Caries experience in a selected group of children in Kuwait

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Murtomaa H, Al Za'abi F, Morris RE, Metsäniitty M. Caries experience in a selected group of children in Kuwait. Acta Odontol Scand 1995;53:389–391. Oslo. ISSN 0001–6357.

A study to set base-line data for future interventions to develop young children's oral health care was carried out in November 1993 in Kuwait. The study population comprised a random sample of 450 3- to 7-year-old children drawn from the students in Kindergarten and Primary Departments of Kuwait English School in the Salwa District of Kuwait. The mean dmft and mean d values were highest at the age of 6 (4.1, SD = 3.6, and 2.1, SD = 2.4, respectively) and lowest at the age of 4 (1.4, SD = 2.5, and 1.0, SD = 2.0, respectively). The proportion of caries-free children (dmft = 0) was 39%. Molars and maxillary incisors were most prevalently affected by caries. There seems to be a distinct need for both organized dental health care and preventive programs for the very young children in Kuwait. □ *Dental caries; epidemiology; preschool child*

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During the past decades the decreasing trend in caries in children has been documented in several studies (1–5). Most studies have focused on children in industrialized countries, where the decrease in caries, with a few exceptions, is remarkable and indisputable (6, 7). The dental health of preschool or kindergarten children has not been documented to the same extent as that of primary schoolchildren. This is probably because primary teeth in many countries still are not considered as important or valuable as permanent teeth, and also because in many countries the older children may be going to school and are easier to identify and to study (8). Yet, different groups in society will require appropriate preventive programs and the provision of targeted oral health care, especially when there appears to be polarization of dental caries prevalence to a certain group of individuals (9).

Although the state of Kuwait has had a national oral health care program free to all residents since the 1970s, there is no evidence that oral disease morbidity rates have been reduced in the general population, and there is evidence that caries in schoolchildren is increasing (7–9). However, no epidemiologic data are available to document oral disease rates in Kuwaiti preschool children. The aim of this pilot study was to study caries experience in 3- to 7-year-old Kuwaiti children, to set base-line data for future oral health interventions.

Materials and methods

The study was carried out in the Salwa District of Kuwait, in late 1993. The study sample comprised 450 children, 270 boys and 180 girls (Table 1), whose age ranged from 3 to 7 years. The sample was randomly selected among the students in Kindergarten and Primary Departments of Kuwait English School. Seventy-eight per cent of the students were of Kuwaiti origin.

The children were examined by an experienced dentist (H. Murtomaa). The examinations were carried out with a disposable mouth mirror and an explorer in a portable dental chair furnished with examination light. Teeth were not dried with air before examination, and no radiographs were taken. Caries was diagnosed at the cavitation level in accordance with WHO criteria (10). Dental caries was scored as the number of decayed, missing, and filled primary teeth (dmft) and recorded by two trained Kuwaiti hygienists.

In statistical analysis Student's t test was used to test statistically significant differences between the background variables. A p value 0.05 or less was considered significant for the study.

Results

The mean dmft and mean d were highest at the age of 6 years and lowest at the age of 4 years (Table 1). No statistically significant differences in caries experience were found between boys and girls or between Kuwaiti and non-Kuwaiti children ($p = 0.650$, $p = 0.394$). The children with caries had up to 16 decayed, missing, or filled teeth. Twenty-six per cent of the children belonged to the high-caries group (dmft ≥ 5). The pro-

Table 1. The mean dmft, d indexes, proportion of caries-free, and mean dmft of those in the age group with caries among 450 3- to 7-year-old children studied

Age, years	*n*	Mean dmf	Mean d	Caries-free, % (dmf = 0)	Caries-free (*n*)	Amount of caries*	Mean dmft of those with caries†
3	26	1.7	1.3	46	12	44	3.1
4	111	1.4	1.0	63	70	155	3.8
5	137	2.9	1.9	39	54	395	4.8
6	108	4.1	2.1	20	22	445	5.2
7	68	3.8	1.6	25	17	261	5.1
Total	450	2.9	1.6	39	175	1300	4.4

*Total amount of dmft in the age group.
†Mean dmft of those in the age group with caries.

portion of caries free (dmft = 0) subjects was 39% (Table 1). It was highest at the age of 4 years (63%) and lowest at the age of 6 years (20%).

When the components of the dmf index were studied separately, decayed teeth represented 56%, missing teeth 31%, and filled 13%. The relative proportion of decayed teeth decreased with age from 78% in 3-year-olds to 42% in 7-year-olds, with a corresponding increase in the f component from 14% to 42%.

The tooth-specific pattern of caries experience is shown in Fig. 1. Molars and maxillary incisors were most often affected by caries, and only a minor proportion of the caries lesions was found in canines and mandibular incisors.

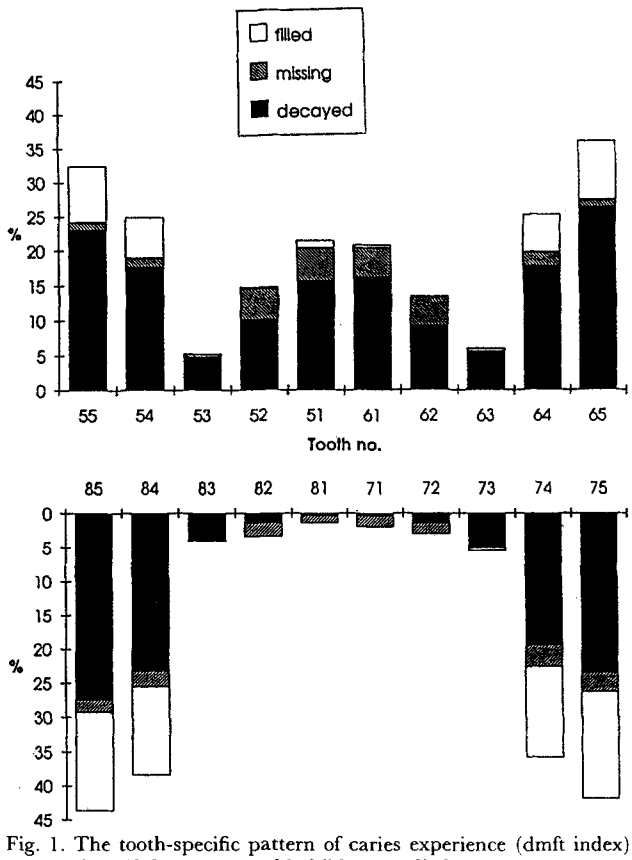

Fig. 1. The tooth-specific pattern of caries experience (dmft index) among the 450 3- to 7-year-old children studied.

Discussion

The children in the Kuwait English School are not necessarily representative of the entire country. Social class and residence are known to relate to caries prevalence and oral health behavior (11–13). The study population most likely represents higher socioeconomic status than the average, as this school attracts a high socioeconomic group to its English-based program. Therefore, the caries experience recorded should be considered an underestimation rather than an overestimation of the present situation in the whole country.

The exfoliation of incisors in the older age groups might explain why the d index of 7-year-olds is lower than for the 6-year-olds (Table 1). The 6-year-olds may still have their carious incisors, whereas the incisors of the 7-year-olds have exfoliated. The mean dmft of the preschool children studied (2.9) is higher than that found in the Nordic countries in general, where mean dmft scores vary between 0.3 and 2.1 (13–17). Iceland is an exception in Scandinavia, with mean dmft scores of 2.4–4.1 for 4- to 6-year-olds (18, 19). In Finland, for instance, in 1987 the mean dmft of 3- to 7-year-olds was 1.3 (16). The difference may be partly due to the lack of organized preventive oral health care system for these age groups in Kuwait. In some European countries the prevalence of caries is still high, but where preventive programs have been instituted, improvements can be shown (20).

The national oral health services of Kuwait remain curative/extraction-based. Only limited prevention-based programs were available to schoolchildren before 1994. These programs reached some 20% of primary

schoolchildren. None of the children studied had, however, participated in these programs. Care for preschoolers is episodic only and delivered at district health centers. The rapid uncontrolled caries in primary dentition in Southeast Asia has been explained partly by the increased consumption of sugar-containing foods and drinks (20). This is one of the explanations that could hold true also in Kuwait.

The highest caries prevalence observed in the maxillary incisors (Fig. 1) relates to nursing bottle caries. In a 1985 study 12% of kindergarten children in Kuwait experienced nursing bottle caries (21). The percentages observed here indicate a dramatic increase in this caries type since 1985. The prevalence of nursing bottle caries in Western industrialized countries has been estimated at about 5% (22). However, rates up to 53% have been observed in native American populations (23). Bottle and breast feeding are characteristic of each country and reflect local traditions (24). It is necessary to attack nursing bottle caries by reducing the use of bottles containing sugary drinks.

The World Health Organization (WHO), in collaboration with the International Dental Federation, adopted as a global goal for oral health by the year 2000 that 50% of 5- to 6-year-olds should be caries-free (14). On the basis of the present study the goal seems still rather remote. The total proportion of caries-free children studied here (39%) is smaller than in the Nordic countries, where the proportion of caries-free preschool children varies between 58% and 83% (13, 15–17, 25, 26), except in Iceland, where the proportion of caries-free is lower: from 39% to 46% (18, 19). There seems to be a distinct need for organized oral health care and preventive programs for very young children, with regular examinations by dental professionals, in Kuwait.

Acknowledgements.—The authors acknowledge the kind help and cooperation of the staff in Kindergarten and Primary Departments of Kuwait English School in the conduct of this study.

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Received for publication 3 November 1994
Accepted 3 March 1995