Prevalence of dental caries among different stage students in College of Dentistry, Hawler Medical University

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Background and Objectives: Dental caries considered as one of the most prevalent diseases affecting teeth. Many organizations are trying to prevent this disease in a variety of ways. The first responsible person professionally for oral health education is the dentist. In order to educate others, one should apply these measures by himself. The aim is to measure the prevalence of dental caries among different stage students, in college of Dentistry/Hawler Medical University. Then relate the prevalence with their academic knowledge of dental caries prevention and to know if males or females have more dental caries, in academically educated dental students about dental caries prevention.

Methods: 148 were collected, and the DMFT index scored for them. From which 62 of them were males and 86 females. Peak participation was in the first stage. Females were dominant in participation in all the stages without exception. The female to male ratio was 1.39:1 in the total of all stage participants.

Results: The results appeared not significant, with no association between dental caries and academic education of dental caries prevention (p=0.703). There was some difference between the stages, but it was not coincident with having oral health education or not.

Conclusion: Academic information has little effect on increasing or decreasing dental caries rates.

Keywords: dental caries, dental students, education

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Introduction

Dental Caries, another term for tooth cavity, decay, or caries, is the breakdown of tooth structure by bacterial activities.[1] The first person responsible for oral health education, promotion, and providing dental treatments are dentists and dental staff. [2] Therefore, they should all know about oral health preventive measures.

Do we need to educate the patients before giving treatments? Does it affect the success of our treatments? Will it promote oral health? All these questions need to be answered. Comparing oral health attitudes between dental professionals in different countries will be time-consuming, costly, and difficult to perform.[3] Many of the researches are done among dental students for simplicity, and for ease of comparison between different levels of oral health education. A study carried out in turkey among dental students reported the effectiveness of oral health education and it is needed for improvement of oral health in Turkey.[2] Also in Jordan, a study was done but it reports poor oral health attitude and behavior among dental students.[4]

Significant cultural differences were found in oral health attitudes, behavior and values in freshman dental students of Japan, western china and Hong Kong [5]. Another study exploring cross-cultural differences between Japanese and Greek dental students concludes that there

are considerable differences between the students of the two countries in their dental health behavior and attitudes, reflecting the different health education systems and cultures.[6]

The study that compared Finnish and Japanese dental students, reported that Finnish dental students in their final year have worse oral health behavior, using HU-DBI for estimation than their Japanese peers did.[7]

To the best of my knowledge, there is no research done in Erbil city till now; the purpose of our study is: to measure the prevalence of dental caries, among different stage students, in our college. in academically non-educated and educated students. Also, get results for the effect of parent education on dental caries. And how the frequency and technique of brushing affect dental caries prevalence.

Subjects and Methods

At college of Dentistry/Hawler Medical University, there are 388 students who are the population. A cross-sectional study was designed. An online sample size calculator (surveysystem.com/sscalc.htm) was used to estimate the sample size. 95% confidence level and 5% confidence interval were used. The result was 193. For convenience, 200 questionnaires were printed.

The questionnaires included two dichotomous questions with "yes" or "no" answers. Then adding three questions about sex, age, and stage, before going to the DMFT index, which is one of the most common indices to assess caries prevalence [8].

The sample was divided into two groups equally: males and females. By using Microsoft excel, we made two separate lists of male students and female students, then using random systematic sampling with 2-unit interval to select the students for the sample.

The questionnaires were given to the students selected, to answer the five questions. Then the index was scored by the investigator or a qualified assistant to do this work. The students were diagnosed for Decay, Missing (due to caries only), and Filling teeth in the diagnosis department, consultancy clinics of college of dentistry.

The investigator (or the assistant) used a mirror and probe, in a clean and dry field under a source of light, which was the dental unit light. The clean and dry field was obtained by flushing the mouth with water of the dental unit's triple syringe, then drying it with air in the same triple syringe. The investigator (or assistant) was using gloves and masks and change them between diagnosing each student. In addition to that, he was using disposable probes and mirrors, to prevent cross-contamination.

After all the questionnaires were checked and the students were diagnosed 148 forms were collected that were input into a Microsoft excel sheet, then it was organized with the same program. DMFT scores were changed into 0 (for no decay, missing, and filling) and 1(for present decay, missing, and filling), by this we turned the data into categorical (caries and no caries). Then using pivot table in the program, tables were prepared to summarize data. The results were tested statistically to see if they were significant or not. Some data was analyzed by using SPSS.

Results

Students were requested to come to the diagnosis department, for completing the questionnaire. 148 were collected, and the DMFT index scored for them. From which 62 of them were males and 86 females.

Peak participation was in the first stage. Females were dominant in participation in all the stages without exception. The female to male ratio was 1.39:1 in the total of all stage participants.

First stage students were 38 in total, which 14 of them were males, while 24 females. The second stage had 24 students in the research, for which 11 were males and 13 were females. In third stage, we diagnosed 12 males and 13 females to get a total of 25. 12 males and 21 females attended for

Table 1: Demographic distribution table

	Male					Male Total	Female					Female Total	Grand Total
Age (years)	First Stage	Second Stage	Third Stage	Fourth Stage	Fifth Stage		First Stage	Second Stage	Third Stage	Fourth Stage	Fifth Stage		
16								1				1	1
17							1					1	1
18	2					2	3					3	5
19	6		1			7	12	3				15	22
20	1	10	2			13	1	9	4			14	27
21			3	2		5			5	4		9	14
22			3	7	1	11			1	9	1	11	22
23		1	3	1	7	12			3	4	7	14	26
24				1	5	6				2	6	8	14
25										1		1	1
26										1	1	2	2
(blank)	5			1		6	7					7	13
Grand Total	14	11	12	12	13	62	24	13	13	21	15	86	148

diagnosis in the fourth stage, the total was 33. Finally, 28 students in the fifth stage were diagnosed, 13 males and 15 females (Table 1).

The age of all students included in the research was ranging between 16 and 26 years. With the age 20 years observed most frequently, followed by 23 years (Table 1).

The prevalence of dental caries among all students was 91.2%, with highest prevalence in the first stage (94.7%), followed by fourth stage (93.9%), and least percentage was in the third stage (84%) followed by fifth stage (89.3%). The second stage (91.7%) was in the middle (Table 2).

Table 2: Prevalence of dental caries among different stage students.

	No Careis	Caries	Grand Total
First	5.3%	94.7%	1
Second	8.3%	91.7%	1
Third	16.0%	84.0%	1
Fourth	6.1%	93.9%	1
Fifth	10.7%	89.3%	1
Grand Total	8.8%	91.2%	1

The prevalence of dental caries in the students of the college of dentistry (91.2%) tested statistically and it appeared that there is a significant ($p=0.03$) difference as considered between population prevalence and dental student prevalence.

Table 3: Hypothesis test for the proportion.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories defined by DMFT = 1.00 and 0.00 occur with probabilities 0.856 and 0.144.	One-Sample Binomial Test	.033	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 4: Academic Info and Dental caries Cross-tabulation.

			Having Dental Caries		Total
			No	Yes	
Academic Info Received	Yes	Count	10	110	120
		Expected Count	10.7	109.3	120.0
	No	Count	3	23	26
		Expected Count	2.3	23.7	26.0
Total		Count	13	133	146
		Expected Count	13.0	133.0	146.0

In the cross-tabulation of academic info on dental caries prevention and dental caries presence, the observed values were very close to the expected values, so we tested the readings statistically by using fisher's exact test (Table 5).

The results appeared to be considered not significant (p=0.703) and it is likely due to chance.

Table 5 Difference between males and females' proportions having dental caries in academically educated students

The proportion of female students (56%) having dental caries while they are academically educated was higher than males (44%) as shown in table 6.

Probably our results are due to chance as it was considered not significant (p=0.514) by testing it with fisher's exact test, The proportions are nearly the same (Table 7).

Table 5: Fisher' exact test .

Pearson Chi-Square	.271a	1	.603		
Continuity Correctionb	.020	1	.888		
Likelihood Ratio	.254	1	.614		
Fisher's Exact Test				.703	.418
Linear-by-Linear Association	.269	1	.604		
N of Valid Cases	146				

Table 6: Difference between males and females' proportions having dental caries in academically educated students

	No caries	Caries	Grand Total
Males	30%	44%	43%
Females	70%	56%	58%
Grand Total	100%	100%	100%

Table 7: Fisher's exact test to see the association between sex and dental caries in academically educated students.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.698a	1	.404		
Continuity Correctionb	.251	1	.616		
Likelihood Ratio	.722	1	.395		
Fisher's Exact Test				.514	.313
Linear-by-Linear Associa-	.692	1	.406		
N of Valid Cases	120				

Discussion

In college of dentistry, we have a higher proportion of females between the students, so the samples (even with trying to take males and females equally) ended up with females at higher proportions. The prevalence of dental caries was relatively high (91.2%) as compared with normal population at nearly the same age group.[9]

The difference between different stages was present but it was not as we expected to be. As we thought that the ones with more knowledge will have fewer dental caries. One thing we can suggest from these results is that the students start to get educated about prevention or tooth brushing in the third stage.

People will get motivated when they receive oral health education, but they tend to ignore and forget about these measures as time passes by. The first stage students have the least information, and they have the highest rate of caries, this emphasizes that the less information you have to control your teeth, the most dental caries you will have.

One problem in the results is that fourth stage students are recently educated, but they have more dental caries rates. This may be due chance, as the samples were not collected in the same manner for all the stages. Unfortunately, some stage students had more participation than the others.

The proportion of dental caries among dental students was significant when tested by a one-sample binomial test in SPSS program. So, there is difference between prevalence of dental caries of dental school students and other populations.

In order to summarize data, we used cross-tabulation between academic info on dental

caries prevention and caries presence. There was no significant difference in the proportion of dental caries among academically educated and non-educated students. This also may be due to sampling variability, because the results were statistically not significant.

Finally, we had to compare the male and female proportions among the academically educated group only. Dental caries among females was higher. This high proportion may be caused by the high participation of females in the study rather than males. Also after testing the result, it was not significant and mostly due to chance.

Conclusion:

The prevalence of dental caries among dental students in the College of Dentistry, Halwer Medical University was high as compared to other populations in the same age group. A higher proportion of dental caries among the first stage was noted since they had no education on dental caries prevention, yet. The results were not inversely proportional to education and background.

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Conflicts of interest:

The authors report no conflicts of interest.

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