Original Study

ASSESSMENT OF MEDICAL UNIVERSITY STUDENTS' KNOWLEDGE TOWARD DENTAL CARIES PREVENTION

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ABSTRACT

Aim: Preventive measures can prevent future complications, among which dental and medical specialists have active responsibilities toward early screening, referring and treating. This study aimed to evaluate knowledge of general practitioner and general public health students of Kerman University of Medical Sciences towards preventive measures of dental caries (2017).

Materials & Method: The present descriptive-analytic cross-sectional study was conducted on general practitioner and general health students of Kerman University of Medical Sciences, who were selected through census sampling method. Data were collected from a 14-item self-administered, closed ended, structured questionnaire, demographic information and self-reported oral health behavior.

Results: Out of 168 participates, 30.4% were males and 69.6% were females, 43.5% brushed their teeth twice a day, and 57.2% visited a dentist for filling their teeth. The mean knowledge score was found to be 10.42 ± 2.44. There was significant correlation between knowledge score and fluoride therapy, brushing twice a day and using dental floss. No statistically significant correlation was seen between gender and source of dental information. A significant difference in knowledge was observed for medical students compare to others.

Conclusion: The results of the present study showed good level of knowledge toward preventive dentistry among general practitioner and general health students. They should be encouraged to use dental floss, fluoride therapy and fissure sealant.

Key words: Dental Caries, Oral Health Knowledge, Oral Health Behavior, Preventive Dentistry, Students.

Introduction

The dental caries and periodontal diseases are considered to be the most important health concern throughout the world.[1] The dental caries is an infectious and contagious condition affecting approximately 60%-90% of primary school children and almost all adults in most countries. Clinical trials have shown that community members, professionals, and preventive measures are effective in preventing the dental caries.[2]

Knowledge of preventive dentistry is a factor in reducing the prevalence of dental caries.[3] Pediatric oral health has been shown to be influenced by their parental knowledge of the preventive measures, including good oral health, the use of healthy diets, and periodical dental visits for using topical fluoride, fissure sealant.[4] Many interventions in dentistry have been proposed to prevent dental caries, some of which focuses on the patient's personal responsibility in the management of disease, and others are special to the dentists as well as measures used in the community. Many factors have implications for the use of any preventive method for community health policies, insurance coverage and access to therapeutic drugs.[5] In a study of Suma Sogi in India, 81.5% of subjects knew that sweet food causes tooth decay, but their knowledge was respectively 54% and 42.5% regarding the treatment of deciduous teeth and fluoridated toothpaste.[6] Comparing the knowledge and opinion of medical and dental students about early childhood oral health showed that more dental students answered correctly and the early childhood oral health was important. Medical students were more likely to know about the weaning time than to agree to recommend their first dental visit.[7]

A research by Rajalingam *et al*. on knowledge of Indian pediatric specialists regarding oral health showed that only 7% of them counseled parents about nutrition and concluded that the pediatricians in the study did not know about preventive measures for dental caries.[8] Further, assessing knowledge of pediatricians in Bangalore on the prevention of dental caries revealed that half of them did not know about visiting the dentist twice a year.[9] 91.6% of Yemeni dental students were aware of the effectiveness of fissure sealant in preventing dental caries, while 34.7% knew the importance of fluoridated toothpaste versus brushing technique.[10]

The majority of referred people in Saudi Arabia were properly informed about the association between dental caries and oral hygiene. Half of the people had knowledge about the effect of topical fluoride on the control of dental caries, and about a third of them had used the fluoride.[11] The reorientation of oral health services to promote health is one of the priorities of the World Health Organization for the continued oral health.[12] Oral health standards, when properly applied, together with regular care can provide oral health and prevent dental caries and periodontal diseases.[13]

Given that the students of the medical university not only should take care for their oral health, but also should be responsible for the patients referred and family members. Therefore, knowledge of this group can play an important role in preventing dental caries in society and in reducing the results of dental caries.

Materials & Method

The present descriptive-analytic cross-sectional study was performed on freshman and sophomore students in general practitioner and general health at Kerman University of Medical Sciences who were selected by census method. After obtaining the necessary permissions, a senior dental student attended the classroom, explained the research objectives, voluntary participation in the study and confidentiality of information, and then presented a researcher-made questionnaire and requested them to complete the questionnaire at the same meeting. Average response time was 10 minutes. After collecting the questionnaire, the correct answer was given to the student upon request. The questionnaire consisted of demographic information (gender, year of entry, field of study, source of information on dental caries and prevention methods) questions related to oral health behavior (frequency of brushing, use of dental floss, dental visits, cause of referral, fluoride therapy and fissure sealant) and 14 questions on knowledge assessment based on researcher-made questionnaire in accordance with existing literature. The validity of the questions was evaluated by providing a questionnaire to pediatric dentistry and one expert. After consulting and commenting, a total of 14 questions were selected and validated (the total validity coefficient of the questionnaire was 0.84). The reliability of the questions was obtained by submitting a questionnaire to 10 students. After answering, the same 10 people again answered the questionnaire after two weeks. Cronbach's alpha coefficient obtained from the two response times was 0.81. In addition, 11 questions were answered by yes, no, and I do not know, and 3 were multiple choice questions. The data were inserted into the computer and analyzed using absolute and relative frequency tables and charts, as well as linear regression, t-test and Chi-square and ANOVA tests. A significance level was considered to be 0.05. The participants were assured that they would not be named in any part of the study. Participation in the project was completely optional and with their satisfaction. The study proposal was approved by the Ethics Committee with code of ethics IR.KMU.REC.1396.1046.

Results

Moreover, 168 students completed and returned the questionnaire, with a response rate of 72%. The findings are as follows: 51 (30.4%) were boys and the rest were girls. The highest percentage of dental students was 59 (35.1%). The source of information in 55 (32.8%) was dentist. [Table 1]

Variable		Number	Percent
Gender	Men	51	29.2
	Women	117	69.6
Grade	First year	60	35.7
	Second year	71	42.3
	Third year	37	22.0
Education course	Medicine	35	20.9
	Pharmacy	38	22.6
	Dentistry	59	35.1
	Public health	36	21.4
Source of information	Family members	14	8.3
	Academic texts	13	7.7
	Radio and television	9	5.4
	Internet	25	14.9
	Dentists	55	32.8
	Other sources	16	9.5
	More than one source	36	21.4

Table 1: Demographic status of participants.

In terms of brushing, 76 people (45.2%) brushed once a day, 60 (35.7%) patients did not use dental floss, 52 (31.0%) reported fluoride therapy, and 12 (7.1%) experienced fissure sealants. The health behavior of individuals was shown in Table 2.

Variable		Number	Percent
Tooth brushing frequency	Occasionally	9	5.4
	Once a day	76	45.2
	Twice a day	73	43.5
	Three times a day	10	6.0
Dental floss using	Yes	108	64.3
	No	60	35.7
Fluoride therapy	Yes	54	32.2
	No	114	67.9
Fissure sealant therapy	Yes	15	8.9
	No	153	91.1
Dental visit	Never	11	6.5
	During past 6 month	56	33.3
	Last 1 year	37	22.9
	Last 2 years	16	9.5
	More than 2 years	48	28.6
Cause of dentist attendance	Pain	22	13.1
	Tooth extraction	11	6.5
	Filling	96	57.2
	Check up	39	23.2
	More than one reason	2	1.2

Table 2: Oral health behavior status in participants.

The process of answering the knowledge assessment questions is shown in Figure 1. As can be seen, the highest number of correct responses was observed for the question "Dental caries is a preventable condition", and the least correct response for the question "sealant reduce occlusal caries incidence". Concerning the questions, the correct answer was observed in 50 (29.8%) for the best brushing time, in 80 (47.6%) for which of the following items has better anti-decay property? and in 10 (6.8%) for which of the following items has less decay-removing property?

The mean score of knowledge was 10.42±2.44. After turning the answers into three categories of good and bad and average, the subjects (49.4%) had good knowledge.

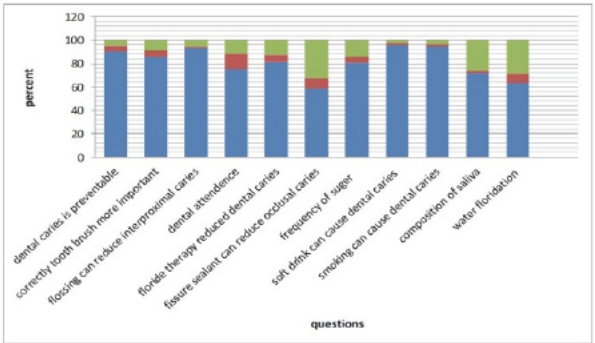

Figure 1: Participants Response to questions.

The t-test was used to compare gender, fissure sealant experience, use of fluoride. There was no significant difference between gender and the mean knowledge score (p = 0.351). Those who used dental floss and fluoride therapy had significantly more knowledge (p = 0.000) and (p = 0.022). There was no significant relationship between fissure sealant experience and knowledge (p = 0.209). [Table 3]

Variable		Mean	SD	*p* value
Gender	Men	10.15	2.63	0.351
	Female	10.54	2.23	
Tooth brushing status	Occasionally	8.71	1.60	0.092
	Once a day	10.30	2.19	
	Twice a day	10.94	2.39	
	Thrice a day	9.30	3.83	
Dental flossing	Yes	10.98	2.05	0.000
	No	9.43	2.77	
Fluoride therapy	Yes	11.05	2.28	0.022
	No	10.11	2.46	
Fissure sealant therapy	Yes	9.58	3.62	0.209
	No	10.51	2.33	

Table 3: Correlation between genders, tooth brushing, dental flossing, fluoride and fissure sealant therapy with knowledge.

The ANOVA test was used to compare several variables. Knowledge score of medical students was higher than other fields and had a statistically significant difference with the field of health (p-0.051). There was no significant difference between the sources of information, dental visits and cause of referral with knowledge (p = 0.341) (p = 0.729 p = 0295). The mean knowledge score was lower in dentistry patients referred due to dental pain. The regression analysis showed that there is a direct and significant relationship between the use of floss and fluids, i.e., increasing knowledge. The relationship between the year of entry and knowledge was reciprocal and meaningful, meaning first years of entry showed more knowledge. [Table 4]

Variable	B	t	*p* value
Year of entrance	-0.250	-3.063	0.003
Course of education	-0.143	-1.666	0.098
Dental floss using	0.255	2.236	0.002
Dentist attendance cause	0.145	1.875	0.063
Fluoride therapy	0.193	2.386	0.018
Fissure sealant therapy	0.163	-2.043	0.043

Table4 : Correlation between variables and knowledge.

Discussion

The oral health behavior such as daily brushing, dental floss and regular dental visits occurs to prevent dental plaque accumulation that can lead to problems such as periodontitis, dental caries, loss of teeth, and the risk of systemic diseases and cardiovascular disease.[14]

The findings of this study showed that most of the subjects (43.5%) brushed once a day. Pacauskiene *et al* [14] found that 92% of preclinical dental students and 73.3% of technology students in Lithuania brushed twice a day. A study by Kasaee *et al.*[15] in Rasht (Iran) reported that only 17.4% of teenage girls brushed twice a day. The results of a study by Oyetola on physicians, nursing and medical students demonstrated that 73.5% of subjects brushed once a day and 26% twice a day.[16] The results indicate a low percentage of brushing in the case group of the study. Given the current study done on general practitioner and general health students, the status of brushing in this study is undesirable. In the present study, 64.3% used the dental floss. In the study of Pacauskiene *et al.*[14] 41.0% of dental students used dental floss regularly, which is less than the present study. The reason for this difference can be attributed to the importance of using dental floss emphasized in mass media and the Internet.

In this study, 6.5% of the subjects never visited dentistry. The reason for dental visits in 13.1% of cases was doe dental pain. The study by Pacauskiene *et al.*[14] showed that 6% of clinical dental students and 18% of preclinical dental students and 37.3% of technology students did not refer to the dentist till pain. In our study, the percentage of people who visited with dental pain is much less that can be due to easier and cheaper access to dental services in the current study.

In the current study, the least correct answer was related to the role of fissure sealant in preventing dental caries, and 8.9% of people said had fissure sealant experience. In a study in Spain, 17% of adolescents aged 15-16 years were exposed to the fissure sealant.[17] Bravo *et al.* underlined that the fissure sealant decreased the dental caries in the occlusal and smooth surfaces by 87% and 68% during a two-year period, respectively.[18] Fissure sealant is an effective method for preventing dental caries, but its use to prevent dental caries is not common.[19]

In the present study, the most information sources were dentists. Taniguchi-Tabata *et al*.[20] exhibited that the frequent sources of student knowledge were dental clinics in line with the current study.

In the current study, 80.1% of people were aware of the effect of fluoride on the prevention of dental caries. Different fluoride compounds are capable of creating a reverse process at the onset and progression of primary demineralization.[5] In the current research, 49.9% had good knowledge and 48.3% had average knowledge. In the study of Nilchian *et al*.[21] 82.1% of students had an average knowledge toward preventive dentistry, which was higher than the current study. The reason for this difference can be seen in the population studied. The study of Nilchian *et al*. was conducted among dental students. Obviously, Dental students, especially senior students, have more knowledge regarding the passing of further specialized courses. In this study, 6.8% of people responded correctly about the poor anti-decay property of nuts, apples, carrots and cereal grains, and 58.3% responded correctly to the effect of sugar free gum on reducing dental caries, while 80.4% and 95.8% correctly responded to the use of sweets and soft drinks in inducing dental caries, respectively. In the study of Suma *et al*., 81.5% of the subjects were aware of the effect of sweet foods on the dental caries.[6] It seems that, as with the impact of sweets on dental caries, the effect of nutrition on reducing dental caries has not been intervened and there is a need for further education through the media.

Since human beings are omnivorous and have a diet consisting of a large amount of different substances, the role of nutrition in dental caries should not be limited to carbohydrates. The anti-decay nutrition may cause environmental changes and affect the ecology of oral microbiome and cause a relative reduction in the effect of carbohydrates.[22]

In this study, no significant relationship was found between the source of information regarding the preventive dentistry and knowledge score. This result is inconsistent with a study by Taniguchi-Tabata *et al*.[19] who showed that regular use of dental floss and regular dental visits were significantly related to the student's information source.

In this study, there was a significant difference between general health students and medical students in terms of knowledge scores. Sharda and Shetty showed that medical students had significantly further knowledge than non-medical students, [23] while there was no significant difference between medical, dental and pharmaceutical students. In the study of Pacauskiene *et al*.[14] in Lithuania, the dental students significantly had greater knowledge compared to technology students. The reason for this difference is that the current study showed no difference in the courses of oral health education between different groups, this means that dental students did not yet complete the dental specialty courses in relation to preventive dentistry.

In this research, the statistical tests showed that people with a history of fluoride therapy had significantly higher knowledge. The reason for this is that people have been aware of the importance of fluoride therapy in preventing the dental caries.

The results of a study by Autio-Gold showed that the preventive dentistry programs should be included with more emphasis in the curriculum of dental students.[5] Previous studies have suggested that oral health education in primary and secondary schools can improve oral health behavior.[24, 25] Therefore, further attention should be paid to oral health education in the first years of training, as these trainings should be included in academic courses, especially in the early years.

Conclusion

The findings of this study showed good level of knowledge toward the preventive dentistry for about half of science and general health students. The general health students had a significantly lower scores compared to the medical students. Knowledge of people about the role of sugar free gum in reducing the dental caries and anti-decay property of nuts was lower than others. It is essential to include courses related to preventive dentistry in the curriculum of medical and public health students.

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