The progression of dental disease in Omani schoolchildren

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Following the first National Oral Health Survey of Omani 12-year-olds in 1993, in 1996 a follow-up survey was performed of the same cohort of subjects as 15-year-olds. The mean DMFT was found to have doubled from 1.5 to 3.2. The oral hygiene status remained poor with only a slight increase of those scored as plaque-free from 11% to 19% whilst the number of children reportedly with supra-gingival lingual calculus had risen from 28.5% to 42.5%.

Key words: Oral health, caries, periodontal disease, Oman

The Sultanate of Oman is situated along the south eastern coast of the Arabian Peninsula covering an area of 309,500km². It has a total population of 2.5 million of whom almost a half are children under the age of fifteen. The annual population growth rate is estimated to be 3%. The dentist per capita ratio is 1:8,300. This study reports the findings of the National Oral Health Survey of 15-year-olds which follows that of the same group of subjects performed three years earlier when they were 12-year-olds.

Materials and methods

A sample population was randomly selected from all 10 administrative regions using school class lists correlating to 7.8% of the 15-year-olds target population. Larger sample sizes were used randomly from sparsely populated areas to ensure that suitable numbers were available for regional comparative statistical analysis. A two-day training and calibration course was conducted for 14 dentists and their scribes. The course involved the explanation of the method of data collection, definition of terms and standardisation of the diagnostic criteria using the British Association of the Study of Community Dentistry (BASCD) pack. A clinical calibration exercise was conducted and an inter-examiner reproducibility as described by Rugg-Gunn and Holloway estimated in terms...
intra and inter-examiner agreement. The reliability coefficient ranged from 0.61 to 0.92 for the latter, with the mean score of 0.83.

The survey was conducted in October 1996 according to the BASCD protocol using portable equipment in classrooms. Participants were examined lying supine on a table. A standard light source (Daray), providing light intensity of 4000 lux at one metre was used. Teeth were examined using a No. 4 plane mouth mirror and a CPITN-E probe for displacement of debris only (when present). Presence of caries was diagnosed on visual clinical inspection only. The oral hygiene was reported by noting the presence or absence of plaque on the six index teeth, namely the teeth 16, 11, 26, 31, 36 and 46, and also by the presence of calculus supra-gingivally on the lingual aspects of the lower incisors and canines. The presence of dental fluorosis on the labial aspects of upper incisors and canines was also scored. Data was processed and analysed using SRSS version 5 software package.

Results

In total, 2,860 15-year-olds were included in the survey comprising 7.8% of the target age group. The mean national DMFT was found to be 3.23 with the weighted mean DT, MT and FT scores being 2.8, 0.3 and 0.1 respectively. However, there was considerable variation of the DMFT between the different regions ranging from 1.5 in South Sharqiya to 6.5 in Dhofar. The percentage of children with no caries experience (DMFT=0) was 26.8%; in other words, almost three-quarters had experienced decay in their permanent dentition. The Care Index (F/DMFT) was only 3%. Caries affected 60% of the first permanent molars and 19% of the children had at least one of their permanent molar teeth missing by this age. Dental fluorosis, as noted on the labial aspects of the maxillary incisors and canines by the presence of symmetrical hypoplasia and diffuse symmetrical marks, was 5.6% and 10.6% respectively, again with wide regional variation, the highest being found in South Sharqiya with respectively 28.4% and 44.1% of the affected children. Oral hygiene was found to be poor with more than half of children (58%) having plaque scored in five or six of the index teeth. However, almost 20% were plaque-free. Supra-gingival lingual calculus was noted in 42.4% of the children.

Discussion

It is clear from the above data that a vast number of children suffer from dental caries, and that the severity of the disease was greater than that found in the same age group of subjects three years earlier with the DMFT score having more than doubled. Furthermore, the Care Index (F/DMFT) was low, at only 3%, and since radiographs were not taken, the severity and extent of the decay is likely to be underestimated for the presence of inter-proximal caries.

Fluorosis was particularly prevalent in South Sharqiya with the severe form of the condition (symmetrical hypoplasia) affecting 28.4% of the children. Apart from the capital (Muscat), where water fluoridation was introduced in 1994 (0.5ppm), most areas of the country still depend on underground water sources.

Oral hygiene has deteriorated with 18.6% of children claiming to have never brushed their teeth. However, this figure is probably higher as indicated by the fact that plaque was scored in five or six of the index teeth in 58% of the children. The corresponding calculus score was also high, 42.5%.

This is the first Oral Health Survey that permits an examination of the progression of dental disease by comparison to the previous National Oral Health Survey performed on 12-year-olds in 1993. The DMFT score has more than doubled and the prevalence of children affected by dental caries has risen from 56% to 69% in a three-year period for the same age group. There was also a dramatic decline in the number of children without caries experience, from 42% to 27%. The distribution of caries incidence is almost identical in both surveys with the first permanent molar being the tooth most affected by caries.

In comparing the results of this survey of 15-year-olds with data from neighbouring countries it is clear that although the level of decay is not significantly different, the oral hygiene practices in Oman appear much poorer.

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References