

PREVALENCE AND INTENSITY OF DENTAL CARIES AMONG SCHOOL STUDENTS IN JEDDAH CITY

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ABSTRACT

This survey was conducted on school children of the various educational stages in Jeddah city. The aim was to detect the caries experience of school pupils. A stratified random sample was taken from the various administrative districts of Jeddah. Stratification by age, educational stage and gender was done and random samples were drawn from the school lists of various stages. A total sample of 2400 students was surveyed, half males and half females, equally withdrawn from private and public schools of the various educational levels.

The results revealed a low caries experience 2.5 among the 9-12 year old group, and moderate (DMFT =3.46 and 4.31) among the 13-15 and 16-18 year old groups respectively. The trend was therefore not decreasing. Females and governmental schools had higher DMFT levels in intermediate and high schools. Educational, preventive and therapeutic school dental programs are recommended.

INTRODUCTION

Dental caries, one of the most common disorders of mankind, starts at an early age, affecting children and young adults but can occur at any age. Caries affects all populations and population subgroups, from the highly industrialized to the least developed countries with regional variations. Caries is multifactorial in nature, with various risk factors contributing to its occurrence, including age, sex and socio-economic status.⁽¹⁾

Oral health surveys help to detect the population's oral health status and treatment needs, providing baseline information which help health planners and administrators to establish their oral health plans on the actual need of their populations. ⁽²⁾

During the past 20 years a decline in caries prevalence has been observed in most developed ⁽³⁾ countries, developing ⁽⁴⁾ and Arab countries ^(5, 6, 7).

In the Kingdom of Saudi Arabia, oral epidemiological studies were carried out to determine caries levels of the Saudi population. El Amoudi et al ⁽⁸⁾ (1996) studied a young age group of 6-9 year old in Jeddah and reported that the mean DMFT of deciduous teeth was 4.23, while in permanent teeth the average DMFT of the same age group was 1.85. Concerning the older age groups, El Bakly (1996), investigated the caries intensity at age 12-13 years in Riyadh. The results showed a low to moderate level of dental caries (DMF) = 2.59.⁽⁹⁾ In the same year (1996) Al Shammery conducted a

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survey on a sample of school children aged 12-13 years old from urban and rural areas of ten administrative regions in the Kingdom of Saudi Arabia and it revealed that the mean DMFT did not differ significantly between urban (2.69) and rural areas (2.65) DMFT, as well as the frequency of snacks and sweet drinks.⁽¹⁰⁾

Al Khateeb et al (1991) studied the caries prevalence and treatment needs among children 6-12 years old and young adolescents of the age 15 years, in three communities in Saudi Arabia; Jeddah, Rabagh and Mecca. The mean caries experience of deciduous teeth in 6 year old in Jeddah was, 2.9 in private and 6.3 in public schools with a statistically significant difference. In Rabagh the mean DMFT was 1.5 in private and 2.8 in public schools. In Mecca it was 2.7 and 2.8 in private and public schools respectively.⁽¹¹⁾ The authors reported that the trends were similar regarding the 12-15 year old age groups, being highest in public schools in Jeddah.⁽¹¹⁾ These epidemiologic data on caries levels in various regions of Saudi Arabia, indicated a low to moderate caries experience with apparent social variations. Therefore an update on the local information in Jeddah city was considered important.

The aim of the present study was:

- 1- To assess caries experience among students in each educational stage in Jeddah
- 2- To compare caries prevalence experience between males and females.
- 3- To highlight the effect of social variables public and private schools in Jeddah city.

MATERIALS AND METHODS

A stratified random sample was selected from primary, intermediate and high schools in Jeddah, Kingdom of Saudi Arabia. The sample consisted of 2400 students representing three age groups; 9-12, 13-15, and 16-18 year old. Twenty-four schools were selected randomly from north and east geographic regions. Equal numbers of males

and females were selected from each sampling point as well as equal numbers of private and governmental schools. A special examination chart based on the basic WHO oral health assessment was prepared. The dental examinations were performed by trained examiners reaching to acceptably uniform diagnosis.

The criteria used for diagnosing caries were according to the World Health Organization (WHO, 1997). The examination were carried out in classrooms and performed under florescent lighting with the patient sitting on a normal chair. Disposable mirrors and probes were used to record: decayed, missing and filled teeth (DMFT) and surfaces (DMFS) in the permanent dentition and decayed, filled teeth (df) in deciduous dentition. Occlusal, vestibular, lingual, mesial and distal surfaces were all examined in each tooth.

The data collection took a period of one month. The data was coded, processed and analyzed using SPSS program version 11. Student's t test was used to compare between males and females as well as between private and governmental schools. The results were tabulated and presented.

RESULTS

The prevalence and intensity of dental caries among students is shown in table I and graph 8. The table shows that the mean DMFT at age groups 9-12, 13-15 and 16-18 years was 2.50, 3.46, and 4.31 respectively. The table also shows that the mean DMFS for the same age groups were 4.21, 5.89 and 7.10 respectively, while the mean df was 1.15.

Regarding the intensity of dental caries according to sex, table II and graph 2 show that DMFT and DMFS is slightly higher in males (M) than females (F) in 9-12 year old children but the difference was not statistically significant (M:2.76 and 4.69, F: 2.24 and 3.74). On the other hand DMFT and DMFS were higher in females than males in age group 13-15 years (F:4.61 and 7.27, M: 2.31 and 4.52 respectively) and in age group 16-18 years (F:5.61 and 8.75, M:3.02 and 5.45 respectively). The difference between male and fe-

males was statistically significant in the second and third age groups ($P < 0.05$) but there was no significant difference between male and female regarding DMFT, dft in 9-12 year old children.

Table 3 shows the mean DMFT and DMFS according to the type of school. The results revealed that there was no statistically significant difference between private and governmental schools for the

age group (9-12 years) (primary schools) while the prevalence of dental caries among private schools was less than governmental intermediate and secondary schools and this difference is statistically significant ($p < 0.05$). Private schools showed higher df than governmental schools and this difference was statistically significant ($P < 0.05$). Private schools showed greater number of filled teeth than government schools at all age groups.

Table I: Mean decayed, missed, filled, DMFT, DMFS and df according to age group

Age Group	Mean					
	<i>D</i>	<i>M</i>	<i>F</i>	<i>DMFT</i>	<i>DMF</i>	<i>df</i>
9-12	2.11	0.06	0.36	2.5	4.21	1.51
13-15	2.64	0.13	0.71	3.46	5.89	
16-18	2.95	0.15	1.20	4.31	7.10	

Graph 1

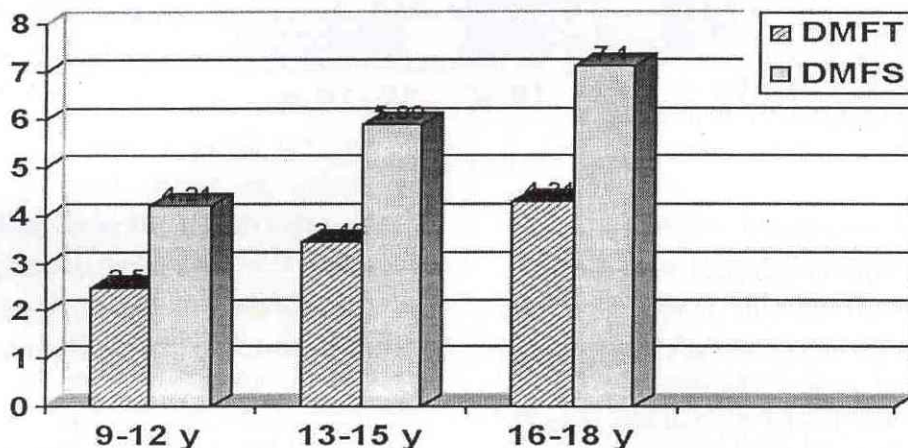


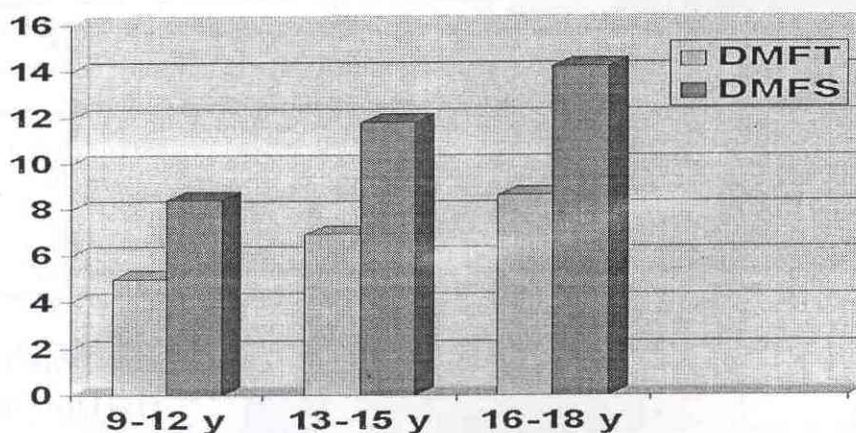
Table II: Mean decayed, missed, filled, DMFT, DMFS, and df according to age groups and sex

Age Group	Sex	Mean					
		<i>D</i>	<i>M</i>	<i>F</i>	<i>DMFT</i>	<i>DMF</i>	<i>df</i>
9-12	Male	2.27	0.07	0.48	2.76	4.69	1.66
	Female	1.94	0.05	0.23	2.24	3.74	1.36
13-15	Male	1.41	0.14	0.75	2.31	4.52	
	Female	3.87	0.07	0.67	4.61	7.27	
16-18	Male	1.89	0.17	0.95	3.02	5.45	
	Female	4.0	0.14	1.45	5.61	8.75	

Table III: Mean decayed, missing and filled teeth (DMFT) and teeth surfaces (DMFS) and (df) according to age groups and type of school.

Age Group	School	Mean					
		<i>D</i>	<i>M</i>	<i>F</i>	<i>DMFT</i>	<i>DMF</i>	<i>df</i>
9-12	Private	1.64	0.06	0.44	2.10	4.03	2.06
	Government	2.62	0.06	0.27	2.71	4.41	1.02
13-15	Private	2.21	0.08	0.82	2.82	4.4	
	Government	3.17	0.18	0.60	4.10	7.4	
16-18	Private	2.34	0.11	1.50	3.95	5.91	
	Government	3.57	0.20	0.90	4.71	8.28	

Graph 2



DISCUSSION

The present study investigated the prevalence and intensity of dental caries in various age groups of Jeddah school populations, including samples of the three educational stages. The results revealed a low caries experience (DMFT = 2.5 at age group 9-12 year olds, DMFT = 3, 4, 6 at age group 13-15 and DMFT = 4.31 at age group 16-18 year old).

These results are in agreement with others obtained from some developed countries, such as the United Kingdom, where the DMFT at age 12 year-olds was 2.55⁽¹²⁾.

The present results also coincide with other Arab countries such as Kuwait where the mean DMFT among children aged 9 to 18 years was 3.25⁽⁷⁾ and with a study conducted in Oman where the DMFT was 3.2 in the age group 15 years old⁽¹⁵⁾.

Although lower levels of caries (mean DMFT at 12 years old = 1.5) among the 12 year old were reported in Iran⁽¹⁵⁾ but they still agree with the low level of dental caries detected in the present survey.

The same lower level was reported in Libya in 1994 (170 where a DMFT of 1.63 was found among 12 year old school children). These lower levels of the Iranian and Libyan studies may be due to the different cultural factors affecting these various communities, while the population in Jeddah is multiethnic comprising of various nationalities with different customs and habits.

Comparing the current findings with previous surveys conducted in Riyadh, nearly the same figures were reported on low to moderate levels of dental caries in 12 year olds^(8,9).

Therefore the trend of dental caries has not shown an observable decline since the previous researches published in 1996. The same trend was reported also in surveys conducted in Kuwait between 1996⁽¹³⁾ and 2004⁽¹⁸⁾, and in Syria⁽¹⁹⁾. The decayed component accounted for the majority of the DMF components in the present survey and in previous researches conducted in Saudi Arabia in Riyadh⁽⁹⁾ and other regions of Saudi Arabia⁽¹⁰⁾. These same findings were also reported in other Arab countries, such as Jordan⁽¹⁹⁾ and the previously mentioned survey in Libya⁽¹⁶⁾.

Regarding the gender difference, the results have shown that among intermediate (age 13-15 years) and secondary school students (age 16-18 years) (tables II), the decayed component in females exceeded twice that of males in the first group, and the filled component in females was almost double that of the males in the last group. These findings are supported by the known sex difference in caries experience⁽¹⁾, and are in agreement with results of research among Egyptian students⁽⁶⁾.

The social factors represented in the type of school, had an observed impact on caries experience of Saudi children (Table III), especially in the higher age groups, since the DMFT levels of governmental school students was higher in these school stages indicating the lack of access of the under privileged groups to health education, prevention and school dental services. The same findings were reported in Jordan⁽¹⁹⁾, where public school children had higher overall DMFT scores and in Syria⁽¹⁸⁾ where a lack of community and preventive oriented approach was noticed in the public sector. Finally in Saudi Arabia it was found that caries and rampant caries were related to social class even in the younger age groups of Saudi children⁽²⁰⁾.

CONCLUSIONS

- The caries experience of Jeddah's school pupils was low among younger age group (9-12 years old), and moderate among the higher age groups.

- * The trend of caries experience is stable since the levels did not decrease since the previous researches conducted in Saudi Arabia in 1996.

- Females showed higher DMFT levels in the intermediate and secondary school stages than males.

- Public schools had higher DMFT levels than private schools indicating the impact of socioeconomic factors on caries experience.

RECOMMENDATIONS

- The low levels of dental caries detected with no trend for any decline of caries experience call for more comprehensive and organized school dental programs with educational and preventive components

- These programs should be directed to school children to raise their level of awareness and improve their oral health practices aiming at lowering caries levels.

- The difference between private and public schools in caries levels indicate the need for free school dental health services for the public sector.

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