DENTAL CARIES AND RELATED FACTORS IN THE FIRST- AND SECOND- YEAR MEDICAL STUDENTS IN THAIBINH MEDICAL UNIVERSITY, VIETNAM

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ABSTRACT: A cross-sectional analytical study involved 365 first and second year students in Thaibinh Medical University, Vietnam. The purpose of the study was to ascertain prevalence of dental caries (as measured by score for decayed, filled, and missing teeth [DMFT]), and risk factors for caries, in study subjects. The prevalence of caries (DMFT > 0) was 70.4 and the mean DMFT was 2.28 ± 2.18. The mean filled teeth score was low (only 0.05 ± 0.46). Only a limited percentage of subjects (56.7%) had ever visited a dentist, and an even smaller proportion had visited for a dental checkup (13.5%). Just above 50% of participants had ever used at least one type of fluoride supplement (not including fluoridated toothpaste). A significant positive association was observed between mother's education and use of fluoride supplements. Brushing after getting up and having regular brushing schedule were protective factors against dental caries. Perceptions of tooth damage and school absence due to oral health were significantly associated with increased dental caries.

Keywords: dental caries, DMFT, oral hygiene, fluoride supplement, perception of oral health.

INTRODUCTION: Dental caries is one of major public health problems worldwide. Poor oral health may have a profound effect on general health as well as quality of life. The experience of pain, problems with eating, chewing, smiling and communication due to missing, discolored or damaged teeth have a major impact on people's daily lives and well-being[1]. This is a multifactorial disease caused by the interaction of oral microorganisms in dental plaque, diet and a broad array of host factors ranging from societal and environmental factors to genetic and biochemical, immunologic host responses[2]. Diet, oral hygiene and supplying fluoride are the most frequently studied risk factors. However, the influences of these factors on dental caries vary from study to study, from children to adults, from area to area. This study aimed to describe dental caries status and to characterize the relationship between dental caries and these factors among medical students. Perception of oral health also was addressed in this study.

MATERIALS AND METHODS: This was a cross sectional study of a sample of 365 first and second year students in Thaibinh Medical University. Each of the students was interviewed with a structured questionnaire. An examination was then made to determine subjects' dental health status. The WHO caries criterion for decayed, missing and filled teeth (DMFT) was used to measure dental health status. Methods of assessing dental caries followed instructions of "Oral Health Surveys – Basic methods, 1997". Verbal consent was obtained from each participant before interview and examination, and the study protocol was approved by the ethics committee of Thaibinh Medical University.

Statistical methods: Data analysis was done by using SPSS software, Chicago, Illinois. The term "DMFT score" was used to indicate DMFT as a continuous variable. DMFT category was used to indicate dichotomous variable with DMFT = 0 and DMFT > 0 as its values. Descriptive statistics were used in terms of

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frequency distribution and mean. Two-tailed chi-square test and Kruskal-Wallis test were used to evaluate associations between independent and dependent variables. The choice of these non-parametric tests is appropriate, since the DMFT score was not normally distributed. The level of significance for relationships among these variables was set at $\alpha = 0.05$.

RESULTS: The dental caries index DMFT score ranged from 0 to 10 (average 2.28) of a maximum possible of 28. There were 257 participants with caries experience (DMFT>0), accounting for 70.4 percent. More than two-third (254 participants, 69.6 %) had untreated caries at the time of examination (DT>0). Mean score for decayed teeth (DT) was 2.16. The F factor, which represents the treated dental caries, averaged only 0.05, denoting a quite small dental treatment rate with 2.2% (FT>0) (table 1).

Table 1 Dental status of the subjects

Dental status (n = 365)	Number of subjects (%)*	Mean ± SD
DMFT	257 (70.4)	2.28 ± 2.18
DT	254 (69.6)	2.16 ± 2.09
MT	17 (4.7)	0.07 ± 0.36
FT	8 (2.2)	0.05 ± 0.46

**prevalence of non-zero measurements only, for example 2.2 is prevalence of FT > 0*

Regarding brushing practice, most of the students brushed their teeth twice or more a day (83.5%) and almost all brushed regularly (92.9%). About 80% brushed after getting up and about 72% brushed before going to bed. 40.3% never had a dental visit and 3.0% did not remember whether they had or not. However, statistical analysis revealed no significant association between income and dental visit. In those who had visited a dentist, there were over one-third had their most recent visits more than two years ago. Going for dental check-up only accounted for 13.5%, and 14.0% did not remember reason for their dental visits. The relationship between dental caries and oral hygiene practice is presented in table 2. Brushing regularly and brushing after getting up significant related to good dental status (p-values = .038 and .027 respectively). There were no significant association between dental caries and brushing before going to bed and times of brushing per day.

For fluoride supplement, the rate of using fluoride among students whose mothers were highly educated was significantly higher than among students whose mother was not. This trend was not observed in relation to father's education (table 3). Most students who had ever used fluoride were not using it at the time of the study. DMFT score was higher in those who ever used any type of fluoride and lower in those who never used or did not remember ever used or not. However this association was not significant (table 4).

Table 2 Relationship between DMFT and oral hygiene practice

Time of brushing		Frequency (%) DMFT category	
		DMFT = 0	DMFT > 0
Brush but no regular schedule (*)	No	3 (11.5)	23 (88.5)
	Yes	104 (30.8)	234 (69.2)
Brush after getting up (*)	No	93 (32.1)	197 (67.9)
	Yes	14 (18.9)	60 (81.1)
Brush after breakfast	No	10 (23.8)	32 (76.2)
	Yes	97 (30.2)	224 (69.8)
Brush before going to bed	No	79 (29.8)	186 (70.2)
	Yes	28 (28.3)	71 (71.7)
Times of brushing/day	≤ 1	18 (30.0)	42 (70.0)
	≥ 2	90 (29.6)	214 (70.4)

(*) p-value < 0.05 in Pearson chi-square test.

Table 3 Relationship between fluoride supplement history and parents' education

Parent education		Frequency (%) Fluoride supplement	
		Never	Ever
Mother's education (*)	≤ Primary school	16 (55.2)	13 (44.8)
	Secondary school	73 (56.2)	57 (43.8)
	High school	53 (39.8)	80 (60.2)
	Occupation trainings	10 (40.0)	15 (60.0)
	Graduated	16 (35.6)	29 (64.4)
Father's education	≤ Secondary school	60 (50.0)	60 (50.0)
	High school	67 (45.9)	79 (54.1)
	Occupation training	14 (45.2)	17 (54.8)
	Graduated	27 (42.9)	36 (57.1)

(*) p-value < 0.05 in Pearson chi-square test.

Table 4 Relationship between each type of fluoride supplement and DMFT score

Fluoride supplements		Mean rank of DMFT	K-W test p-value
F-mouth rinse	Yes	185.84	0.364
	Never	177.33	
	DR	207.56	
F-gel	Yes	183.51	.857
	Never	182.80	
	DR	172.69	
Fluoride from other source	Yes	210.27	.187
	Never	180.52	
	DR	174.48	

Tooth damage and school absence due to oral problem were strongly related to dental caries with the tendency that DMFT score to be higher in subjects who reported problems. Generally, this tendency for DMFT score to be higher in subjects with perceived oral health-related problems than in those who had never experienced them can be seen in most of the items (table 5).

Table 5 Relationship between perception of oral health problems and DMFT score

Perception of oral health problems		Mean rank of DMFT	K-W test p-value
Pain	Present	188.06	095
	Past only	183.68	
	Never	158.94	
Chewing	Present	200.10	.233
	Past only	182.76	
	Never	169.55	
Color	Present	184.98	.511
	Past only	184.96	
	Never	172.38	
Smiling	Present	178.53	.905
	Past only	185.89	
	Never	177.61	
Communication	Present	201.67	.252
	Past only	158.67	
	Never	175.77	
Tooth damage	Present	223.00	< .001
	Past only	192.35	
	Never	152.12	
Odor	Present	185.26	.798
	Past only	176.39	
	Never	175.68	
School absence	Present	207.38	.012
	Past only	248.47	
	Never	174.43	

DISCUSSION: The prevalence of dental caries found, 70.4%, was almost equal to dental caries prevalence among Brazilian 18-year-old males[3] and was lower than the prevalence among 18-34 year old people living in Red River Delta, the area most subjects of this study came from, which was 89.9%[4]. The lower prevalence of the study could possibly be explained that medical students might be more concerned about health than other groups, such as farmers, economics students, constructive students, because they had sense of their future work being a model of healthy behavior and healthy life for population. The mean DMFT was 2.28 was a little bit lower than mean DMFT index of 18-year-old Brazilian males[3] and about three times lower than mean DMFT of young Israeli adults which was 6.77[6]. However, it was quite high if compare with that of 18-34 year old Red River Delta residents (DMFT = 1.54)[4]. Looking at detail of each components of DMFT, we see that mean of DT component was 2.16 was much higher than this figure of Nationwide Oral Health Survey and this figure of young Brazilian males[3]. Meanwhile, means of FT components was 0.05, was much lower in comparison with The National Survey (DT = 0.22) and

Bastos' study (DT = 1.2)[3] as well as Levin's findings among young Israeli adults[6]. It means that in the population of medical students, a predominant group of these students had healthy dental status but in other smaller group, they were suffering very poor dental health with many untreated cavities on their teeth. The noticeable low mean of 0.05 filled teeth strongly said that dental treatment in those who had dental caries was poor. Hence, a policy focuses on intervention treatment is recommended.

Healthy oral hygiene practice in terms of brushing, frequency of brushing and time of brushing revealed the marked high proportion. However, the results showed that there was no association between daily frequency of brushing as well as frequency of changing toothbrush and DMFT. On the other hand, brushing time in terms of brush after getting up and having regular brushing

schedule significant associated with low DMFT. It takes us to a thought that only brushing twice per day does not help much to prevent dental caries. Time of brushing appears more likely to protect teeth from cavity, especially brushing after getting up. Besides, methods of brushing, which was not measured in this study might have some impacts on dental caries protection. Therefore, recommendation for further study is that it should look at the all sides of brushing behavior: frequency, time and method so it can give the whole picture of influence of brushing behavior on dental caries.

Three type of fluoride listed in the study was not popular in the market. Fluoride mouth rinse was provided freely in some schools where performing school dental care program. Other fluoride supplements such as fluoride gel, fluoride table, fluoride vitamin were available in supermarkets or drugstores in big city not in small provinces where most subjects came from. Thus, it was not easy for people even to know about such products. People who had better social economic status seem to afford and more comfortable to access these kinds of products. This point seems reasonable for the findings that the higher educated are the mothers the more fluoride their children access. Even so, access to fluoride among these people was not constantly. It is widely accepted that fluoride needs time to take effect[7]. In this study, fluoride use was generally short-term, not long-term. This could possibly serve to explain the lack of association between fluoride use and dental caries status among those students.

Dental pain is the most common symptom of oral problems. The prevalence of students suffering oral pain at the time of study was 15.3%. Similar results were found among 14-20-year old male and female[8] and among young male adults from southern Brazil[3]. However, in this study, the association between pain and dental caries status did not quite achieve statistical significance. School absence as results of dental problem also revealed significant association with DMFT score.

Most dental problems assessed were related to the social life of individuals. Trouble with smiling, tooth color change, bad odor can make people feel unconfident about their appearance and can limit their social activities. Pain, chewing problems and tooth damage are not only physical dysfunction but also obstruct people's daily life and well-being. If people suffer them for long time, they can lead to stress or even depression. Hence, the tendency for DMFT to be higher when these problems were reported suggests that dental caries might not only have an influence on physical health but also on mental health or well-being. Therefore, early prevention and treatment of dental problems is very important. Finally, in this study it is difficult to determine whether perceived dental problems arose before or after development of dental caries. More research on relationships between objective dental lesions and perceived problems, as well as the consequences of these problems, is needed.

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ฟันผุกับปัจจัยที่เกี่ยวข้องกับฟันผุ ในนักศึกษาแพทย์ปีที่ 1 และปีที่2 มหาวิทยาลัยทาบินท์ ประเทศเวียตนาม

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บทคัดย่อ: การศึกษาวิเคราะห์ภาคตัดขวาง จากกลุ่มตัวอย่าง 365 คน ซึ่งเป็นนักศึกษาแพทย์ปีที่ 1 และ2 มหาวิทยาลัยทาบินท์ ประเทศเวียตนาม วัตถุประสงค์เพื่อศึกษาถึงความชุกของการเกิดฟันผุ (โดยการวัดรูผุของฟัน การอุดฟัน และฟันหลอ) และ ปัจจัยเสี่ยงต่อการฟันผุ พบว่าความชุกของฟันผุคือ 70.4 % โดยมีค่าเฉลี่ยการวัดรูผุของฟัน การอุดฟัน และฟันหลอ คือ 2.28±2.18 ค่าเฉลี่ยของฟันอุดต่ำเพียง 0.05 ± 0.46 กลุ่มตัวอย่างร้อยละ 56.7 เคยไปพบหมอฟัน และเพียงร้อยละ 13.5 เคยไปตรวจฟันตามนัด ร้อยละ 50 ของกลุ่มตัวอย่างเคยใช้ ฟลูโอไลด์อย่างน้อยหนึ่งประเภท (ไม่รวมการใช้ยาสีฟันที่ผสมฟลูโอไลด์) นอกจากนี้พบว่าการศึกษาของมารดาของ กลุ่มตัวอย่าง เป็นปัจจัยที่มีนัยสำคัญทางสถิติกับการเสริมฟลูโอไลด์ และพบว่าการแปรงฟันเมื่อตื่นนอน และการแปรงฟันตามเวลา เป็นปัจจัยทีสำคัญในการป้องกันฟันผุ สำหรับ การรับรู้เกี่ยวกับฟันถูกทำลาย และการขาดเรียนเนื่องจากปัญหาโรคในช่องปากก็พบว่าเป็นปัจจัยที่มีนัยสำคัญทางสถิติกับการเพิ่มของฟันผุ

คำสำคัญ: ฟันผุ การวัดรูผุของฟัน ฟันอุด และฟันหลอ สุขภาพช่องปาก การเสริมฟลูโอไลด์ การรับรู้เรื่องสุขภาพ ช่องปาก

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