Oral Health Knowledge and Behavior in Relation to Oral Hygiene and Gingival Condition among a Group of Industry Workers

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ABSTRACT

Background: In Iraqi communities, the workers considered the largest population groups, so increasing their dental education by increasing the care for their dental health knowledge and behavior is very important, the present study was aimed to evaluate the gingival health and oral hygiene in relation to knowledge and behavior among a group of a workers selected randomly from Al Fedaa company in Baghdad city.

Materials and methods: A sample of 110 workers (65 men and 45 women) included in this study, a questionnaire used to evaluate their oral health knowledge and behavior. The gingival health condition of the workers was examined by using Loe and Silness index (1963), Silness and Loe index (1964) was used to asses plaque quantity, and Ramfjord index (1959) used to asses calculus quantity, SPSS version 18 was used to analyze the data of the study statistically.

Results: This study showed that no significant differences between plaque, calculus, and gingival index with the education degree of the workers. About the knowledge the result showed no significant differences in questions asking about type and characteristic of dental caries, best type of tooth paste, brushing technique. There is a significant differences found in questions regarding gingival health and bleeding. The behavior of the workers showed no significant differences in questions regarding quantity of brushing teeth, using assistant aid, better time for eating sweet, while there is a significant difference in question about smoking and gingival health and duration of brushing time.

Conclusion: Increasing the dental education by using the help of social media, schools, and national educational programs will improve the dental knowledge and behavior which affect positively on the oral hygiene

Keywords: Behavior, oral hygiene, knowledge. **(J Bagh Coll Dentistry 2018; 30(2): 76-81)**

INTRODUCTION

The most important goals of dental health education is the improvement of oral health; oral health is a key factor for the elimination of many health problems [(1)], it has received considerable attention among the health care community and the people [(2,3)]. The past decades have witnessed a reduction in the severity and prevalence of oral disease among the population of the developing countries while in undeveloped countries the prevalence of dental caries still recorded higher percent [(4-6)].

In Iraq oral health system is in a transitional developmental stage, and systematic data collection is needed to plan oral health care for the community. Regular oral health assessment is fundamental to promoting, protecting and improving people oral health; it allows caries to be detected at an early stage and treated using non-operative or minimally invasive techniques [(7)], the parents failure to organize or support the effort of their children tooth brushing coincided with the findings from a previous studies that reported lack of acceptable levels of knowledge and awareness of periodontal problems, which may explain the presence of bad oral hygiene (bleeding gums on brushing and bad breath) [(8,9)].

Knowledge is defined as awareness, understanding, or information that has been obtained by experience or study, and that is either in person's mind or possessed by people generally [(10)], in other words it means the expertise and skills acquired by a person through experience or education. Knowledge acquisition involves complex processes: perception, learning, communication, association and reasoning [(11,12)] .

Undoubtly one of the methods for prevention is to improve the knowledge of the community regarding promotion of health behavior [(13)]. So behavior is the range of actions made by organisms, systems, or artificial entities with their environment, which includes the other systems or organisms around as well as the physical environment, which mean the human actions taken to maintain and promote health [(14)]. It also helps to prevent diseases; oral health behavior consisted of individual and professional care and includes tooth brushing, dental flossing, visiting a dentist regularly and following a proper diet [(15,16)].

Maintaining a healthy life style, including optimal oral health, is essential for all group of communities, there are many studies done about the relation of oral hygiene and gingival health condition with the level of education specially to school age children, but there are no previous studies were found regarding the relation of dental knowledge and behavior of a workers with their

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level of education and severity of oral hygiene in Iraq so this study was done.

MATERIALS AND METHODS

A study group consisted of 110 workers (65 male and 45 female) included in this study, 11 response format was excluded because 9 of them do not completed the response formats and 2 workers have sickle cell anemia, they were selected randomly from Al-Fedaa Company. Their level of education was of primary, intermediate, and secondary school, the age rang was from (35 to 46). By using a questionnaire consisting from three parts which adopted from Peterson et al [17], Stenberg et al [18], Al-Omiri et al [19], and Hoobi [20], the first part was a general information related to the name, age, gender, level of education, and the general health, the second part consisting from ten questions about the dental health knowledge which are:- Q1 Is food remnant and bacteria together causing dental caries?, Q2 the better tooth paste how have strong flavor, Q3 the better tooth paste how have impressive taste, Q4 mouth wash is very enough to prevent dental caries and there is no need for tooth brushing, Q5 dental caries is the presence of black cavitation, Q6 gingival bleeding during tooth brushing meaning gingivitis, Q7 the healthy brushing done by moving the brush irregularly, Q8 vitamin c can help in reducing or prevention of gingival bleeding, Q9 eating a fibrous food help in increasing the gingival health, Q10 brushing teeth prevent bad odor. and the third part was questions related to dental behavior which are:- Q1 Clean my teeth twice daily, Q2 mouth wash is an oral hygiene aids, Q3 better time for eating sweet after meal, Q4 better time for eating sweet before meal, Q5 no more than two minutes the time for cleaning my teeth, Q6 did you used siwak and dental floss as an aide for brushing, Q7 better time for tooth brushing is before sleeping, Q8 is any relation between heavy smocking and gingivitis?, Q9 did you learn the tooth cleaning from parents or school?, Q10 eating fruit and vegetables before sleep keeping the tooth in a healthy condition. The response format provided in the questionnaire included Yes the (+ev) or No the (-ev) answer in which the workers were instructed to choose one of them. The way of how to fill and answer the questionnaire was explained to the workers without conferring with each other.

By using portable light and plane mouth mirror with sickle shaped explorer, the examination was done. Dental plaque was assessed by using plaque index of Silness and Loe [21] while calculus index of Ramfjord [22] was used to assess the quantity of dental calculus.

Regarding gingival health condition, gingival index of Loe and Silness [23] was used to diagnose gingival disease. Only selected teeth were examined.

SPSS version 18 was used to analysis the data collected by using A nova, chi squared test used when the percent of the cells who have a reading more than 5 more than 80%, while fishers exact test was used when the percent of the cells which have a reading less than 5 are less than 20%.

RESULTS

The sample of this study consisted from three age groups of both genders (men and women) their limit of education was primary, secondary, and intermediate school. Table 1 shows the distribution of the sample according to the age and the limit of the education.

Table 2 shows the mean and standard deviation of gingival, calculus, and plaque index in relation to the education. The results revealed no significant differences between the plaque, gingival, and calculus indices with the limit of education.

Table 3 reveals the relation between the education and the knowledge of the workers, all the question show no significant differences between knowledge and education except question 6 (bleeding during brushing) a significant difference was recorded between the positive and negative answers, the less percent of negative answer was found in question 5 (the blackness and cavitation on the tooth mean there is a dental caries) which is 2.6% for secondary school educated workers while question 10 (brushing teeth prevent the bad odor) have the highest percent of negative answer 78.4% for primary school educated workers, and the less percent of positive answer 21.6% for primary school educated workers, question 7 (the healthy brushing by irregular movement of brush) have the highest percent of positive answer 100% for all the sample.

Table 4 demonstrate the relation between oral hygiene behavior and the education of the workers, there is a highly significant differences between negative and positive answer in question 5 (no more than two min. is the time for cleaning my teeth) and question 8 (is any relation between heavy smocking and gingivitis),the less percent of negative answer was found in question 1(Clean my teeth twice daily) which is 5.4% in primary school educated workers, the highest percent of negative answer was 91.3% for intermediate school educated workers found in question 4 (better time for eating sweet before meal), question 8 have the highest percent 100% for

positive answer to workers who intermediate school educated, while question 4 had the lowest percent of positive answer 8.7% to workers intermediate school educated.

Table 1: Distribution of the sample according to the age and education

			Education			Total
			Primary	Intermediate	Secondary	
Age (year)	35-38	No.	9	5	15	29
		% within Age	31.0	17.3	51.7	100.0
		%within Education	24.3	21.7	38.5	29.3
	39-42	No.	9	7	10	26
		%within Age	34.6	26.9	38.5	100.0
		%within Education	24.3	30.4	25.6	26.3
	43-46	No.	19	11	14	44
		% within Age	43.2	25.0	31.8	100.0
		%within Education	51.4	47.8	35.9	44.4
Total		No.	37	23	39	99
		% within Age	37.4	23.2	39.4	100.0
		% within Education	100.0	100.0	100.0	100.0

Table 2: Mean and standard deviation of plaque, gingival, and calculus index of the sample in relation to education, with statistical ANOVA test

		N	X	SE	df	F	Sig.
PLI	Primary	37	0.65	0.10	2	0.63	0.54
	Intermediate	23	0.51	0.10			
	Secondary	39	0.53	0.09			
	Total	99	0.57	0.06			
GI	Primary	37	0.30	0.09	2	1.19	0.31
	Intermediate	23	0.15	0.07			
	Secondary	39	0.17	0.06			
	Total	99	0.21	0.04			
CaI	Primary	37	1.00	0.14	2	.589	.557
	Intermediate	23	1.23	0.19			
	Secondary	39	1.19	0.15			
	Total	99	3.42	0.48			

Table 3: The relation between Knowledge * Education

Questions		Education						Fisher's exact	Sig.
		Primary		Intermediate		Secondary			
		No.	%	No.	%	No.	%		
1	-Ve	21	56.8	13	56.5	17	43.6	1.62	0.47
	+Ve	16	43.2	10	43.5	22	56.4		
2	-Ve	10	27.0	7	30.4	7	17.9	1.56	0.46
	+Ve	27	73.0	16	69.6	32	82.1		
3	-Ve	2	5.4	2	8.7	6	15.4	1.56	0.46
	+Ve	35	94.6	21	91.3	33	84.6		
4	-Ve	9	24.3	6	26.1	12	30.8	0.45	0.84
	+Ve	28	75.7	17	73.9	27	69.2		
5	-Ve	1	2.7	1	4.3	1	2.6	0.67	1.00
	+Ve	36	97.3	22	95.7	38	97.4		
6	-Ve	22	59.5	7	30.4	27	69.2	8.90	0.011*
	+Ve	15	40.5	16	69.6	12	30.8		
7	+Ve	37	100.0	23	100.0	39	100.0	-----	------
8	-Ve	3	8.1	0	.0	2	5.1	1.62	0.36
	+Ve	34	91.9	23	100.0	37	94.9		
9	-Ve	28	75.7	13	56.5	31	79.5	3.89	0.14
	+Ve	9	24.3	10	43.5	8	20.5		
10	-Ve	29	78.4	18	78.3	25	64.1	2.28	0.29
	+Ve	8	21.6	5	21.7	14	35.9		

Table 4: The relation between Behavior * education

Questions		Education						Fisher's exact	Sig.
		Primary		Intermediate		Secondary			
		No.	%	No.	%	No.	%		
1	-Ve	2	5.4	2	8.7	6	15.4	1.99	0.37
	+Ve	35	94.6	21	91.3	33	84.6		
2	-Ve	14	37.8	11	47.8	16	41.0	0.62	0.76
	+Ve	23	62.2	12	52.2	23	59.0		
3	-Ve	8	21.6	3	13.0	5	12.8	1.22	0.57
	+Ve	29	78.4	20	87.0	34	87.2		
4	-Ve	31	83.8	21	91.3	34	87.2	0.66	0.81
	+Ve	6	16.2	2	8.7	5	12.8		
5	-Ve	10	27.0	3	13.0	1	2.6	9.46	0.006**
	+Ve	27	73.0	20	87.0	38	97.4		
6	-Ve	28	75.7	14	60.9	30	76.9	2.09	0.37
	+Ve	9	24.3	9	39.1	9	23.1		
7	+Ve	7	18.9	9	39.1	12	30.8	3.09	0.23
	-Ve	30	81.1	14	60.9	27	69.2		
8	+Ve	2	5.4	0	0	8	20.5	7.19	0.024*
	-Ve	35	94.6	23	100.0	31	79.5		
9	+Ve	17	45.9	9	39.1	19	48.7	0.56	0.79
	-Ve	20	54.1	14	60.9	20	51.3		
10	+Ve	19	51.4	13	56.5	23	59.0	0.49	0.81
	-Ve	18	48.6	10	43.5	16	41.0		

DISCUSSION

In this cross-sectional study, the relation of knowledge and behavior with oral hygiene of industry workers aged from 35 to 46 was studied, the results showed no significant differences present between the plaque index, the gingival index, and calculus index with the limit of education, which mean that the workers to be dentally educated do not need to have a high limit of education, this may be due to that the education does not include dental information, large number of the workers beliefs that tooth brushing is not to prevent dental caries and keep good oral hygiene but to have a nice looking (an attitude done as a daily routine).

The workers have a good oral health knowledge in about these question the food remnant are the causative factor of dental caries, the pattern of dental caries, and the effect of vitamin C on the gingival condition, but the result showed that the workers have a wrong idea and a weak knowledge back ground in about the better tooth paste that the best one have a strong flavored and impressive taste, a high percent of the workers have an idea that washing mouth is enough to prevent caries, the technique of right brushing (they thought move the brush irregularly is the right one), but there is no significant differences was found, the workers who do not know that the bleeding during brushing is an indicator to the presence of gingivitis are more than who have a positive thought and there is a significant differences while the workers who beliefs that tooth brushing prevent bad odors and fibrous food are important in keeping gingival health and make it as a behavior are less than workers who have a negative answer, may be due to the wrong idea they have it that the effect of food just on dental caries and have no effect on gingival condition. This personal differences between the workers regarding the dental knowledge may be due to the majority of workers had insufficient knowledge or were insufficiently motivated because of their lack of knowledge to take the requisite action to maintain gingival health which have a bad impression on them, or may be due to the type of the work they worked which lasted for long hours.

The workers with positive answer more than workers with negative answer and there is no significant differences in about these questions (clean my teeth twice daily, mouth wash assistant factor in teeth cleaning, better time to eat sweet after meal, the better time for tooth brushing before sleeping, learn tooth brushing from parents or school), this is may be due to that the idea and the thought of the workers which came from the family, friends, community, and the social media are converted to an attitude which done daily by the workers [3,24-26].

Concerning the effect of heavy smoking on gingivitis the workers with positive beliefs are more than workers with negative and have a significant difference this is may be due to the fact

that most of the workers are heavy smokers so they know all the problem of the smoking. Better time to eat sweet during meal, siwak and tooth pick help in tooth cleaning, in eating vegetable and fruit before sleep having healthy teeth the workers which make it as a behavior are less than workers who have a positive attitude and there is no significant difference this is due to the bad attitude of the workers in the way of eating the healthy nutrition and there is a shortage in the dental treatment program and motivation. From this study the results showed the important of family, school, social media, and the friends on the dental attitude of the workers, the failure of the parents to organize and support their children's tooth brushing and keeping periodontal health because the parents themselves lack the acceptable levels of dental knowledge [16,27].

Oral health behavior is essential for planning and evaluation of oral health promotion programs, brushing and flossing are practices to maintain good dental health, regular dental visits are equally important in maintaining oral health [23,25], lacking of a comprehensive oral health educational programs which directed toward the public and targeting the adult as well as the young, also the link between oral health and well-being of the rest of the body might help promote oral health care among school children till they grow.

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الخلاصة

خلفية الموضوع :يعتبر العمال في المجتمع العراقي من أكبرالمجموعات السكانية، حيث زيادة ثقافتهم بخصوص طب الأسنان بزيادة المعرفة بالسلوك الخاص بالعناية بصحة الأسنان أمر هام جداً، كان الغرض من القيام بهذه الدراسة لتقييم صحة اللثة وصحة الفم والأسنان وعلاقتهما بالمعرفة والسلوك لدى مجموعة من العمال تم اختيارهم عشوائياً من شركة الفداء في مدينة بغداد.

المواد والطرق شملت عينة الدراسة 110 من العمال (65 من الرجال 45 من النساء) وذلك باستخدام استبانة لتقييم المعرفة والسلوك الخاصة بصحة الفم وفحصت حالة صحة اللثة للعمال باستخدام مؤشر Loe and silness(1963) ،بينما استخدم مؤشر Silness and Loe (1964) لاحتساب كمية البلاك (الصفيحة الجرثومية) على الاسنان ومؤشر Ramfjord (1959) لاحتساب كمية المادة الكلسية على سطح الاسنان ،استخدام SPSS نسخة 18 لتحليل بيانات الدراسة احصائيا.

النتائج أظهرت هذه الدراسة أنه لا توجد اختلافات واضحة بين مؤشراللثة و اللويحة الجرثومية ومؤشر الكلس مع درجة التعليم للعمال. حول المعرفة النتيجة إظهرت عدم وجود اختلافات كبيرة في الأسئلة التي تسأل عن نوع وسمات تسوس الأسنان و أفضل انواع معاجين الأسنان، تقنية استخدام الفرشاة. وهناك اختلافات في اجوبة الاسئلة المتعلقة بصحة اللثة والنزيف. اظهر سلوك العمال لا توجد اختلافات كبيرة في الأسئلة فيما يتعلق بعدد مرات تنظيف الأسنان، استخدام وسائل مساعدة بتنظيف الاسنان، أفضل وقت لاكل اللحلويات، بينما توجد اختلافات كبيرة في السؤال عن صحة اللثة والتدخين والزمن الذي تستغرقه عملية التفريش.

الاستنتاج زيادة المعرفة فيما يخص العناية بالفم والاسنان باستخدام المساعدة من وسائل الإعلام الاجتماعية والمدارس والبرامج التعليمية الوطنية سيؤدي إلى تحسين المعرفة والسلوك التي تؤثر تأثيراً إيجابيا على صحة الفم.