

## Oral hygiene practice and oral health knowledge in relation to sugar and dental caries among dental students from Taibah University

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**Abstract:** Oral health is as important as general health. Dental caries is most common disease and prevalence is high instead of taking preventive measure. Carbohydrate in the form of sugar drinks or added in the confectionaries are one of the main causative factor. Prevalence of caries is influenced if it is taken in between meal or during the meal. Observational cross sectional study was conducted on dental students at college of dentistry, Taibah University. The students who participated in the study were conveniently selected. Questionnaire was prepared to assess oral hygiene practice and sugar intake by them and to know their knowledge about time of sugar intake and its relation with dental caries prevalence. Total 103 students participated in this study and the response rate was 91%. There were 52 males and 51 females among the participants. Among all, about 50% participants were brushing their teeth for 1 min while the rest were 2 min and a very small percentage told that they did not observe the time of cleaning. Most of the final year students were brushing up to 2 min. Females were taking more sugar in between meal as compared to male students. Knowledge regarding effect of intake of sugar in between meal was more to female students. The prevalence of taking sugar in between meal is quite high among the students even they know that prevalence of dental caries increase.

[Saif Abdulrahman Alrashidi and Khalid Lafi Alrashedi. **Oral hygiene practice and oral health knowledge in relation to sugar and dental caries among dental students from Taibah University.** *Nat Sci* 2017;15(8):29-33]. ISSN 1545-0740 (print); ISSN 2375-7167 (online). <http://www.sciencepub.net/nature>. 5. doi:[10.7537/marsnsj150817.05](https://doi.org/10.7537/marsnsj150817.05).

**Key words:** Dental caries, oral health, carbohydrates, brushing

### 1. Introduction:

Oral health is an important component of general health in our life. Dental caries and periodontal diseases are the most common oral diseases, which are health problems in all over the world (Kothiwale et al., 2010). Poor oral health and untreated oral diseases can have a significant impact on the quality of life. Health behavior was defined as “the activities undertaken by a person in order to protect, promote and maintain health, and to prevent disease (Sharda and Shetty, 2008).

Home care for oral health, recommended as care includes tooth brushing one or more time in a day, taking food with low sugar content and regular use of fluoride tooth paste (Gopinath, 2010). Dentists should not only do the treatment but he should propagate the importance of oral health and ask to be the model example for others. He should be example for the patients for the behavior and caring of oral health (Gopinath, 2010; Sharda and Sharda, 2010).

In this way, the health beliefs and attitudes of dental professionals will not only reflect their oral self-care habits but also influence their patient’s ability drastically to take care of their teeth and shape the public’s oral health education level.

Globally, many studies have proved that peoples of different areas having information in oral health practices and their attitude will surely adopt excellent

habits for better oral hygiene (Zhu et al., 2003; Tamrakar, 2010). However, little attention has been paid to the context in which dental professionals undergo motivational and behavioral changes with respect to their oral self-care regimens. According to the literature, only few studies have been done to assess the oral hygiene awareness, sweet in take between meal and its relation with dental caries among dental students. Therefore, the present study was designed to assess the oral hygiene practice, frequency of sweet intake and its relation with dental caries among dental students in the College of Dentistry, Taibah University, Madinah, Kingdom of Saudi Arabia.

Objective of the study was to know the practice of taking sugar and knowledge about dental caries and its relation with sugar.

### 2. Methodology

Observational cross sectional study was conducted on dental students at College of Dentistry, Taibah University. The students who participated in the study were conveniently selected. The questionnaire was prepared to assess oral hygiene practice and sugar intake by them and to know their knowledge about time of sugar intake and its relation with dental caries prevalence. The questionnaire was electronically mailed to 113 students. Among them, 10

students were removed from the study due to incomplete answer. Total of 103 students were included in the study that replied and answered correctly. Response rate was 91%.

### Statistical analysis

The collected data was statistically analyzed using IBM SPSS version 21 program package, Chicago, IL, USA. The significant level was fixed at  $P < 0.05$ .

### 3. Results

Data were entered in an IBM SPSS file and descriptive statistic was done and t-test was used. Oral health knowledge is one of the important parts for the prevention of dental caries. In this study, we tried to know the opinion of dental students from College of Dentistry, Taibah University especially about dental caries and its relation with the consumption of sugar by them and how their opinion about intake of sugar during meal or in between meal and its relation with dental caries. Total of 103 students participated in this study and the response rate was 91%. There were 52 males and 51 females among the participants (Figures 1). And Number of participants by study year were 20 first year, 29 second year, 15 third year, 16 fourth year and 23 fifth year (Figures 2).

All the subjects were using brush and toothpaste to clean their teeth. Among all, about 50% participants

were brushing their teeth for 1 min, while the rest were 2 min and a very small percentage said that they did not observe the time of cleaning (Table 1). First and second year students were brushing 70 and 80%, respectively for 1 min. But third and fourth year students were brushing 50% for 1 min and the rest (about 50%) brushed for 2 min. Whereas 80% of final year students were brushing for 2 min (Table 2).

Out of the total, 59% female were taking sweet in between meal as compared to male that was 54% (Table 3), while asking their opinion about sugar intake and dental caries, 51% female said that dental caries was more prevalent if sweet is taken in between meal as compared to male (Table 4).

Out of the total, 83% fifth year students were taking sweet in between meal as compared to the second year student that was 31% and it was having significant relation with year of study and sugar intake  $P = 0.00$  (Table 5), while asking their opinion about sugar intake and dental caries, 61% of fifth year student said that dental caries was more prevalent if sweet is taken in between meal as compared to second year student (Table 6).

It was very surprising that 62% of the students were taking sugar in between meal, while they knew that in between meal is responsible for more prevalent of dental caries (Table 7).

**Table 1.** Brushing time by gender ( $P = 0.094$ ).

Gender	1 min		2 min		Don't know		Total	
	N	%	N	%	N	%	N	%
Male	26	50	25	48	1	2	52	100
Female	27	53	18	35	6	12	51	100

**Table 2.** Brushing time by year of study.

Year of study	1 min		2 min		Don't know		Total	
	N	%	N	%	N	%	N	%
First year	14	70	3	15	3	15	20	100
Second year	23	80	5	17	1	3	29	100
Third year	7	47	7	47	1	6	15	100
Fourth year	6	37	9	57	1	6	16	100
Fifth year	3	13	19	83	1	4	23	100

**Table 3.** Taking sweet by the gender ( $P = 0.784$ ).

Gender	Between meal		During meal		Don't know		Total	
	N	%	N	%	N	%	N	%
Male	28	54	22	42	2	4	52	100
Female	30	59	20	39	1	2	51	100

**Table 4.** Opinion of gender about Prevalent of dental caries in relation with sugar (P=0.882).

Gender	Between meal		During meal		Same effect		Don't know		Total	
	N	%	N	%	N	%	N	%	N	%
Male	24	47	7	13	11	21	10	19	52	100
Female	26	51	8	16	8	16	9	18	51	100
Total	50	49	15	15	19	18	19	18	103	100

**Table 5.** Taking sweet by year of study (P = 0.00).

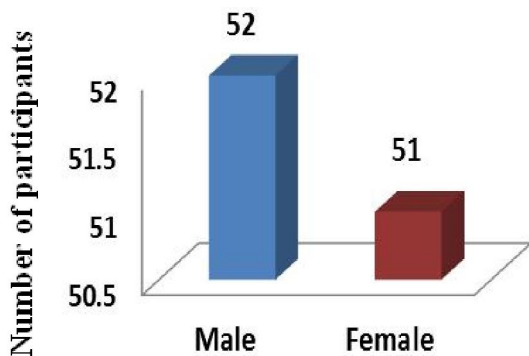
Year of study	Between meal		During meal		Don't know		Total	
	N	%	No	%	No	%	No	%
First year	10	50	7	35	3	15	20	100
Second year	9	31	20	69	0	0	29	100
Third year	10	67	5	33	0	0	15	100
Fourth year	10	63	6	37	0	0	16	100
Fifth year	19	83	4	17	0	0	23	100

**Table 6.** Opinion of year of study about Prevalent of dental caries in relation with sugar (P = 0.022).

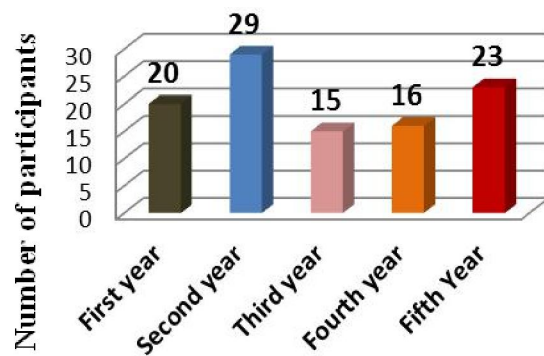
Year of study	Between meal		During meal		Same effect		Don't know		Total	
	N	%	N	%	N	%	N	%	N	%
First year	11	55	1	5	0	0	8	40	20	100
Second year	9	31	4	14	11	38	5	17	29	100
Third year	7	47	2	13	4	27	2	13	15	100
Fourth year	9	56	3	19	2	13	2	13	16	100
Fifth year	14	61	5	22	2	7	2	7	23	100

**Table 7.** Relation between sweet taken and opinion about sugar producing dental caries (P=0.266).

Opinion about sugar Intake producing caries	Taking sugar daily by the subject									
	Between meal		During meal		Don't know		Total			
	N	%	N	%	N	%	N	%		
Between meal	31	62	18	36	1	2	50	100		
During meal	7	47	8	53	0	0	15	100		
Same effect	9	47	10	53	0	0	19	100		
Don't know	11	58	6	32	2	10	19	100		



**Figure 1.** No. of participants by gender.



**Figure 2.** No. of participants by study year.

#### 4. Discussion

The association of dental caries with the oral health knowledge especially related to sweet and practice of sweet food consumption and oral health practice among the students of College of Dentistry, Taibah University, Madinah, Saudi Arabia was examined. In this study, majority of the students were brushing their teeth with toothbrush and toothpaste and among them, 50% were brushing for 1 min while others were brushing for 2 min or more. Jamjoom (2001) reported 98.5% of the persons were cleaning their teeth with toothpaste and toothbrush (Jamjoom, 2001).

It is generally accepted that the prevalence of caries is related to the form in which sugar is ingested and the frequency of its consumption. The term "frequency" means the numbers of times per day sugary foods are eaten. It is clear that both form and frequency affect the length of time that teeth are exposed to sugar (Qadri et al., 2015). The relative importance of frequency versus the total amount of sugar consumption is difficult to evaluate. The relationship of the physical consistency of food to caries is not entirely clear. Several studies have incriminated the stickiness of foods as prime factor in the initiation of caries (Gustaffson et al., 1954; Duany et al., 1972). It is likely that the length of time that the teeth are exposed to sugar-containing foods rather than simply the form of the food is a critical factor in the promotion of caries (Sreebny, 1982). Many studies point to the frequency of eating sugars to be of greater etiological importance for caries than the total consumption of sugars. The primary evidence comes from the Vipeholm study (Gustaffson et al., 1954; Duany et al., 1972). A positive correlation between the frequency of consumption of confectionery and sugar-containing gum and the DMF rate was also found in a study conducted on 14-year-old Caucasian, Hawaiian, and Japanese schoolchildren in Hawaii (Gupta et al., 2013). A range in intake from zero to five or more sweets per day was followed by a corresponding increase in DMF scores. It is already established that sugar intake causes dental caries and when it is taken in between meals, the frequency of prevalence of dental caries increases.

Regarding dietary knowledge of sugar in our study, about 50% from both genders agreed that dental caries is more prevalent if sugar or sugary food is taken in between meals. Instead of knowing, they were taking sugar or sugary meals in between meals. In a study at Jazan, Saudi Arabia related to knowledge, attitude and practice of sweet food consumption, 60% said that sugary food causes more dental caries and especially frequency of intake is increased in between meals (Gupta et al., 2015). It is slightly higher as

compared to our study. It might be due to social culture among the people.

Among all, 62% of the students were taking sugar or sugary food in between meals instead of having knowledge that prevalence of dental caries is more if it is taken in between meals (Table 7). This might be social culture in the country. They are used to take coffee or tea throughout the day, either they are in home or visiting the relatives or friends. Because of this culture, they cannot refuse to take the tea or coffee.

#### Conclusion

The prevalence of taking sugar in between meals is quite high among the students even when they know that prevalence of dental caries increases.

#### Acknowledgments

The authors would like to thank Manar Abdulrahman Alrashdi a dental student in Tainah university for her support and help with this research.

The authors deny any conflicts of interest related to this study.

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5/23/2017