

Effect of 5 years of dental studies on the oral health of Tunisian dental students

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تأثير الدراسة مدة خمس سنوات على صحة الفم والأسنان لدى طلاب كلية طب الأسنان في تونس
فتححي معتوق، وهيبية معتوق، هشام غديرة، سماح بن ميمون

الخلاصة: تعتبر هذه الدراسة حول صحة الفم والأسنان لدى طلبة الصف الخامس بكلية طب الأسنان، استكمالاً للبحث الذي أجري على نفس الطلبة في المُستَير في عام 1998-1999 عندما كانوا بالصف الأول. وهي تهدف إلى تقييم مردود الدراسة على ممارسات صحة الفم والأسنان لديهم. وقد شملت هذه الدراسة 140 طالباً تونسياً من العدد الكلي للطلبة (155 طالباً) الذين شملتهم الدراسة الأولى. وأظهرت النتائج أن 84.3% يشكون من أمراض الأنسجة الداعمة للأسنان، و80.0% يعانون من سوء الإطباق، و43% يشكون من التسوس. وقد أبرز تحليل هذه النتائج بالمقارنة مع الدراسة السابقة تحسناً عاماً في صحة الفم والأسنان، حيث ارتفع معدل تسويك الأسنان بالفرشاة، وانخفض معدل انتشار التسوس وجيوب الأنسجة الداعمة للأسنان، كما تحسّن منسب الأسنان المنخورة والمقلوعة والمحشوة DMF، بيد أن معدل انتشار التدخين، والنزف، والقَلَح لم يتغيّر، كما زاد معدل سوء الإطباق.

ABSTRACT This study is a follow-up of one made in 1998-99 on first-year dental students in Monastir. Now in their fifth year, we assessed the effect of dental studies on students' oral health practices and dental health. Of the 155 students in the first study, 140 were still enrolled. Periodontal troubles, malocclusion and dental decay affected 84.3%, 80.0% and 43.0% of the students respectively. Compared with the previous study, students had achieved a better dental health status – tooth brushing rate was much higher, prevalence of dental decay and periodontal pockets had decreased, and DMF index had improved. However, the prevalence of smoking, bleeding and calculus had not changed, and the frequency of malocclusion had increased.

Impact sur la santé bucco-dentaire des étudiants tunisiens en médecine dentaire de 5 années d'études

RÉSUMÉ La présente étude est un suivi de celle qui a été réalisée en 1998-1999 chez les étudiants de première année de médecine dentaire à Monastir. Alors que ces étudiants se trouvent maintenant en cinquième année, nous avons évalué l'impact des études dentaires sur leurs pratiques de santé bucco-dentaire et sur leur santé dentaire. Sur les 155 étudiants de la première étude, 140 sont toujours inscrits. Les troubles parodontaux, les malocclusions et les caries dentaires touchent 84,3 %, 80,0 % et 43,0 % des étudiants respectivement. Par rapport à la première étude, les étudiants ont un meilleur état de santé bucco-dentaire – le taux de brossage est beaucoup plus élevé, la prévalence des caries dentaires et des poches parodontales a diminué, et l'indice CAO s'est amélioré. Toutefois, la prévalence du tabagisme, des saignements et du tartre n'a pas changé, et la fréquence des malocclusions a augmenté.

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Introduction

One of the general objectives of teaching dentistry is to train experts whose principal task is to motivate patients to adopt good oral hygiene practices. They are more likely to be able to do this if they themselves are motivated.

Reports on the impact of education on the oral hygiene of dental students differ. Both Lang et al., in a study undertaken on Danish students [1], and Cavaillon et al., in an investigation into students at the University of Paris V [2], noted a clear improvement in the oral hygiene practices of students during their studies. On the other hand, Ainamo and Ainamo, in a study on Finnish and Indian students [3], El-Mostehy et al., in an investigation of 100 Egyptian students [4], and Meister et al., in a study at the University of Marquette (Michigan) in the United States of America [5], all noted the absence of improvement in the practices of oral hygiene in students, in spite of having received information and education.

Since 18 November 1975, the date of the establishment of the dental school in Tunisia, very few studies involving Tunisian dental students have been conducted. Among them, a retrospective survey was performed with 155 first-year dental students in 1998 (90 girls and 65 boys) from 18 to 22 years [6]. This study, which aimed to assess social conditions, school history and the oral health status of the students, showed that the most frequent oral conditions affecting the students were periodontal diseases (88.4%), dental caries (70.3%), malocclusion (62.6%) and fluorosis (52.3%).

In this study we report the results of a follow-up descriptive study carried out 5 years later on the same sample of students when they were in their final year (2002–2003). The study aimed to assess

the changes in oral health indicators and analyse the effect of dental studies on the students' oral hygiene practices.

Methods

Of the 155 Tunisian dental students registered in the first year for the academic year 1998–1999, 140 went through to the final year in 2003. These students were aged from 21 to 25 years [mean 22.7 (SD 0.7) years]. About 53.6% of them came from medium socioeconomic background (based on parental jobs) and women constituted more than half the sample (61.4%).

To assess the prevalence of oral diseases, the students were examined by the same dentist at the university dental clinic. The clinical examination was performed according to the World Health Organization (WHO) criteria using normal dental examining instruments (mouth mirrors, explorers and WHO periodontal probe) [7]. Data were recorded on a simplified WHO form [7]. The decayed (D), missing (M) and filled (F) teeth index (DMF) and the community periodontal index for treatment needs (CPITN) were calculated. In addition, the students were requested to complete a self-administered questionnaire about oral hygiene, habits and choice of professional practice.

Data were analysed using *Epi-Info*, 6.04 and compared with the previous study. The Pearson chi-squared test was used to compare different percentages at the 5% level of significance [8].

Results

The findings revealed that three-quarters of students (75.0%) intended to choose a career in the private sector after graduating,

either as specialists (44.0%) or as general practitioners (46.4%); only 7% wanted to teach in dental school.

As regards oral hygiene practices, 86.0% of the students brushed their teeth at least twice a day; the mean frequency of daily tooth brushing was 2.52 (SD 0.89). The majority of our sample used a commercial toothpaste (91.4%) and about half of them used one or more means complementary to brushing, mouthwash (25.7%), flossing (2.9%), other (10.7%), more than one (10.7%). Nearly 18% of the students smoked (14.3% men and 3.7% women) with an average of 15 cigarettes per day.

Over 90% of them had visited a dentist prior to the previous year, but only 64.3% had seen a dentist in the last year, generally for a periodontal concern (in 13% of cases). Of these, 12.9% were for periodontology, 10.7% for oral surgery, 10.7% for dentistry concerns and 3.6% for orthodontics.

Table 1 shows the dental conditions affecting the students: 112 students had malocclusion; 31.4% of these needed orthodontic treatment, but only 3.6% were already having such treatment. Periodontal problems affected 84.3% of the students; fortunately 75.6% of these lesions were

reversible; calculus was the most frequent periodontal problem (55.8% of students), on average found in 3 sextants of dentition (Table 1).

Regarding dental caries, 43.0% of students were affected. The D, M and F scores among the 140 students were: 147 decayed (mean 1.05), 21 missing (mean 0.15) and 157 filled (mean 1.12) teeth giving 325 affected teeth overall and mean DMFT of 2.32. Dental fluorosis affected 23 (16.4%) of our sample, primarily Dean stages 2 and 3 (Table 2).

More girls (75%) opted for private practice (25%) than boys (χ^2 , $P < 0.0001$). The rate of smoking among the students had increased since 1998 but the difference between the 2 periods was not significant.

Comparison with previous study

Table 3 gives a comparison of the results of the 1998–1999 study compared with the current study.

In 1998–1999, 30% of the students were undecided on what career to take up after graduation. In the current study, only 3.6% were still undecided ($P < 0.0001$). Three-quarters of all the students had chosen private practice (75.0%) (Table 3).

Table 1 Prevalence of malocclusion and periodontal disease by sex in the dental students

Condition	Males (n = 54)		Females (n = 86)		Total (n = 140)	
	No.	%	No.	%	No.	%
Malocclusion						
Mild	21	39.0	47	54.7	68	48.6
Moderate or severe	21	39.0	23	26.7	44	31.4
Periodontal disease ^a						
Bleeding	11	20.4	19	22.0	30	21.4
Calculus	29	53.7	49	57.0	78	55.7
Pockets (4–5 mm)	4	7.4	6	7.0	10	7.1

^aMean no. of sextants (standard deviation) affected with bleeding = 0.32 (0.77), with calculus = 3.24 (2.28) and with pockets = 3.69 (2.72).

Table 2 Prevalence of dental fluorosis among the dental students by Dean stage

Dental fluorosis stage	No. (n = 140)	%
Questionable	4	2.9
Very mild	7	5.0
Mild	11	7.9
Moderate	1	0.7
Severe	0	0
Total	23	16.4

A large proportion of the students (77.4%) brushed their teeth twice daily or more in 1998–1999. This improved appreciably in 2002–2003 to 86.5% ($P < 0.05$). In addition, more students used commercial toothpaste than pharmaceutical ones in the current study compared with the previous one ($P < 0.0001$) and also used additional

means of hygiene, primarily mouthwash ($P < 0.0001$).

More students had visited the dentist than in the previous study ($P < 0.0001$) because of greater motivation and ease of access to dental consultation. Therefore the dental therapeutics index had increased from 19.1% 5 years ago to 51.6% in 2003 ($P < 0.0001$), notably those of periodontology and oral surgery.

The prevalence of malocclusion had increased appreciably ($P < 0.0001$) as a result of an increase in the rate of mild malocclusion from 28.4% to 48.6%, which may be due to a noncompensated dental extraction and/or differences in judgement between the 2 investigators. The rate of moderate to severe malocclusion remained unchanged (31%) suggesting insufficient orthodontic management.

Table 3 Comparison of students' practices and dental status between 1998 and 2003

Variable	1998–999 (n = 155) %	2002–2003 (n = 140) %	Success rate in exams (%)
Males	42.0	38.6	83.0
Females	58.0	61.4	95.5
Future practice			χ^2 , Significance
Private	61.3	75.0	6.33, $P < 0.01$
Undecided	30.0	3.6	18.53, $P < 0.0001$
Practised oral hygiene	77.4	86.5	3.99, $P < 0.05$
Use of commercial toothpaste	70.0	91.4	19.72, $P < 0.0001$
Use of additional means of hygiene	30.3	50.0	34.11, $P < 0.0001$
Ever visited dentist	63.2	90.7	30.7, $P < 0.0001$
Mild malocclusion	28.4	48.6	12.7, $P < 0.0001$
Periodontal pockets (4–5 mm)	20.0	7.1	10.16, $P < 0.001$
Dental caries	70.3	42.8	22.68, $P < 0.0001$
Therapeutics index (had undergone dental treatment)	19.1	51.6	34.97, $P < 0.0001$

As in 1998, the prevalence of periodontal trouble remained at an alarmingly high level (84.3% in 2002–03 versus 88.4% in 1998–99) but the difference was not statistically significant. Detailed analysis showed that the rate of shallow pockets (4–5 mm) however had appreciably decreased ($P < 0.001$) (Table 3). The prevalence of dental caries had significantly decreased since 1998 from 70.3% to 42.8% ($P < 0.0001$). In the DMF index, we noted a clear reduction in the D component, an improvement in the F component, and the M component remained the same.

Discussion

The predominance of women seen in our study was also noted in other countries such as France [3,9,10], the United States [11] and Japan [12,13]. With an average academic success rate of 95.5%, the women were ahead of the men. Tooth brushing frequency was significantly higher in girls ($P < 0.0001$); Polychronopoulou et al. noted the same tendency in Greece [14]. Although the girls brushed their teeth more frequently, the boys had lower frequency of periodontal trouble: 81.5% versus 86.0% ($P < 0.01$).

Private practice attracted most of the students which is in agreement with Crossley and Mubarik [15]. Teaching as a career attracted only a few students. More girls opted for hospital practice than boys, possibly because of family responsibilities, safety and job security. Winters and Butters noted the same tendency in their study [16].

The rate of smoking among the students had increased since 1998 but the difference between the 2 periods was not significant. In the current study, the prevalence of smoking was greater in males ($P < 0.0001$) as was also shown by Ghannem et al. and a WHO report which reported males consti-

tuting 70% of smokers in the world [17,18]. A large body of epidemiological research indicates that tobacco use is generally associated with periodontal disease [19–21].

The percentage of smokers in 2002–2003 remained lower than that reported in a study by Malbrunot where 33% of dental students of Clermont Ferrand (France) smoked [10], but it was about the same as that noted by Fakhfakh who reported that of 257 Tunisian medical students examined, 24% smoked [22].

An effort needs to be made to tackle this problem especially as these students, as health professionals, should be setting a good example. This is supported by the study of Koerber, Crawford and O'Connell in the United States [23]. Yip et al. have gone as far as suggesting including an action against smoking in this direction in the American dental course [24].

The paradox between a large percentage of students brushing their teeth (86%) and a high prevalence of periodontal lesions (84%) was also reported by Carlos et al. in their study on 100 Philippine dental students who had excellent oral hygiene [25]. They explained this by bad tooth brushing techniques, inadequate toothbrushes or over-brushing. Regarding periodontal treatment needs, 84.3% of our students required oral hygiene improvement and 78% required scaling.

In spite of some changes, statistically, we had overall in 2003 the same population of students as that of 1998. Therefore, we can consider that our comparisons are valid and justified. However, there may be a possible difference in judgement between the 2 investigators in the 2 studies, which is a frequent bias in a “before–after” survey.

In general, at the end of their course, the dental students had achieved a better dental

health status, particularly in the following areas:

- the tooth brushing rate, which was much higher;
- the prevalence of dental decay had decreased;
- the DMF index, where the D component had decreased whereas the F component had clearly increased;
- the rate of periodontal pockets had decreased.

In spite of these improvements, there were the following negative points:

- smoking prevalence had not decreased;

- the prevalence of bleeding and calculus had not changed;
- the frequency of malocclusion had increased.

Dental school lecturers should address the dental practices of their students and consider introducing modifications to the courses tackling this issue.

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