

## Comparison Of Oral Health Status And Behavior between First And Fifth Years Of Al-Mustansiriyah Dental Students

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### ABSTRACT

**Background:** Periodontal diseases and dental caries are the most common oral diseases, but they can be adequately prevented by adopting a specific health behavior and plaque control. The study was carried out to determine and compare oral health status; it included both caries experience, gingival health and oral hygiene behavior between first and fifth years of Al-Mustansiriyah dental students.

**Materials and methods:** Total sample of the study consisted of 50 students at first year (25 males, 25 females) and 60 students at fifth year (30 males, 30 females). Plaque and gingival indices, dental caries indices (DMFS and DMFT) were recorded to evaluate oral health status for each student. Further questionnaires were given to evaluate different oral hygiene habits.

**Results:** The mean values of plaque and gingival indices in the first year were higher than fifth year for males and females with highly significant difference at ( $P \leq 0.01$ ); whereas the mean values of plaque index were (1.17, 0.83 for males of first and fifth years respectively and 1.02, 0.47 for female of first and fifth years respectively) and the mean values of gingival index were (0.89, 0.51 for males of first and fifth years respectively and 0.78, 0.31 for females of first and fifth years respectively). As well as, the mean of (DMFS and DMFT) were showed higher values among females than males where (8.88, 6.48 for males and 10.16, 7.08 for females) in first year, while (11.90, 8.73 for males and 13.33, 9.16 for females) in fifth year. The percentages of tooth brushing, mouthwash, dental floss, and tooth picks using for fifth year students were higher than first year students.

**Conclusion:** Differences of oral health status and behavior rates between first and final years students can be attributed to low level of dental education in first year students whose need the improvements of oral hygiene education in future which include the importance of proper tooth brushing and using of interdental aids to prevent the periodontal diseases and dental caries.

**Keywords:** Tooth brushing, plaque index, gingival index, dental students. (J Bagh Coll Dentistry 2017; 29(2):77-71)

### INTRODUCTION

Oral hygiene is the practice of keeping the mouth healthy and clean by brushing and flossing to prevent tooth decay and gingival disease so the purpose of oral hygiene is to prevent the buildup of bacterial plaque, which is generally accepted as the predominant etiological factor in periodontal disease (PD) and is also regarded essential for the initiation of dental caries (DC) (1, 2). Consequently preventive programs of the (PD) and (DC) are based on plaque control (1, 3).

Dental caries is a highly prevalent chronic oral infectious disease of microbiological origin affecting hard tissues of the tooth, characterized by alternating phases of demineralization and remineralization. (4,5) It can be arrested, restricted and potentially reversed in its early stages, but it is often not self-limiting and without proper care can be progress until the tooth is destroyed. (6), also it can affect either genders with all age groups with all socioeconomic conditions (7).

Many studies were conducted to evaluate the decayed, missing and filled surfaces and teeth (DMFS) and (DMFT). The results showed that

the caries prevalence was high and it increased with age and over time, especially since the relatively recent economic growth, which has resulted in an increased consumption of refined sugar, higher than other developing countries (8-14). Lack of awareness about oral health practices has also contributed to increase dental caries (15, 16).

One of the general objectives of teaching dentistry is to train experts to motivate patients to adopt good oral hygiene practices. They are more likely to be able to do this if they themselves are motivated (1, 13).

Dental students are representative of the educated, urbanized, influential, and motivated class of individuals. They should be convinced that (DC) and (PD) are preventable, and should possess the knowledge and conviction of preventive principles in planning and implementation of programmers and possess leadership in this aspect (17, 18).

Reports on the impact of education on the oral hygiene of dental students are different. Lang et al, in 1977 was studied oral hygiene of Danish dental students, while Cavillon et al, in 1982 was studied oral hygiene of French dental students at the University of Paris; where both

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authors noted a clear improvement in the oral hygiene practices of students during their studies. On the other hand, Meister et al, in 1980 did not show any improvement in the oral hygiene of students, in spite of having received information and education in a study at the University of Marquette (Michigan) in United States of America<sup>(19, 20, 21)</sup>.

The aim of the present study was to determine and compare oral health status (DC and gingivitis) and oral hygiene behavior among first (1<sup>st</sup>) and fifth (5<sup>th</sup>) years of Al-Mustansiriya dental students to find out if they are practicing the dental health regimes effectively during their studying period and to assess the import of dental study on improvement of oral health status.

## MATERIALS AND METHODS

The sample of the study consisted of 110 dental students; 50 students at 1<sup>st</sup> year (25 males and 25 females) and 60 students at 5<sup>th</sup> year (30 males and 30 females) of Al-Mustansiriya dental college, they were randomly recruited and enrolled voluntarily in the study after a well explanation of purpose of the investigation.

In this study, all students were systemically healthy, cooperative and not taking any antibiotics during the last three months<sup>(22)</sup>. Any pregnant and in menstrual cycle females, student had history of chronic systemic diseases with known associations with (PD) (e.g. diabetes mellitus) and any student with retentive factor of plaque (e.g. orthodontic appliance) were excluded from this study.

Oral examinations of students were carried out at the dental clinics teaching hospital department of periodontics of Al-Mustansiriya University, under standard conditions, using plane mouth mirrors, William's periodontal probes and artificial light. All teeth were examined with the exception of third molars. Oral health status was evaluated by measurement of the plaque index (PLI)<sup>(23)</sup>, gingival index (GI)<sup>(24)</sup>, (DMFS) index and (DMFT) index<sup>(25)</sup>. Radiographs were not taken for any of the participants because of practical limitations.

Further questionnaires were given to evaluate different oral hygiene behavior that includes:

- How often do you clean your teeth daily?
- Are you use dental floss, mouthwash and tooth picks?

Statistical methods for analysis of the results of the study were performed using (IBM® SPSS® Statistics version 21, 2012).

## RESULTS

The study sample was composed of 110 dental students; 50 students at 1<sup>st</sup> year aged (17-19 years) divided into (25 males and 25 females) and 60 students at 5<sup>th</sup> year aged (21-23 years) divided into (30 males and 30 females), this was shown in Table (1).

The means of (PLI) and (GI) were higher in the 1<sup>st</sup> year students than in the 5<sup>th</sup> year students for males and females (means of PLI were 1.17, 0.83 for males and 1.02, 0.47 for females while means of GI were 0.89, 0.51 for males and 0.78, 0.31 for females at 1<sup>st</sup> and 5<sup>th</sup> years respectively) as shown in Table (2) and Figure (1)

Caries experience by gender was shown in Table (3); where the means of (DMFT) and (DMFS) indices showed higher values among females than males (8.88, 6.48 for males and 10.16, 7.08 for females in 1<sup>st</sup> year students, while 11.90, 8.73 for males and 13.33, 9.16 for females in 5<sup>th</sup> year students).

For comparisons among students, ANOVA test was used; the results showed that there was high significant (HS) difference at P-value  $\leq 0.01$  among and within students for both (PLI) and (GI), as shown in Table (4). While, the least significant difference (LSD) test was performed for multiple comparisons between each two groups; the results showed that there was non-significant (NS) difference at P-value  $\geq 0.05$  between 1<sup>st</sup> year-males and 1<sup>st</sup> year-females for both (PLI) and (GI), while there was significant (S) difference at P-value  $< 0.05$  between 5<sup>th</sup> year-males and 5<sup>th</sup> year-females for (GI), whereas there was (HS) difference at P-value  $\leq 0.01$  between 1<sup>st</sup> year-males and 5<sup>th</sup> year-males; 1<sup>st</sup> year-males and 5<sup>th</sup> year-females; 1<sup>st</sup> year-females and 5<sup>th</sup> year-males; 1<sup>st</sup> year-females and 5<sup>th</sup> year-females for both (PLI) and (GI), and 5<sup>th</sup> year-males with 5<sup>th</sup> year-females for (PLI), as shown in Table (5).

Also, ANOVA test was showed that there was (HS) difference at P-value  $\leq 0.01$  among and within groups for both (DMFS) and (DMFT) indices, as shown in Table (6). While, LSD test was showed that there was (NS) difference at P-value  $\geq 0.05$  between 1<sup>st</sup> year-males and 1<sup>st</sup> year-females; 5<sup>th</sup> year-males and 5<sup>th</sup> year-females for both (DMFS) and (DMFT) indices, and 1<sup>st</sup> year-females with 5<sup>th</sup> year-males for (DMFS) index, while there was significant (S) difference at P-value  $< 0.05$  between 1<sup>st</sup> year-males and 5<sup>th</sup> year-males for (DMFS) index, and 1<sup>st</sup> year-females with 5<sup>th</sup> year-males for (DMFT) index, whereas there was (HS) difference at P-value  $\leq 0.01$  between 1<sup>st</sup> year-males and 5<sup>th</sup> year-females; 1<sup>st</sup> year-females and 5<sup>th</sup> year-females for

both (DMFS) and (DMFT) indices, and 1<sup>st</sup> year-males with 5<sup>th</sup> year-males for (DMFT) index, as shown in Table (7).

The percentages for once, twice and more than twice per day of tooth brushing in 5<sup>th</sup> year students were (43%, 40%, 16% respectively for males) and (33%, 56%, 10% respectively for females), while the percentages in 1<sup>st</sup> year students were (48%, 44%, 8% respectively for males) and (40%, 48%, 12% respectively for females), as shown in Table (8).

The rates of mouthwash using in 1<sup>st</sup> year students were (16%, 20%) and in 5<sup>th</sup> year were (20%, 23%) for males and females respectively. While, of dental floss using in 1<sup>st</sup> year students were (20%, 24%) and in 5<sup>th</sup> year students were (43%, 63%) for males and females respectively. Whereas, of tooth picks using in 1<sup>st</sup> year students were (28%, 24%) and in 5<sup>th</sup> year students were (30%, 6.7%) for males and females respectively, as shown in Table (9).

## DISCUSSION

This study was performed on dental students only; 50 dental students at 1<sup>st</sup> year aged (17-19 years) divided into (25 males and 25 females) and 60 dental students at 5<sup>th</sup> year aged (21-23 years) to determine and compare oral health status and oral hygiene behavior among them. One might expect that dental students have good oral hygiene and periodontal health than other subjects in the community, but from the presented results of this study it's clear that most of dental students didn't demonstrate an effective oral hygiene this could be due to differences in oral hygiene habits and oral hygiene practice among different subjects (26, 27). This result was agreed with **Christopher et al, in 1994; wali in 2002; Al-Juboury in 2006; AL-Muhamadawy in 2009.** (3, 27, 28, 29)

Our findings were showed that females students had lower means of (PLI) and (GI) than males students; which were in agreement with **Howat et al, in 1979; Locker et al, in 2000; Al-Juboury in 2006; AL-Muhamadawy in 2009** (3, 27, 30, 31). This result may be possibly due to the fact that females take care of their teeth and oral health better than males as a result of greater social pressure on females to be physically attractive (32). A statistically significant improvement in oral hygiene and periodontal health status (PLI) and (GI) were found between 1<sup>st</sup> and 5<sup>th</sup> year students, this may be attributed to that 5<sup>th</sup> year students were more successful for removing plaque than 1<sup>st</sup> year students due to entirely devoted to comprehensive dental care, also the awareness and the knowledge of the

presence of disease and its management was poor in the 1<sup>st</sup> year students (1, 18). This was in agreement with some other studies **Howat et al, in 1979; Lang et al, in 1977; Cavaillon et al, in 1982; AL-Muhamadawy in 2009** (3, 19, 20, 30), while **Elmostehv et al, in 1969 ; Meister in 1980 and Tenenbaum in 1980** were not showed any improvement of either effective personal oral hygiene or gingival health between pre-clinical and final-year dental students due to the absence of improvement of the oral hygiene practices in students, in spite of having received information and education (1, 21, 26).

The evaluation of (DC) is important. It gives an opportunity to improve hygiene, diet, and implement preventive measures in a population. The overall prevalence of (DC) in this study (DMFS and DMFT) among females was higher than males; this could be attributed to the earlier eruption of teeth in females than males which enhance longer exposure to the cariogenic oral environmental factors or may be easier to food supplies by females and frequent snacking during food preparation (33). This result was in agreement with **Al-Azawi in 2000; Eugenio et al, in 2005; Hala in 2006; Abdullah in 2009; Rashid et al, in 2010; Shaikhet al, in 2014** (11, 16, 27, 34, 35, 36). Also the means of (DMFS and DMFT) indices were higher in 5<sup>th</sup> year students than 1<sup>st</sup> year students caries prevalence was high and it increased with age (9, 10). These results are attributed to the irreversibility of caries process and accumulative nature of the disease on the one hand, and the paucity of planned preventive programmers in Iraq (including different methods of fluoride application) on the other hand (16, 37). So the people are very susceptible to (DC) throughout their lifetime. (38). This result was in agreement with **Maatouk et al, in 2006** (13) and **Al-Huwaizi and Khamis in 2010** (14).

The mean of (DS) component for 1<sup>st</sup> year students was found to be higher than 5<sup>th</sup> year students; this result was opposite to the result of 5<sup>th</sup> year students, which showed that the mean of (FS) component had higher than 1<sup>st</sup> year students, and this result was reflected the low care about dental health among dental students in 1<sup>st</sup> year in comparison with 5<sup>th</sup> year students, in addition greater motivation and ease of access to dental consultation of 5<sup>th</sup> year students. This result was in agreement with **Maatouk et al, in 2006** (13).

Many students in 1<sup>st</sup> year were brushing their teeth at least once a day but lack the knowledge of proper tooth brushing techniques, also, this study was reported that very few students were

used practice flossing and at least some students were used mouthwash and toothpicks<sup>(39, 40)</sup>, while large proportion of the students in 5<sup>th</sup> year were brushed their teeth twice daily with the knowledge of proper tooth brushing techniques and interdental cleaning aids such as flossing, which indicate that their training appear to have influenced their oral hygiene effectively. This result was in agreement with **Maatouk et al, in 2006**<sup>(13)</sup>.

## CONCLUSION

The results of this study confirmed the need for extensive and continual exposure of dental students towards plaque control and prevention procedures and starting from the 1<sup>st</sup> year and continued throughout their courses in order that the graduated dentist having ample knowledge and are capable of implementing and maintaining thorough preventive measures for their patients.

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**Table 1: Descriptive statistical results of student's ages.**

Groups	Gender	No.	Mean	S.D
1 <sup>st</sup> year students	Males	25	18.04	0.53
	Females	25	18.12	0.52
5 <sup>th</sup> year students	Males	30	22.13	0.57
	Females	30	22.06	0.44

**Table 2: Descriptive statistical results of (PLI) and (GI) for each group.**

Groups	Index	Gender	Mean	S.D
1 <sup>st</sup> year students	PLI	Males	1.17	0.32
		Females	1.02	0.33
	GI	Males	0.89	0.41
		Females	0.78	0.46
5 <sup>th</sup> year students	PLI	Males	0.83	0.28
		Females	0.47	0.27
	GI	Males	0.51	0.29
		Females	0.31	0.19

**Table 3: Descriptive statistical results of dental caries for each group.**

			DS	MS	FS	DMFS	DT	FS	FT	DMFT
1 <sup>st</sup> year	Males	Mean	5.96	1.40	1.52	8.88	5.08	0.28	1.12	6.48
		S.D	2.79	2.70	1.44	3.52	2.46	0.54	1.05	2.41
	Females	Mean	6.52	1.60	1.84	10.16	5.16	0.32	1.52	7.08
		S.D	3.74	2.78	1.65	5.18	2.67	0.55	1.22	2.78
5 <sup>th</sup> year	Males	Mean	5.63	2.66	3.76	11.90	4.86	0.53	3.33	8.73
		S.D	3.01	4.09	3.69	5.58	2.51	0.81	3.27	3.25
	Females	Mean	4.53	2.00	6.90	13.33	3.63	0.40	5.13	9.16
		S.D	2.35	2.81	4.26	4.18	1.97	0.56	3.38	2.87

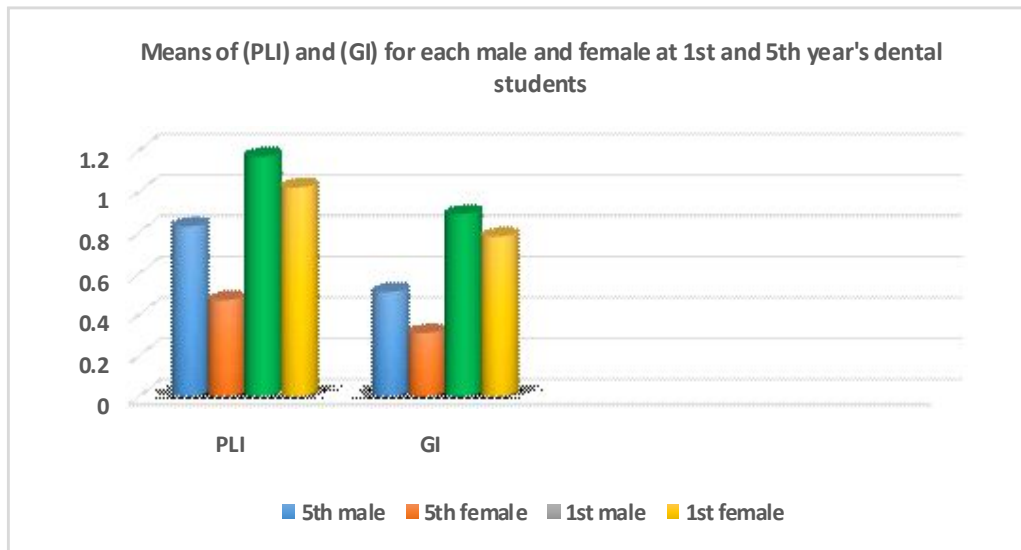


Figure (1): Bar chart graph for means of (PLI) and (GI) for each for each group.

Table 4: ANOVA test for plaque and gingival indices.

Index	ANOVA	SS	df	MS	F-test	P-value	Sig.
PLI	Among groups	7.65	3	2.55	27.85	0.000	**
	Within groups	9.70	106	0.09			
	Total	17.35	109				
GI	Among groups	5.69	3	1.89	15.49	0.000	**
	Within groups	12.98	106	0.12			
	Total	18.67	109				

Table 5: LSD test to compare the means of (PLI) and (GI) among groups.

Index	Groups	MD	SE	P-value	Sig.	
PLI	1 <sup>st</sup> year-males	1 <sup>st</sup> year females	0.14	0.08	0.093	NS
		5 <sup>th</sup> year-males	0.34	0.08	0.000	**
		5 <sup>th</sup> year-females	0.69	0.08	0.000	**
	1 <sup>st</sup> year-females	5 <sup>th</sup> year-males	0.19	0.08	0.017	**
		5 <sup>th</sup> year-females	0.55	0.08	0.000	**
	5 <sup>th</sup> year-males	5 <sup>th</sup> year-females	0.35	0.07	0.000	**
GI	1 <sup>st</sup> year-males	1 <sup>st</sup> year females	0.11	0.09	0.264	NS
		5 <sup>th</sup> year-males	0.38	0.09	0.000	**
		5 <sup>th</sup> year-females	0.58	0.09	0.000	**
	1 <sup>st</sup> year-females	5 <sup>th</sup> year-males	0.27	0.09	0.005	**
		5 <sup>th</sup> year-females	0.46	0.09	0.000	**
	5 <sup>th</sup> year-males	5 <sup>th</sup> year-females	0.19	0.09	0.030	*

Table 6: ANOVA test for DMFS and DMFT.

	ANOVA	SS	df	MS	F-test	P-value	Sig.
DMFS	Among groups	312.82	3	104.27	4.68	0.004	**
	Within groups	2357.36	106	22.23			
	Total	2670.19	109				
DMFT	Among groups	135.74	3	45.24	5.48	0.002	**
	Within groups	874.11	106	8.24			
	Total	1009.85	109				

Table 7: LSD test to compare the means of DMFS and DMFT among groups.

Groups		MD	SE	P-value	Sig.	
DMFS	1 <sup>st</sup> year-males	1 <sup>st</sup> year females	-1.28	1.33	0.339	NS
		5 <sup>th</sup> year-males	-3.02	1.27	0.020	*
		5 <sup>th</sup> year-females	-4.45	1.27	0.001	**
	1 <sup>st</sup> year-females	5 <sup>th</sup> year-males	-1.74	1.27	0.176	NS
		5 <sup>th</sup> year-females	-3.17	1.27	0.015	**
	5 <sup>th</sup> year-males	5 <sup>th</sup> year-females	-1.43	1.21	0.242	NS
DMFT	1 <sup>st</sup> year-males	1 <sup>st</sup> year females	-0.60	0.81	0.462	NS
		5 <sup>th</sup> year-males	-2.25	0.77	0.005	**
		5 <sup>th</sup> year-females	-2.68	0.77	0.001	**
	1 <sup>st</sup> year-females	5 <sup>th</sup> year-males	-1.65	0.77	0.036	*
		5 <sup>th</sup> year-females	-2.08	0.77	0.008	**
	5 <sup>th</sup> year-males	5 <sup>th</sup> year-females	-0.43	0.74	0.560	NS

Table 8: Frequency of brushing in students.

z	Gender	Brushing					
		Once daily		Twice daily		≥ 3 times daily	
		No.	%	No.	%	No.	%
1 <sup>st</sup> year students	Males	12	48	11	44	2	8
	Females	10	40	12	48	3	12
5 <sup>th</sup> year students	Males	13	43.3	12	40	5	16.7
	Females	10	33.3	17	56	3	10

Table 9: Frequency of flossing, mouth wash, and tooth picks in students.

Groups	Gender	Flossing				Mouth wash				Tooth picks			
		Yes		No		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1 <sup>st</sup> year students	Males	5	20	20	80	4	16	21	84	7	28	18	72
	Females	6	24	19	76	5	20	20	80	6	24	19	76
5 <sup>th</sup> year students	Males	13	43.3	17	56.7	6	20	24	80	9	30	21	70
	Females	19	63.3	11	36.7	7	23.3	23	76.7	2	6.7	28	93

### المستخلص

الخلفية: تعتبر امراض اللثة وتسوس الاسنان من امراض الفم الشائعة، لكن يمكن ان نتجنبها بشكل تام من خلال التعود على سلوك صحي محدد وسيطرة على البلاك. تم عمل هذه الدراسة لتحديد ومقارنة الحالة الصحية للفم والتي تتضمن كلاً من تسوس الاسنان وصحة اللثة وكذلك السلوك الصحي للفم بين طلاب المرحلة الاولى والخامسة في كلية طب الاسنان-المستصريه.

المواد والطرق: يتكون النموذج الكلي للدراسه من 50 طالبا في المرحلة الاولى (25 ذكور، 25 اناث) و 50 طالبا في المرحلة الخامسة (30 ذكور، 30 اناث) وقد تم عمل مؤشرات البلاك واللثة وتسوس الاسنان (DMFS and DMFT) لتقدير الحالة الصحية لفم كل طالب وقد تم اعطاء اسئله اخرى للطلاب لتقدير العادات الصحية المختلفه للفم.

النتائج: كانت قيم معدلات مؤشرات البلاك واللثة عند طلاب المرحلة الاولى اعلى من المرحلة الخامسة لكلا من الذكور والاناث مع وجود فرق معنوي عالي عند ( $P \leq 0.01$ )؛ بحيث كانت قيم معدلات مؤشر البلاك (1,17، 0,83 للذكور عند المرحلتين الاولى والخامسة بالتتابع و 1,02، 0,47 للاناث عند المرحلتين الاولى والخامسة بالتتابع) وكذلك اظهرت قيم معدلات مؤشري (DMFS and DMFT) قيم عالية بين الاناث اكثر من الذكور بحيث كانت (8,88، 6,20 للذكور و 10,16، 7,08 للاناث) عند المرحلة الاولى بينما كانت (11,90، 8,73 للذكور و 13,33، 9,16 للاناث) عند المرحلة الخامسة وكانت نسبة تنظيف الاسنان، استخدام غسيل الفم، خيط الاسنان، وعيادان الاسنان عند طلاب المرحلة الخامسة اعلى من طلاب المرحلة الاولى.

الاستنتاج: ان اختلافات الحالة الصحية والمعدلات السلوكية للفم بين طلاب المرحلتين الاولى والخامسة قد يكون راجع الى انخفاض مستوى تعليم طب الاسنان عند طلاب المرحلة الاولى والذين يحتاجون الى التثقيف الصحي للفم في المستقبل والذي يتضمن اهمية تنظيف الاسنان الصحيح واستخدام وسائل التنظيف بين الاسنان لمنع امراض اللثة وتسوس الاسنان. الكلمات الرئيسية: تنظيف الاسنان، مؤشر البلاك، مؤشر اللثة، طلاب كلية طب الاسنان.





