 0.01$). Children whose mothers had low education exhibited a higher total DMFT score (1.85) than those whose mothers had high education (1.16).

Key words: *Dental caries, prevalence, school children.*

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Introduction

Good dental health makes an important contribution to community health, yet dental disease is one of the great scourges threatening man's search for quality in life.

The advent of dental caries is relatively recent in human history. While in ancient man teeth decay, the prevalence and severity of the disease were considerably lower than today.

Dental caries is ubiquitous in modern man, especially in developed and urban population of developing countries (1,2).

Ludwig and Bibby (3) have demonstrated that fluoride is not the sole variable in determining geographic differences in caries activity, while presence or absence of trace minerals in the

water, food and soil, and other variables eg. age, sex, socio-economic status are also responsible for its occurrence. It is primarily a disease of childhood and adolescence when diet and oral hygiene are unfavorable (4). At all ages the prevalence of dental caries was higher in female than male (5). James et al. (6) and Beal et al. (7) reported that children with good dental hygiene had lower caries incidence than with poor oral hygiene.

Today dental caries is considered an infectious and transmissible disease (8) so it is a matter of concern to find out its severity in school children.

The aim of the present study was:

– to assess out the prevalence of dental caries among school children in Tripoli,

– to demonstrate the relation between dental caries and age, sex, oral hygiene and educational level of their mothers,

– to deliver health education regarding prevention and control of dental caries to school children.

Material and methods

The sample consisted 720 children from Al Kurania primary school, grades 5 and 6 from Hadba Sargia in Tripoli. This is a field – practice area of the Department of Family and Community Medicine.

Dental examination were performed by investigators, together with three junior doctors after intensive training at the Badri-Polyclinic, Department of Dental Medicine, during a period of seven days. The study was conducted during November and December 1989.

The diagnosis of caries was primarily based on visual criteria. All teeth were systematically examined and caries was recorded where a breakdown of enamel resulting in cavitation, or opacity beneath enamel was visible. In doubtful cases, an expert opinion was asked from a dentist.

DMFT and dft scores (9) were used to observe dental caries in permanent and deciduous teeth, respectively. An individual caries experience is represented by the total number of decayed (D), missing (M), and filled (F) teeth. This score constitutes the DMF tooth count (DMFT) for an individual. The sum of individual DMF scores divided by the number of individuals examined produces the average DMFT score for children. For deciduous teeth, the index included the decayed (d), and filled (f) teeth only. The dft index does not include missing teeth, because

Table 1. Distribution of decayed, missing, and filled teeth component in school children

Tablica 1. Distribucija karijesnih, izvađenih i zuba s ispunima u školske djece

DMFT component	Children with DMFT (N=720)		Score per child
	η	%	
Decayed teeth (DT)	304	42,22	1,34
Missing teeth (MT)	96	13,33	0,21
Filled teeth (FT)	10	1,39	0,03
Total	410	56,94	1,58

of difficulties in differentiating deciduous teeth lost as a result of caries from those lost by natural exfoliation.

Oral hygiene was assessed according defined categories designated on scoring basis as good, fair and poor, as described by James et al (6).

a) Elements assessed:

1. Tooth brushing: No or occasionally – 0
Morning or evening – 1
Morning & evening – 2
2. Tartar: Present – 0
Absent – 1
3. Odor: Present – 0
Absent – 1
4. Rinsing: Yes – 1
No – 0

b) Scoring system:

- Score – 5 – Good oral hygiene
Score – 4 – Fair oral hygiene
Score – 3 or less – Poor oral hygiene.

Other information e.g., age, sex, mother's level of education were recorded in pre-tested forms for each individual.

Results

Four hundred and sixty boys and 260 girls were included in the study. The mean age of the children was 11.5 years. The mean DMFT for all children examined was 1.58, while the number of children with at least one DMFT score was 410 (56.94%). In 43.06% of children a zero DMFT score was observed.

Table 1 shows the distribution of decayed, missing, and filled teeth in school children. The DT component made 1.34 (42.23%), followed

Table 2. Prevalence of dental caries in school children in relation to their age

Tablica 2. Prevalencija zubnog karijesa u školske djece u odnosu na njihovu dob

Age (years)	No. of children examined	Children with dental caries		DMFT index per child
		η	%	
10	175	94	53,71	1,41
11	251	140	55,76	1,54
12	201	114	56,72	1,56
13	093	62	66,67	2,10
Total	720	410	56,94	1,58

by MT component 0.21 (13,33%). Only 1.38 children had a FT component (0.03), ($P < .001$).

Table 2 shows that children aged 13 had a 2.10 of DMFT score as compared to children at the age of 10 (DMFT 1.41) ($P < 0.05$). The occurrence of dental caries and DMFT score were found to be directly proportional to children's age. The lowest prevalence (53.71%), and DMFT score (1.41) were recorded in age group of 10 years.

Table 3. Prevalence of dental caries in school children in relation to their sex

Tablica 3. Prevalencija zubnog karijesa u školske djece u obzirom na spol

Sex	No. of children examined	Children with dental caries η	%	DMFT index per child
Male	460	248	53,91	1,48
Female	260	162	62,31	1,79
Total	720	410	56,94	1,58

Table 3 shows DMFT score 1.79 (62.31%) in females having at least one DMFT component to be significantly higher as compared to males ($P < 0.005$).

Table 4 shows that children with good oral hygiene had a significantly lower (40.58%) prevalence of caries ($P < .01$), and DMFT score (0.85) as compared to fair and poor oral hygiene.

Table 5 shows that children having educated mothers (secondary and higher) had lower DMFT score of 1.18 (50.70%) statistically significant, ($P < 0.005$) than those having uneducated (below secondary level) mothers. DMFT score of 1.85 constituted 61.01%.

Discussion

The study showed that the mean DMFT index for all children examined was 1.58; 56.94% children had at least one DMFT score as similar reported by Murray et al. (4) in Newcastle school children aged 10. Kumar et al. (10) reported on a similar DMFT score of 1.5 in Newburgh school children aged 7–14.

In Guernsey school children aged 12, Anderson et al. (11) showed the percentage of dental

Table 4. Prevalence of dental caries in school children in relation to their oral hygiene

Tablica 4. Prevalencija zubnog karijesa u školske djece u odnosu na njihovu oralnu higijenu

Oral Hygiene	No. of children examined	Children with dental caries η	%	DMFT index per child
Good	138	56	40,58	0,85
Fair	182	94	51,64	1,44
Poor	400	260	65,00	1,91
Total	720	410	56,94	1,58

caries-free children to be 38%, while this study showed 43.06% of children to be caries-free. Other studies, e.g., Blinkhorn et al (12), Beal et al. (7), and WHO Global Oral Data bank (13) report on a higher DMFT index, especially in developed countries (Table 6). It may be due to excessive use of refined sugars in developed countries, along with geographical distribution of natural fluoride levels in water, and presence or absence of certain trace minerals in the water, food, and soil (3).

The present study revealed that the DT component of 1.34 (42.23%) was significantly higher than MT of 0.21 (13.33%) and FT component (0.03) (1.38%). Similar findings were reported by Blinkhorn et al. (12), regarding DT and MT components was higher, maybe due to more dental health consciousness. Further 62.31% females experienced dental caries and had at least one DMFT score higher than males (53.91%). DMFT component was 1.79 and 1.48 in females and males respectively, and similar data were reported by Barret and Williamson (14), maybe due to earlier tooth eruption patterns in females.

Table 5. Prevalence of dental caries in school children according to mother's level of education

Tablica 5. Prevalencija zubnog karijesa u školske djece u odnosu na edukacijsku razinu njihovih majki

Mother's level of education	No. of children examined	Children with dental caries η	%	DMFT index per child
HIGH-educated (secondary and higher)	284	144	50,70	1,16
LOW-educated	436	266	61,01	1,85
Total	720	410	56,94	1,58

The prevalence of dental caries and DMFT score was observed to be lower in children with good dental hygiene, as compared to fair and poor oral hygiene. Similar findings were reported by Beal et al. (7), and Bedi (15).

Efficient tooth-cleaning, irrespective of the method used, has been repeatedly demonstrated to be important in maintaining dental health and reducing disease prevalence. In one study, once-a-day tooth-brushers had more disease than those brushing the teeth twice daily. Mouth rinsing and presence or absence of plaque also play a role in the occurrence of dental caries (16).

Bedi (15) observed the mother's level of education to be related to the prevalence of dental caries in Asian school-children, and similar was also observed in this study. It may be that educated mothers are more conscious of dental health of their children.

Conclusion

It is evident from the results of this study that good oral hygiene and educational level of mothers are related to the occurrence of dental caries.

Table 6. *Dental caries prevalence in other countries (WHO Global oral data bank)*

Tablica 6. *Prevalencija zubnog karijesa u ostalim zemljama (podaci iz opće Oralne banke podataka SZO)*

Country	DMFT index at 12 years of age	Year
Australia	2,1	1982
Canada	2,9	1979
Chile	6,3	1978
Ethopia	1,5	1975
Iran	4,9	1976
Jordan	2,7	1981
Lebanon	3,6	1974
Morocco	4,5	1980
Philippines	2,9	1981
Thailand	2,7	1977
Tripoli (Sub-Urban)	1,5	1989
Uganda	1,5	1982
Zair	2,3	1982

PREVALENCIJA ZUBNOG KARIJESA U ŠKOLSKE DJECE PRIGRADSKOG PODRUČJA TRIPOLIJA, LIBIJA

Sažetak

Zubni karijes istraživao je u 720 školske djece petog i šestog razreda osnovne škole u području Habda Sargia u Tripoliju. Prosječan DMF (KEP) indeks zuba za cijeli uzorak djece bio je 1.58. Na komponentu D (K) otpadalo je 1.34 ukupnog skora ili 42.22% djece s pozitivnim nalazom. Komponenta M (E) iznosila je 0.21 od DMF skora i 13.33% djece, dok je na F (P) komponentu DMF indeksa otpadalo 0.03 s 1.39% djece. U ukupnom uzorku djece s nalazom DMF od najmanje jedan ili više bilo je 410 ispitanika ili njih 56.94%. DMFT skor u djece sa slabom higijenom iznosio je 1.91, a u djece s dobrom higijenom 0,85 što je statistički značajna razlika ($P < 0.01$). Djeca majki s niskim obrazovanjem imala su viši ukupni DMF skor (1.85) od djece majki s visokim obrazovanjem (DMFT = 1.16).

Ključne riječi: *zubni karijes, prevalencija, školska djeca*

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