Oral health survey in 12-year-old children in the Islamic Republic of Iran, 1993–1994

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استقصاء حول صحة الفم والأسنان بين الأطفال في الثانية عشرة من العمر في جمهورية إيران الإسلامية ، 1993-1994

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خلاصة : تم تصنيف عدد يبلغ 43772 من تلاميذ الصف الخامس في جميع مناطق ومحافظات البلاد بحسب جنسهم ومحل إقامتهم (في الحضر أو الريف) . وتم فحصهم لتقدير منسوب الأسنان المسابة بالتسوس أو المفقودة أو المحشوة ، واستعمال فرش (فراشي) الأسنان . وأظهر التحليل أن منسوب التسوس والفقد والحشو بين التلاميذ في سن الثانية عشرة بلغ 1.67 ، وهو منسوب منخفض وفقاً لمعايير منظمة الصحة العالمية . وتبين أن أكثر الأسنان إصابة بالتسوس كانت الأرحاء (الأضراس) الدائمة الأولى . ولوحظ أن المنسوب كان أعلى بين الإناث عنه بين الذكور . وفي بعض المناطق كان المنسوب أعلى بين تلاميذ الحضر بدرجة يعتد بها إحصائياً ، بينما كان أعلى بين تلاميذ الريف في مناطق أخرى .

ABSTRACT A total of 43 772 students in fifth grade were classified by sex and place of residence (urban/rural) in all districts and provinces of the country, and were examined to estimate the decayed, missing and filled (DMFT) teeth index and tooth brushing. Analysis revealed that the DMFT index in 12-year-old students was 1.67, which is considered low according to WHO criteria. The teeth with most caries were the first permanent molars. Girls had higher DMFT than boys. In some areas, urban students had significantly higher DMFT whereas in other areas, rural students had significantly higher DMFT.

Enquête de la santé bucco-dentaire chez les enfants de 12 ans en République islamique d'Iran, 1993–1994

RESUME Un nombre total de 43 772 élèves en dernière année de primaire ont été classés par sexe et lieu de résidence (urbain/rural) dans tous les districts et provinces du pays et ont subi un examen pour estimer l'indice de dents cariées, absentes et obturées (DCAO) et le brossage des dents. L'analyse a révélé que le DCAO chez les élèves âgés de 12 ans était de 1,67, ce qui est considéré comme un niveau bas selon les critères de l'OMS. Les dents qui étaient les plus cariées étaient les premières molaires permanentes. Les filles avaient un DCAO plus élevé que les garçons. Dans certaines zones, c'étaient les élèves qui vivaient en milieu urbain qui avaient un DCAO considérablement plus élevé alors que dans d'autres, c'étaient ceux qui vivaient en milieu rural.

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Introduction

To achieve the Islamic Republic of Iran's national developmental goals, epidemiological surveys are necessary for major health programming [1]. Therefore, an oral health survey (second phase) began in February 1993 with the cooperation of the Ministry of Health and Medical Education.

A World Health Organization (WHO) report indicates that the DMFT index in the Islamic Republic of Iran increased between the years 1974 and 1976-77 from 2.4 to between 2.6 and 4.2 [2]. Since 1994 was named the year of oral health by WHO and considering the WHO goal for the year 2000, which is that the DMFT index at age 12 years should be 3.0 or less [2], the importance of determining this index in all provinces is clear. Thus, the main objectives of this survey were to estimate DMFT in 12-year-old students in all provinces, and to motivate the children towards better oral health care.

Subjects and methods

Since in comparing dental caries prevalence it is necessary to focus on similar age groups, the purpose of this study was to determine DMFT in students of about 12 years of age as this would provide data on caries at the exit of students from primary school. Thus, 43 772 students in the fifth grade (about 12 years old) were examined under the supervision of the Dental Research and Oral Diseases Committee. Data were collected separately by sex in rural and urban schools. All of the statistical activities were implemented by the statistics group of the committee. Results of the survey were computed independently for each province and also the overall results of the country.

Biphasal multifactorial stratified sampling was used. In each stratum, the sampling units were primary schools which were selected randomly without replacement. If the school had both girls and boys, as in some rural areas, it was considered as a single sex school (according to instructions sent from head office) and only students of one sex were examined. In each selected school, students were selected by a circular systematic method.

The country was divided into 24 provinces at the time of the survey, and six members of the Scientific Executive Committee of Oral Diseases and Dental Research were responsible for training and assessing examiners in the 24 provinces. These members were also responsible for checking the questionnaires (with random re-examination) in their provinces. With the cooperation of the Ministry of Education, a computerized list of all primary schools in the country was provided. Each district list included four separate lists with the names of urban and rural schools, by sex. In each district, eight or more primary schools were selected randomly (two urban boys' schools, two urban girls' schools, two rural boys' schools and two rural girls' schools). Two was the smallest number of schools selected so that it was possible to compare the results even within districts.

After selecting the schools for each district, the list was sent to the district, together with special blank forms about the selected schools which were completed in the field. The data were concerned with the address of the selected school and the latest changes in school characteristics. These data were returned to head office with correlated examination forms.

In each selected school, 25 students in the fifth grade were examined and the questionnaires completed. If there were not 25 students in the fifth grade in the selected

school, the nearest school with the same characteristics was joined to the main school and these schools were treated as one.

Personnel, instruments and supplies met WHO criteria [3]; a detailed instruction booklet was also provided and distributed to the examiners. After the forms were completed, they were sent to the district health centre. After primary checking, they were sent to the province health centre and after secondary checking, they were sent to the head office in Teheran. In the head office, after data checking and confirmation, the data were analysed by computer.

Results

Analysis of data revealed that the DMFT index in 12-year-old students in the Islamic Republic of Iran was 1.67 which is considered low according to WHO criteria [2]. Most caried teeth in the survey were first permanent molars. Girls had a higher

DMFT index compared with boys. The locality was an important factor in DMFT. In some areas urban students, and in other areas rural students, had significantly higher DMFT. Half of the students did not brush their teeth (according to their statements). Calculus which needed scaling was seen in 30% of them and 35% needed extractions due to caries. Restorations were needed by 62% of students and 10% had major dentoalveolar disorders. Analysis of the data is summarized in Figures 1-6 and Table 1.

Discussion

The results indicate that there are significant differences in DMFT indices among the provinces. Therefore, it is necessary to implement special programmes for the provinces which have a higher DMFT index than the global target (DMFT = 3 by the year 2000). Overall, the results indicate that the Islamic Republic of Iran is below the global target line. Nevertheless, we

Table 1 Summary of results of oral health survey in the Islamic Republic of Iran, 1993-94*

Finding	Percentage of pupils with the finding								
	Urban		Rural		Total		Total		
	Male	Female	Male	Female	Male	Female	Urban	Rural	Total
Dentoalveolar disorders	11	11	8	8	10	10	11	8	10
Arranged teeth	76	74	77	77	76	75	75	77	76
Brush their teeth	45	69	31	49	39	61	57	40	50
Gum bleeding	16	21	16	20	16	21	19	18	18
Healthy gums	73	78	68	76	71	77	75	72	74
Calculus	31	24	38	30	34	27	28	34	30
Need extraction due to caries	37	29	39	33	38	31	33	36	35
Need restoration due to caries	62	63	61	62	61	63	62	61	62

*Sample size was 43 772: urban boys (12 363), urban girls (12 440), rural boys (9524), rural girls (9445)

Figure 1 DMFT index by province

Figure 4 DMFT index in boys by province

Figure 2 DMFT index in urban areas of the provinces

Figure 5 DMFT index in girls by province

Figure 3 DMFT index in rural areas of the provinces

A = Azarbaijan-e Sharqi	M = Sistan va Baluchestan
B = Azarbaijan-e Gharbi	N = Fars
C = Esfahan	O = Kordestan
D = Ilam	P = Kerman
E = Bushehr	Q = Kermanshahan
F = Teheran province (excl. Teheran)	R = Kohgiluyeh va Buyer Ahmadi
G = Teheran city	S = Gilan
H = Chahar Mahall va Bakhtiari	T = Lorestan
I = Khorasan	U = Mazandaran
J = Khuzestan	V = Markazi
K = Zanjan	W = Hormozgan
L = Semnan	X = Hamadan
	Y = Yazd

Figure 6 DMFT distribution among the teeth

should note that the decay component is the major one among DMFT components. Efforts should be made to change the "decayed" (D) component to "filled" (F). Results in the southern provinces indicate low DMFT, which can be related to high fluoride concentrations in the drinking water (as much as five times the optimum concentration).

Conclusion

Overall, DMFT in the Islamic Republic of Iran can be considered low according to international standards [2]. Since the country

has become more industrialized in recent years and the people, especially youngsters, consume more sugary foods, it is necessary to implement programmes to maintain this low level and even decrease it. This is not possible without further research, especially on diet and training methods.

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