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## Oral health knowledge and behavior among male health sciences college students in Kuwait

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### Abstract

**Background:** Health auxiliary personnel have an important role in oral health promotion when they graduate and start working in the health care system. This study aims to find out oral health knowledge and oral health behavior of male Health Sciences College students.

**Methods:** A questionnaire was distributed to all students at the male Health Sciences College in Kuwait (N = 153) during the academic year 2001/2002. The students filled the anonymous questionnaire in the class after the lecture. The response rate was 84% (n = 128). The questions consisted information on the general background, oral health behavior and oral health knowledge.

**Results:** Oral health knowledge seemed to be limited and very few background factors were associated with it. More than half of the students had visited a dentist during the previous 12 months, but only one third of students were brushing twice a day or more often.

**Conclusions:** It may be concluded that the male Health Sciences College students seemed to have appropriate knowledge on some oral health topics, but limited knowledge on the others. Their toothbrushing practices are still far behind the international recommendation (twice a day) and also the knowledge, why it should be done so frequently also very limited.

### Background

Oral diseases are clearly related to behavior, and the prevalence of dental caries and periodontal disease has decreased with improvements in oral hygiene and a decrease in the consumption of sugar products. This general favorable trend in reducing dental caries, however, has not been seen in several developing countries [1] or in the Middle East [2,3]. While twice-a-day toothbrushing seems to be an established practice in several industrialized countries such as the United Kingdom [4], Italy [5], Swe-

den [6], and Norway [7], this goal is still very far from being realized in several other countries, including Turkey [8], Lebanon [9], Saudi Arabia [2] and Kuwait [10,11].

Oral health knowledge is considered to be an essential prerequisite for health-related behavior [12], although only a weak association seems to exist between knowledge and behavior in cross-sectional studies [13,14]. Nevertheless, studies have shown that there is an association between increased knowledge and better oral health [15,16].

Since auxiliary health personnel specialize in preventive information and health promotion, it is important that their own oral health knowledge is good and their oral health behavior conforms to professional recommendations. With proper knowledge and oral health behavior, they can play an important role in the health education of individuals and groups [17–20], and act as role models for lay people and the community at large.

The aim of this study is to determine oral health knowledge and behavior among students at the male Health Sciences College in Kuwait, which graduates auxiliary health personnel.

### Methods

The Health Sciences College, formerly the Health Institute, was established in 1974, with separate colleges for female and male students. The programs offered are: General Nursing, Pharmaceutical and Medical Sciences, Oral and Dental Health (females only), Medical Records, Environmental Health, Food Sciences and Nutrition, and Medical Laboratory Technology (females only).

A questionnaire was distributed to all students at the male Health Sciences College (N = 153) during the academic year 2001/2002. See additional file: 1. The students were requested to remain in the classroom after the lecture and to fill in the questionnaire. The participation was voluntary and the answers were anonymous. Altogether 28 returned the questionnaire, giving a response rate of 84%

The questions consisted of:

1) Background: age (18–20 years, 21–25 years, 26 years and over); marital status (single, married); nationality (Kuwaiti, non-Kuwaiti); years in College (one year, two or more years); financial status (satisfactory, not satisfactory); dental disease (yes, no/don't know); perceived oral health (poor, average, good).

2) Oral health knowledge: role of sugar, bacteria and soft drinks in dental caries; baby teeth brushing after bottle feeding; fluoride toothpaste for baby teeth; occurrence of periodontal diseases in men; transmission of bacteria from the father to his child; plaque; calculus; dental diseases; extraction of teeth, if painful; what is orthodontics; role of fluoride in toothpaste.

3) Oral health behavior: last dental visit (during last year, more than a year ago); purpose of dental visit (examination/prevention, treatment); toothbrushing frequency (less than once a day, once a day, more than once a day); use of fluoride toothpaste (yes, no/don't know); amount of toothpaste on toothbrush (less than half, half, more than half).

Data on behavior and knowledge were analyzed according to age, marital status, nationality, years in college, financial status and perceived oral health. The data were processed by SPSS-PC, version 10. Analysis of variance (ANOVA) were used for evaluation of the statistical significance. All of the knowledge answers (13) were summarized by giving equal weight (1) for each of the correct answers. The mean values were then compared against the background factors and oral health behavior.

### Results

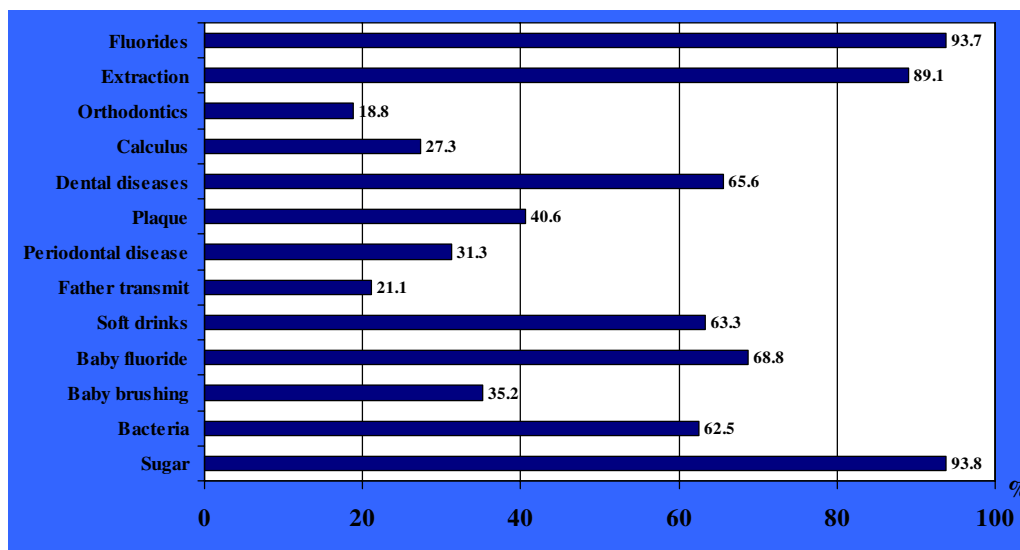
Almost all students know the role of fluorides in caries prevention, the role of sugar in caries etiology, and that extraction is not the only treatment for a painful tooth (Fig. 1). Only few knew what orthodontics means, that a father could transmit *Str. Mutans* to the child, and what calculus is. One third of the respondents knew about the risk of periodontal disease and that baby teeth need to be brushed after bottle feeding.

When the additive knowledge summary variable was analyzed according to different independent variables, only a few associations were detected (Table 1). Single students seemed to have better knowledge than married ones and Kuwaiti students better than non-Kuwaitis. From the oral health behavior variables, only the use of fluoride toothpaste seemed to be significantly associated with the knowledge.

Most of the students (60%) had visited a dentist during the last year, 11% 1–2 years ago and 29% more than two years ago (Fig. 2). More than half of the students were seeking the dentist for the treatment. Altogether 34% of the students were brushing twice a day or more often, 45% once a day and 20% less than once a day. Most of the students (70%) used fluoride toothpaste, 11% did not use it and 20% did not know whether they were using it or not. The amount of toothpaste used was less than half of the toothbrush by 11%, about half by 34% and more than half by 55%.

### Discussion

Although oral health knowledge does not necessarily relate to better health behavior, people who have assimilated this knowledge and feel a sense of personal control over their oral health are more likely to adopt self-care practices [13]. Oral health knowledge was expected to be good among the Health Sciences College students in this study, because it is important content in their professional education, and they need this knowledge to educate patients and the community when they start working in health care system. These students seemed to be well aware about the most important aspects of oral health care, i.e. effects of sugar consumption, effects of fluorides as well as visiting the dentist. However, there seemed to be

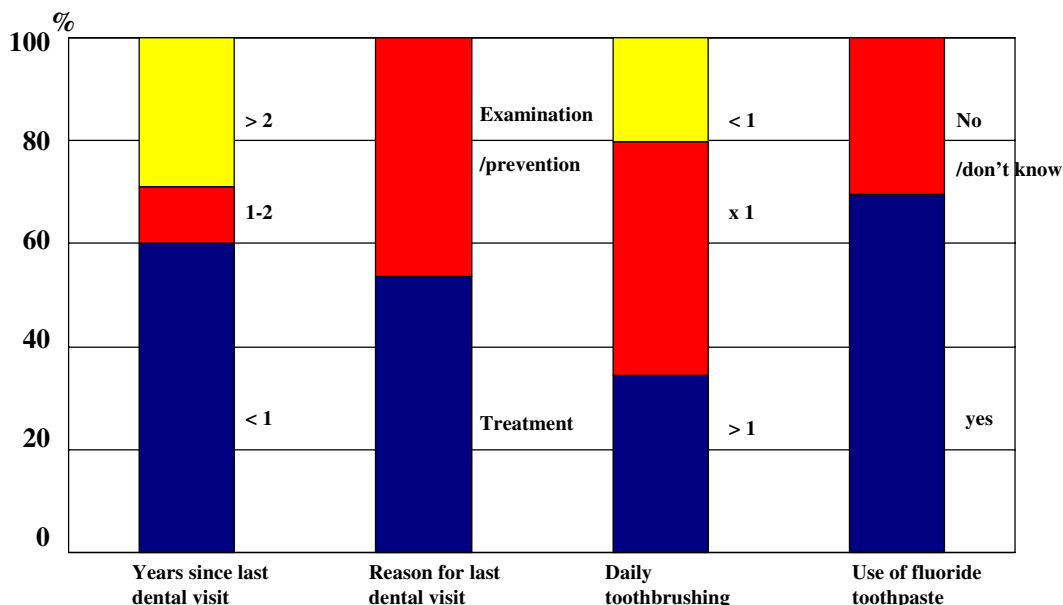


**Figure 1**  
The proportion (%) of the correct answers to the knowledge questions by the college students.

areas i.e. the role of plaque, periodontal diseases, transmission of oral bacteria, where their knowledge was poor. Other studies have also shown that there is in general much work to do in improving dental health knowledge even among dental hygiene students [21], dental students [22], other university students [23,24] and teachers [25–28].

There are very few studies with the representative from Kuwait on the knowledge and the behavior. Therefore these results have are discussed in relation to the other studies, one of them being a national oral health survey almost 20 years ago, which has just recently published [11]. These data were destroyed during the Gulf War. Education in general is segregated in Kuwait and thus there is also a college for females, but this study was conducted only in male college. Therefore the gender comparison is not possible.

Oral health knowledge among the HSC students was most strongly associated with the use of fluoride toothpaste. Although 94% of the respondents knew the role of fluorides, not all of them actually used fluoride toothpaste. Their knowledge of the role of fluorides and sugar in the process of caries formation and various treatment options for a painful tooth was very good, but all the other measured aspects of oral health knowledge were not as high as could have been expected. It was also alarming that there was no significant difference in knowledge between the first year and the more advanced students. One earlier study [21] showed that second year dental hygiene students had more advanced attitudes/behavior than the first year students, which was a logical hypothesis. However, in the present study there seemed to be only a slight increase in knowledge with increasing age in this study. Single persons had better knowledge than married ones. It was expected that married students would have been more



**Figure 2**  
Oral health behavior of college students.

concerned about health issues and therefore would also had more knowledge than the single ones.

More than half (60%) of the students had visited a dentist during the last 12 months, which is a higher proportion than that found in the survey of the total Kuwaiti population (39%) [11]. However, toothbrushing frequency of twice a day or more was not common; only one third of the respondents were brushing as generally recommended. Also the proportion of those students who were brushing less than once a day was high (20%), corresponding to the respective proportion in the illiterate population (24%) in the only national oral health survey in 1984–1985 [11]. A slightly higher proportion of twice-a-day brushers have been reported among 12-year-old Kuwaitis (47% among boys and 62% among girls) [10] and Saudi Arabian schoolchildren [2]. In Lebanon, the proportion of twice-a-day brushers among college students was also

higher (65%) [9], but lower (25%) among 15–18-year-olds in Turkey [8]. Much more health education needs to be done already at schools for establishing appropriate toothbrushing and flossing practice in Kuwait. Dental health education in Kuwait is supposed to be organized by school oral health programs but currently they cannot cover all the schools. This study was conducted also for demonstrating the possible need for improvement in oral health knowledge and the problems in oral health behavior of these young Kuwaiti students especially.

Pea size amount of toothpaste is recommended for toothbrushing, and manufacturers in their advertisements use this amount. However, only 11% of the students in this study used toothpaste less than half of the length of toothbrush. The larger amount of toothpaste does not improve the effect of the mechanical cleaning or the preventive effect of fluoride. As role models, these college students

**Table 1: Summary variable of knowledge concerning dental health by different background factors (ANOVA).**

Variable	n	Mean	SD	P-value
Age				
- 18–20 years	59	7.1	2.2	
- 21–25 years	54	7.6	2.1	
- 26 and over	15	8.3	2.2	0.120 ns
Marital status				
- Single	107	8.3	1.9	
- Married	21	7.2	2.2	0.033 *
Nationality				
- Kuwaiti	69	7.9	2.1	
- Non-Kuwaiti	59	6.9	2.1	0.012 *
Years in College				
- One year	88	7.3	2.1	
- Two or more	40	7.7	2.2	0.308 ns
Financial status				
- Very good/good	116	7.4	2.2	
- Below average	15	7.4	1.6	0.989 ns
Do you think that you have dental diseases?				
- Yes	47	7.5	2.1	
- No/Don't know	61	7.4	2.2	0.704 ns
Perceived oral health				
- Poor	19	7.3	2.0	
- Average	72	7.4	2.2	
- Good	37	7.6	2.1	0.852 ns
Last dental visit				
- During last year	77	7.4	2.2	
- More than year ago	51	7.5	2.1	0.912 ns
Purpose of visit				
- Examination/prevention	53	7.3	2.0	
- Treatment	61	7.6	2.3	0.474 ns
Toothbrushing frequency				
- Less than once a day	27	7.4	1.0	
- Once a day	53	7.4	2.2	
- More than once a day	41	6.9	2.4	0.187 ns
Use of fluoride toothpaste				
- Yes	81	7.8	2.2	
- No/don't know	40	6.6	1.9	0.002 **

\*\* p < 0.01; \* p < 0.05; ns p ≥ 0.05

should follow professional recommendations in their own behavior.

It may be concluded that the male Health Sciences College students seemed to have appropriate knowledge on some oral health topics, but limited knowledge on the others. Their toothbrushing practices are still far behind the international recommendation (twice a day) and also the knowledge, why it should be done so frequently also very limited.

## Additional material

### Additional file 1

*Oval health survey 2002*

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