

# Caries severity in relation to oral health knowledge and behavior of third and fifth year dental students / University of Baghdad (A comparative study)

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## ABSTRACT

**Background:** The knowledge of dental students is important because these individuals are the future dental health providers. The purpose of the present study was to explore the severity of dental caries in relation to oral health knowledge and behavior between two different grades of undergraduate dental students in the College of Dentistry / University of Baghdad.

**Materials and methods:** One hundred dental students were included in this study (50 third years and 50 fifth year students). A questionnaire was distributed among them to evaluate their oral health knowledge and behavior. Dental students were examined for recording of dental caries severity.

**Results:** Data analysis revealed that third year dental students had higher mean of decayed surfaces (DS) and missing surfaces (MS), compared to the other group, the difference was statistically highly significant ( $P < 0.01$ ) for DS and significant for MS ( $P < 0.05$ ), while fifth year dental students were found to have higher mean value of filled surfaces (FS) and the difference was highly Significant ( $P < 0.01$ ). However, higher DMFS value was recorded for final year students without any significant difference. Oral health knowledge was better for fifth grade and the difference was highly significant ( $p < 0.01$ ) except for the question about complete removal of dental plaque by brushing only, the difference was significant ( $p < 0.05$ ). Oral health behavior of third grade students was at lower level, the difference was highly significant ( $P < 0.01$ ) except for the questions about frequency of brushing and sweet eating, it was significant ( $p < 0.05$ ) and it was not significant difference regarding use of siwak.

**Conclusion:** The findings of this study highlights that increase the theoretical education of dental students in addition to clinical experience will improve their oral health knowledge and behavior, which in turn affect positively the oral hygiene towards health promotion and prevention of oral diseases.

**Key words:** Caries severity, knowledge, behavior. (J Bagh Coll Dentistry 2014; 26(3):164-168).

## الخلاصة:

كان الغرض من هذه الدراسة هو معرفة مدى شدة تسوس الاسنان وعلاقتها بمعرفة صحة الفم والسلوك بين مرحلتين مختلفتين من طلاب كلية طب الاسنان / جامعة بغداد شملت هذه الدراسة مائة طالب (خمسون طالب من المرحلة الثالثة وخمسون طالب من المرحلة الخامسة) وقد تم توزيع استبيان مكون من مجموعة اسئلة فيما بينهم لتقييم معرفتهم بصحة الفم والسلوك بالإضافة الى فحص شدة التسوس لهؤلاء الطلاب وكشف تحليل البيانات ان طلاب المرحلة الثالثة لديهم متوسط اعلى من الاسطح المتسوسة والاسطح المفقودة وكان الفرق احصائيا معنويه عاليه للاسطح المتسوسة في حين كان طلاب السنه الخامسه لديهم قيمه اعلى لسطوح الاسنان التي تم علاجها وكان الفرق احصائيا معنويه عاليه وسجلت قيمه اعلى لمجموع الاسطح المتسوسة والمفقوده والمعالجه لطلاب المرحلة الخامسه وكان الفرق احصائيا غير معنوي وكانت معرفة صحة الفم والسلوك الصحي افضل للمرحله الخامسه. اوضحت هذه الدراسه ان التعليم النظري لطلاب المرحله الخامسه بالاضافه الى الخبره السريرييه ادت الى تحسين معرفتهم بصحة الفم والسلوك وهذا بدوره اثر ايجابيا على العناية بالفم نحو تعزيز الصحة والوقايه من الامراض.

## INTRODUCTION

Knowledge is defined as the expertise and skills acquired by a person through experience or education. Knowledge acquisition involves complex cognitive process: Perception, learning, communication, association and reasoning <sup>(1)</sup>. Undoubtedly one of the methods for prevention is to improve the knowledge of the community regarding promotion of health behavior and influence of self effective methods on preventing diseases <sup>(2)</sup>. Health behavior is the human action taken to maintain and promote health; it also helps prevent diseases <sup>(3)</sup>. In Dentistry, dental caries is the most prevalent disease and the major reason for tooth loss, representing a major challenge for oral health care <sup>(4)</sup>. Some components of caries process act at the tooth surface (saliva, biofilm, diet), while another set of determinants which affect the prevalence and severity of dental caries includes (behavior, knowledge, attitude, education, socioeconomic status, income) <sup>(5,6)</sup>.

Oral health behavior consists of individual and professional care and includes tooth brushing, dental flossing, visiting a dentist and following a proper diet <sup>(3)</sup>.

Biology, environment, life style, health care organizations and psychology factors are essential components of oral health behavior <sup>(7)</sup>. Dental health professionals need to set an example for their patients, family and friends by maintaining good oral health in their own mouth <sup>(1)</sup>. Positive attitudes toward health promotion need to be developed during student's days rather than afterward <sup>(8)</sup>.

The prevalence of caries is declining in developed countries, increasing in less developed countries and is an epidemic in countries with emerging economics <sup>(9)</sup>. Decline in the prevalence in developed countries has been associated with improved oral hygiene behaviors and several preventive programs, unlike developing countries where the focus is mostly on curative care <sup>(10)</sup>. There are many studies reported an increase in the prevalence and severity of dental caries among Iraqi population <sup>(11-13)</sup>. As there is no published

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data available about severity of dental caries among dental students in relation to their knowledge and behavior and as an important group to be a future dental services providers, so this study was designed to assess and compare the impact of course content and contribution of clinical training on the development of their oral health knowledge and behavior and in turn how can these effect severity of dental caries.

## MATERIALS AND METHODS

In this study the data was collected from 50 third grade (27 females (54%) and 23 males (46%)) and 50 fifth grade (29 females (58%) and 21 males (42%)) dental students of College of Dentistry / Baghdad University. The questionnaire included 18 items of three aspects (first), general questions related to the name age, gender and general health, (second) information about oral health knowledge and (third) information concerning their oral health behavior. The assessment of participants' oral health knowledge was done by asking about diet, caries etiology, progression, treatment and its prevention. Oral health behavior was assessed by asking about tooth brushing, use of other oral hygiene aids like dental floss, mouth wash and siwak, frequency of visiting a dentist and sweet consumption times.

The students were asked to respond to each item according to the response format provided in the questionnaire which included multiple choice questions in which the students were instructed to choose only one response from provided list of options. A full explanation of how to fill in the questions was elucidated to the participants. They filled in the questions without conferring with each other. Severity of dental caries was assessed using decayed, missing and filled surfaces index of permanent teeth (DMFS) according to criteria described by WHO<sup>(14)</sup>. The examination was done in the dental clinic on the dental chair under artificial light (dental light) using plane mouth mirror and sickle shaped explorer. The data were analyzed using SPSS (version 13). The student's t-test and chi- squared tests were applied. The significance level (P-value) was set at 0.05.

## RESULTS

Table (1) reveals the mean DMFS value for the fifth year which was higher than that of third year student with no statistically significant difference. The mean value of decayed surfaces (DS) was higher for third year with statistically highly significant difference; also the mean value of missing surfaces (MS) was higher for third year with statistically significant difference. Fifth year students were found to have higher mean values

of filled surface (FS) with highly significant difference.

After evaluation the answers of the 100 dental students (50 from third year and 50 from fifth year), it was found that only part of third year students thought that candies and caramel cause dental caries, while all of fifth year sample believed that these substances are causative factors of dental caries. Lower percentage of third year students knew that soft drinks are harmful to the tooth structure compared to final year students. The caries decreasing effect of fibrous food was known by less number of third year students. It is clear that final year students had a higher proportion of correct answers than third year and the difference was statistically highly significant as shown in Table (2).

Table (3) demonstrates students dental knowledge, less number of third year accepted that brushing alone is insufficient for complete removal of dental plaque, the difference was statistically significant. Higher proportion of final year students compared to third year students thought that filling is not the only treatment for carious tooth, also agreed with the statement "fluoride is useful in increasing tooth resistance against dental caries" and believed that dental caries can progress and cause pulp death and the difference was statistically highly significant between them. The opinion of final year students on how to prevent caries was promising compared to third year students because most of them awarded that decrease sweet eating, regular brushing, inter-dental aids and use of mouth wash are all effective means of avoiding caries versus lower proportion of third year volunteers accepted with this and the difference between two groups was highly significant.

Table (4) illustrates oral hygiene behaviors among dental students. Significantly more fifth year students brush their teeth at least twice a day compared to third year ones. Greater proportion of final year student used dental floss and mouth wash, the difference was statistically highly significant. More fifth year students were recorded to use siwak with no significant difference. For last year dental students, it was obvious that the preventive behavior of visiting the dentist for checking is more frequent than third year colleagues from their answers and the difference was statistically highly significant.

Table (5) shows that the dietary behavior of fifth year student to minimize the risk of caries challenge was better than that of third year students and this is reflected by less number of the later group compared with the former group

consumed sweets once or no a day between meals, the difference was statistically significant.

**Table 1: Mean and standard deviation of Decayed Surfaces (DS), Missing Surfaces (MS), Filled Surfaces (FS) and (DMFS) of third and fifth year dental students**

Variables	Grade	Mean ± SD	t. test	p. value
DS	3 <sup>rd</sup>	9.08 2.52	14.26	0.00 **
	5 <sup>th</sup>	3.06 1.59		
MS	3 <sup>rd</sup>	0.50 1.51	2.33	0.02 *
	5 <sup>th</sup>	0 0		
FS	3 <sup>rd</sup>	1.42 1.84	- 15.36	0.00 **
	5 <sup>th</sup>	8.46 2.66		
DMFS	3 <sup>rd</sup>	11 2.68	- 0.89	NS
	5 <sup>th</sup>	11.52 3.13		

\*Significant at p <0.05, \*\*Highly significant at p<0.01, df = 98

**Table 2: Dietary knowledge of third and fifth year dental students**

Item description		Third Year		Fifth Year		χ <sup>2</sup> Value	Statistical significance level
		No.	%	No.	%		
Do candies and caramel cause dental caries	Yes	39	78	50	100	12.36	HS P < 0.01 df = 2
	No	7	14	0	0		
	Don't know	4	8	0	0		
Do soft drinks harm the tooth	Yes	15	30	41	82	27.44	HS P < 0.01 df = 2
	No	20	40	5	10		
	Don't know	15	30	4	8		
Does eating of fibrous food decrease risk of dental caries	Yes	21	42	43	86	22.39	HS P < 0.01 df = 2
	No	8	16	4	8		
	Don't know	21	42	3	6		

**Table 3: Dental knowledge of third and fifth year dental students**

Item description		Third Year		Fifth Year		χ <sup>2</sup> Value	Statistical significance level
		No.	%	No.	%		
Is brushing enough for total removal of dental plaque	Yes	9	18	3	6	5.74	Sig P < 0.05 df = 2
	No	39	78	47	94		
	Don't know	2	4	0	0		
Is filling the only treatment for carious tooth	Yes	12	24	2	4	10.85	HS P < 0.01 df = 2
	No	36	72	48	96		
	Don't know	2	4	0	0		
Is fluoride useful in increasing tooth resistance against dental caries	Yes	33	66	50	100	20.85	HS P < 0.01 df = 2
	No	5	10	0	0		
	Don't know	12	24	0	0		
Can dental caries progress and cause death of the pulp	Yes	31	62	50	100	23.45	HS P < 0.01 df = 2
	No	6	12	0	0		
	Don't know	13	26	0	0		
Typical method of caries prevention	Decrease sweets eating	3	6	0	0	11.56	HS P < 0.01 df = 3
	Regular brushing and interdental aids	9	18	1	2		
	Use of mouth wash	0	0	1	2		
	All the above	38	76	48	96		
	Don't know	0	0	0	0		

**Table 4: Oral hygiene behaviors of third and fifth year dental students**

Item description		Third year		Fifth year		$\chi^2$ Value	Statistical significance level
		No.	%	No.	%		
Frequency of teeth brushing	Once a day	8	16	3	6	10.88	Sig, P < 0.05 df = 4
	Twice a day	20	40	27	54		
	Three times a day	13	26	19	38		
	More than three times a day	1	2	0	0		
	Irregularly	8	16	1	2		
Use of dental floss	Yes	24	48	37	74	7.10	HS, P < 0.01 df = 1
	No	26	52	13	26		
Use of mouth wash	Yes	19	38	35	70	10.3	HS, P < 0.01 df=1
	No	31	62	15	30		
Use of siwak	Yes	9	18	13	26	0.93	NS, 0.33 df = 1
	No	41	82	37	74		
Frequency of dental visit	Every one year or less	7	14	23	46	12.19	HS, P < 0.01 df = 1
	On need	43	86	27	54		

**Table 5: Dietary behavior of third and fifth year dental students regarding the frequency of sweet intake between meals**

Item description		Third Year		Fifth Year		$\chi^2$ Value	Statistical significance level
		No.	%	No.	%		
Frequency of sweet eating between meals	One or no	32	64	43	86	6.61	Sig P < 0.05 df = 2
	Two	12	24	4	8		
	Three or more	6	12	3	6		

**DISCUSSION**

Effective teaching is critical for student learning, especially in professional fields such as dentistry and dental hygiene<sup>(15)</sup>. Result of the present study showed that fifth year dental students had higher caries severity (DMFS) than their third year colleagues, but the difference was statistically not significant. An interesting result of this study was the higher mean value of decayed surfaces (DS) and missing surfaces (MS) for the third year students and the differences were statistically highly significant for DS and significant for MS. While the final year students was found to have higher value of filled surfaces (FS) compared with third year students, the difference was highly significant. This may be attributed to the concept that Undergraduate dental education, as generally agreed should be scientifically based clinically relevant and medically informed to create stable health behavior that can overcome differences in personal characteristics which affect behavior other than knowledge like, beliefs, values, influence of family members and friends on the oral health behavior<sup>(1,16)</sup>, therefore a substantial increase in the dental theoretical education in addition to clinical experience of the final year students led to positive changes revealed in the oral health knowledge and behavior among them passing through the undergraduate curriculum from first to final year of dental study, so their preventive behavior was improved towards the

maintenance of good oral health status<sup>(15)</sup> and they were directed towards the restoration of their decayed teeth converting them from D component to F component of the DMFS. In agreement with the results of some previous studies<sup>(17,18)</sup>, this research established that the better oral health knowledge of final year students compared to third year ones had definitely got an impact on their behavior by reduction unhealthy behaviors such as frequency of sugar eating especially between meals and increase healthy behaviors such as regular frequent brushing, flossing and use of mouth wash, use of other aids like siwak was found in low percent of both grades (18% of third year, 26% of fifth year) with statistically not significant difference this may be related to cultural perceptions, familial belief and other life situations<sup>(19,20)</sup>. Visiting the dentist for routine checkup was defined as preventive care<sup>(1)</sup>. It was demonstrated that the final year students showed better preventive care behaviors than third year colleagues and this may related to their improved knowledge about Preventive Dentistry.

The result of this study pointed out that Preventive Dentistry courses should be taught early in the dental curriculum of the pre-clinical years and the instructors must be well trained how to explain concepts and techniques of Preventive Dentistry clearly at the students level of understanding and how to apply them in the real life towards maintenance of good oral health status overcoming differences in their personal

characteristics and acting as an example for their family and friends.

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