Original Article

Oral Health Knowledge, Attitude, and Practices Among Dental and Medical Students in Eastern India – A Comparative Study

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Abstract

Objectives: To compare oral health knowledge, attitude, and practices among dental and medical students in a Health care centre at Bhubaneswar, Odisha, India.

Materials and Methods: One hundred and fifty BDS and MBBS students each from Kalinga Institute of Dental Sciences and Kalinga Institute of Medical Sciences of KIIT University, Bhubaneswar respectively, were invited to participate in this survey using a self-administered structured questionnaire in English comprising 27 questions, which was designed to evaluate the oral health knowledge, attitude, and practices. The obtained data was analyzed using the Statistical Package for the Social Sciences version 20 software.

Results: On comparison of the scores of knowledge, attitude, and practice, the mean knowledge score was significantly higher among dental students than medical students. The study also showed that female students (both dental and medical) had better oral health knowledge and showed better oral health practices than male students. Karl Pearson's correlation coefficient test showed that, although dental students had better knowledge and attitude towards oral health, there was a lack of adequate practice among them.

Conclusion: Further emphasis on oral health is necessary in undergraduate training to improve oral health knowledge, attitude, and practice among dental and medical students as they will act as role models for oral health education among individuals and community at large.

Keywords: *Attitude, dental students, knowledge, medical students, practice*

Received : 30-07-16.
Accepted : 15-12-16.
Published : 21-02-17.

Introduction

Oral health is an essential component of general health and overall well-being of an individual. Oral cavity and its surrounding structures that are free of any diseases is indicative of good oral health. This not only makes a person look and feel good, it is equally relevant in maintaining oral functions.[1,2] Because professional (dental) students specialize in preventive information and health promotion, it is important that their own oral health knowledge, attitude, and practice are adequate.[3] Moreover, medical students are far more likely to encounter underserved and vulnerable populations than dental students.[4] They should have optimal knowledge regarding oral health so that they can provide the required oral health education and guide or refer to a dental surgeon as and when required. Thus, oral health care needs to be addressed by the combined efforts of dental and medical professionals and should be integrated into comprehensive health-promoting strategies and practices.[5,6] Because today's students will provide health services in the future and will be responsible for public oral health education, it is important to study their oral health knowledge, attitude, and practice.

The present study aims at comparison of oral health knowledge, attitude, and practices among dental and medical students of KIIT University in Bhubaneswar, Odisha, India.

Access this article online

Quick Response Code:

Website: www.jispcd.org

DOI: 10.4103/jispcd.JISPCD_30_17

Materials and Methods

BDS and MBBS students were invited from Kalinga Institute of Dental Sciences and Kalinga Institute of Medical Sciences, Bhubaneswar, respectively, to participate in this survey using a self-administered structured questionnaire written in English and validated through a pilot study during the academic session 2016–2017. It was voluntary participation, and informed consent was obtained from those who participated in the study. All the students were explained regarding the nature and purpose of the study. Permission to conduct the survey was obtained from the Institute's Ethics Committee.

The questionnaire consisted of 27 questions designed to evaluate the oral health knowledge, attitude towards the dental surgeon and dental treatment, and practices in relation to oral health among the BDS and MBBS students. The questionnaire was organized into 4 parts: The first part elicited information

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How to cite this article: Kumar H, Behura SS, Ramachandra S, Nishat R, Dash KC, Mohiddin G. Oral health knowledge, attitude, and practices among dental and medical students in Eastern India – a comparative study. J Int Soc Prevent Communit Dent 2017;7:58-63.

on the demographic attributes of students including age, gender, and year of study.

The second part assessed the participant's oral health knowledge and included 18 questions on purpose of tooth brushing, type of tooth brush, time interval for change of tooth brush, flossing, knowledge about the cause and prevention of tooth decay, common dental diseases including gum disease, effect of soft drinks on teeth, bad breath, role of tobacco, oral cancer, and importance of oral health on general health.

The third part was used to elicit their attitude towards the dental surgeon and dental treatment and comprised 5 questions regarding regular visit to a dental surgeon, attitude towards dental care, cost associated with treatment, and preferred place of visit in terms of dental clinic or dental hospital.

The last part assessed the practices in relation to oral health by using 4 questions regarding their visit to dental surgeon, materials used and frequency of brushing, and oral hygiene aids used in addition to tooth brushing.

The students were asked to respond to each item according to the response provided in the questionnaire. Responses included multiple-choice questions in which the students were instructed to choose only one appropriate response from a provided list of options. One hundred and fifty completely filled questionnaires from dental students and 150 from medical students were collected and analyzed.

Statistical analysis

The obtained data were analyzed using the Statistical Package for the Social Sciences (SPSS) software for windows version 20.0 (IBM SPSS-Chicago, IL:SPSS Inc.). The Mann–Whitney U test was used to compare the knowledge, attitude, and practice related to oral health in both groups. The *t*-test was used to compare the mean percentage scores for knowledge, attitude, and practices among dental and medical students. Correlation between knowledge, attitude, and practice were examined by Karl Pearson's correlation coefficient method. A *P* value of 0.05 was used as a cut-off level for statistical significance.

Results

One hundred and fifty completely filled questionnaires from dental students (mean age: 20.19 ± 1.46) and 150 from medical students (mean age: 21.00 ± 2.05) were collected. Table 1 shows the age and gender distribution of the participants.

A total of 92.67% of the students (96.67% dental and 88.67% medical) knew that the purpose of tooth brushing was to prevent tooth decay and gum disease, and the difference was statistically significant (P =0.0080). Eighty-two percent of the dental students believed brushing with fluoridated toothpaste twice a day prevents tooth decay whereas only 66.67% of the medical students were aware about the fact; the values were statistically significant (P =0.0020). In terms of knowledge regarding flossing, 88% dental and 64% medical students had heard about flossing, and the difference was highly significant (P =0.00001). Awareness regarding chronic trauma increases the chance for oral cancer showed statistically significant difference (P =0.0380) among dental (54.67%) and medical (42.67%) students. Almost all dental and medical students were aware that a soft toothbrush is preferable over hard bristles, smoking and/or tobacco chewing can cause oral cancer, and general health is related to oral health. More than 50% of the respondents knew about the interval for changing tooth brush, tooth decay and gum disease to be the most common dental diseases, improper brushing and consumption of sugary foods and soft drinks as the cause of tooth decay, presence of cavity as an indication of tooth decay, gum bleeding and how to prevent it, cause of bad breath, and smoking and tobacco chewing increases the chance for tooth loss. Table 2 shows the comparison of dental and medical students in each question of knowledge (numbers are only correct answers) by Mann–Whitney U test.

A total of 89.33% of the dental students believed that regular visit to dental surgeon is necessary whereas only 54% medical students agreed on the fact; the difference was highly significant (P =0.00001). Almost half (51.67%) of the students were slightly nervous regarding dental treatment. Medical students felt that dental surgeons give more importance to treatment rather than prevention in contrast to dental students who believed that both are given equal importance. Eighty percent of the students (85.33% dental and 74.67% medical) said they did not avoid or delay a dental visit due to cost, and the results were significant (P =0.0050). Dental hospital and private clinic were almost equally voted as the preferred place

Table 1: Age and gender distribution of the participants

Factor	Dental students	%	Medical students	%	Grand Total	%
Sex						
Male	57	38.00	95	63.33	152	50.67
Female	93	62.00	55	36.67	148	49.33
Age groups						
18-19 years	55	36.67	36	24.00	91	30.33
20-21 years	64	42.67	62	41.33	126	42.00
22-23 years	28	18.67	34	22.67	62	20.67
24+ years	3	2.00	18	12.00	21	7.00
Mean age	20.19		21.00		20.60	
SD age	1.46		2.05		1.82	
Total	150	100.00	150	100.00	300	100.00

Table 2: Comparison of dental and medical students in each question of knowledge (numbers are only correct answers) by Mann-Whitney U test

Question	Dental	%	Medical	%	Total	%	*Z*	*P*
Purpose of tooth brushing	145	96.67	133	88.67	278	92.67	−2.6530	0.0080*
Which is better? Hard or soft toothbrush	137	91.33	140	93.33	277	92.33	−0.6500	0.5160
Tooth decay can be prevented by brushing with fluoridated toothpaste twice a day	123	82.00	100	66.67	223	74.33	−3.0350	0.0020*
Interval for change of tooth brush	116	77.33	109	72.67	225	75.00	−0.9320	0.3510
Knowledge regarding flossing	132	88.00	96	64.00	228	76.00	−4.8590	0.00001*
How often should we floss our teeth?	24	16.00	16	10.67	40	13.33	−1.3560	0.1750
Two most common dental diseases	88	58.67	86	57.33	174	58.00	−0.2340	0.8150
Reason for tooth decay	112	74.67	106	70.67	218	72.67	−0.7760	0.4380
Role of sugary foods in tooth decay	125	83.33	113	75.33	238	79.33	−1.7080	0.0880
Presence of cavity indicates tooth decay	119	79.33	127	84.67	246	82.00	−1.2000	0.2300
Knowledge about gum bleeding	99	66.00	106	70.67	205	68.33	−0.8670	0.3860
Methods to prevent gum bleeding	97	64.67	98	65.33	195	65.00	−0.1210	0.9040
Effect of soft drinks on teeth	112	74.67	110	73.33	222	74.00	−0.2630	0.7930
Cause of bad breath	127	84.67	114	76.00	241	80.33	−1.8850	0.0590
Smoking and tobacco chewing and tooth loss	123	82.00	120	80.00	243	81.00	−0.4410	0.6590
Cause for Oral cancer	147	98.00	141	94.00	288	96.00	−1.7650	0.0780
Chronic trauma and Oral cancer	82	54.67	64	42.67	146	48.67	−2.0760	0.0380*
Oral health and general health	139	92.67	131	87.33	270	90.00	−1.5370	0.1240

*$P<0.05$

of visit for treatment. Table 3 shows the comparison of dental and medical students in terms of attitude.

A total of 84% dental and 72% medical students had visited a dentist at least once in their lifetime, and the difference was statistically significant (P =0.0120). Almost 97% of the students (94% dental and 99.33% medical) used toothbrush and tooth paste to clean their teeth, and the value was statistically significant (P =0.0060). There was significant difference in tooth brushing frequency between dental and medical students. More than 70% of students did not use any other oral hygiene methods in addition to tooth brushing. Comparison of dental and medical students in terms of practice of oral health is presented in Table 4.

Significant difference only in terms of knowledge was seen when mean percentage scores were compared between dental and medical students [Table 5].

The study showed that female students (both dental and medical) had better oral health knowledge and showed better oral health practice than male students, and the difference was statistically significant [Table 6].

Correlation between knowledge, attitude, and practice was examined by Karl Pearson's correlation coefficient method. A positive linear relationship was found between attitude and knowledge, practice, and knowledge whereas a negative linear relationship was found between practice and attitude of dental students. Among medical students, a positive linear relationship was found between attitude and knowledge, practice and knowledge, and practice and attitude [Table 7].

Discussion

Health professionals play a pivotal role in providing knowledge regarding oral health and its significance among general public. Dental and medical students should possess high level of awareness of self oral health care so that this attitude can be instilled among patients and community at large.

The methodological strength of the present study was that it was the first formal assessment of oral health knowledge, attitude, and practices among dental and medical students conducted in Bhubaneswar city with an adequate sample size. There were no controversies raised by the study.

In the present study, the scores of knowledge, attitude, and practice of dental students was compared with that of the medical students, and it was noted that the mean knowledge score was significantly higher among dental students than medical students, which is in agreement with the results of similar study by Rong WS *et al*., Al-Batayneh *et al*., Saran *et al*., and Al Kawas *et al*.[7-10]

A total of 77.33% of the dental students brushed twice a day compared to 53.33% of the medical students, hence indicating better oral hygiene measures adopted by dental students. Similar result was reported by Al Omari *et al*. and Peker *et al*.[11,12] Neeraja *et al*. reported that 74% of the dental students brushed their teeth twice daily.[13] Based on a study by Ansari *et al*., 34% of health sciences students brushed twice daily and 45% once a day.[14] On the contrary, a higher percentage (65.33%) of both dental and medical students in our study brushed twice whereas a lower proportion (31.33%) brushed once daily. On the other hand, Baseer *et al*. reported that 77.9% of the health professionals brushed their teeth once in the morning.[6] Result of another study by Benjamin *et al*. conducted in the University of Nairobi showed that 27.5% of the dental and 39% of the medical students brushed twice

Table 3: Comparison of dental and medical students in terms of attitude towards the dental surgeon and dental treatment

Questions	Dental	%	Medical	%	Total	%	*P*
Is regular visit to a dental surgeon necessary?							
Yes	134	89.33	81	54.00	215	71.67	0.00001*
No	13	8.67	57	38.00	70	23.33	
Don't know	3	2.00	12	8.00	15	5.00	
Does dental treatment make you nervous?							
No	59	39.33	63	42.00	122	40.67	0.9590
Slightly	83	55.33	72	48.00	155	51.67	
Extremely	8	5.33	15	10.00	23	7.67	
Do you think dentists give more importance to treatment than prevention?							
Yes	51	34.00	73	48.67	124	41.33	0.2210
No	88	58.67	52	34.67	140	46.67	
Don't know	11	7.33	25	16.67	36	12.00	
Have you ever avoided or delayed a dental visit due to cost factor?							
Yes	22	14.67	38	25.33	60	20.00	0.0050*
No	128	85.33	112	74.67	240	80.00	
If you plan a dental visit, your preference would be?							
Dental Hospital	78	52.00	85	56.67	163	54.33	0.1940
Private Clinic	72	48.00	65	43.33	137	45.67	
Total							

*P<0.05

Table 4: Comparison of dental and medical students in terms of practice of oral health

Questions	Dental	%	Medical	%	Total	%	*P*
Have you ever visited a dentist?							
Yes	126	84.00	108	72.00	234	78.00	0.0120*
No	24	16.00	42	28.00	66	22.00	
What material you use to brush your teeth?							
Toothbrush and toothpaste	141	94.00	149	99.33	290	96.67	0.0060*
Toothbrush and toothpowder	9	6.00	1	0.67	10	3.33	
How many times in a day you brush your teeth?							
Once	33	22.00	61	40.67	94	31.33	0.0100*
Twice	116	77.33	80	53.33	196	65.33	
Thrice	1	0.67	9	6.00	10	3.33	
Do you use any of these oral hygiene methods in addition to tooth brushing?							
Mouthwash	35	23.33	29	19.33	64	21.33	0.4760
Toothpick	10	6.67	11	7.33	21	7.00	
None	105	70.00	110	73.33	215	71.67	
Total	150	100.00	150	100.00	300	100.00	

*P<0.05

daily, and the values were much lower than those reported in our study.[15]

Eighty-two percent of our dental students felt that tooth decay can be prevented by brushing with fluoridated toothpaste, and this is almost compatible with the findings of the studies by Cebeci *et al*. who reported it to be 79% and Ahamed *et al*. who reported it to be 81% among clinical dental students.[16,17] According to our study, 96.67% students (141 dental and 149 medical) used toothbrush and toothpaste as cleaning aids. Similar results were reported by Baseer *et al*. in a KAP study among health professionals in Riyadh.[6]

Flossing of teeth is as much required as brushing for complete cleanliness of teeth. A total of 32.3 % of Turkish dental students flossed regularly while 16% of our dental students flossed.[12] This shows that students are not well educated regarding the benefits of flossing.

Table 5: Comparison of dental and medical students mean percentage scores for knowledge, attitude, and behavior of students by *t*-test

Variable	Group	*n*	Mean	SD	*t*	*P*
Knowledge	Dental	150	75.81	12.71	2.9478	0.0035*
	Medical	150	70.74	16.82		
Attitude	Dental	150	50.57	7.52	1.1201	0.2636
	Medical	150	49.43	9.98		
Practice	Dental	150	68.92	12.69	−0.0553	0.9559
	Medical	150	69.00	13.41		

*P<0.05

Table 6: Comparison of male and female dental and medical student's mean percentage scores for knowledge, attitude, and behavior by *t*-test

Groups	Variables	Sex	*N*	Mean	SD	*t*	*P*
Total	Knowledge	Male	152	69.63	16.73	−0.3709	0.0000*
		Female	148	77.03	12.17		
	Attitude	Male	152	49.95	9.88	−0.0932	0.9258
		Female	148	50.05	7.66		
	Practice	Male	152	67.35	13.50	−2.1774	0.0302*
		Female	148	70.61	12.36		

*P<0.05

Table 7: Correlation between knowledge, attitude, and practice by Karl Pearson's correlation coefficient method

Groups	Variables	Knowledge	Attitude	Practice
Total	Knowledge	-		
	Attitude	r=0.2317*	-	
	Practice	r=0.1022	r=0.0026	-
Dental	Knowledge	-		
	Attitude	r=0.2431*	-	
	Practice	r=0.0757	r=−0.1330	-
Medical	Knowledge	-		
	Attitude	r=0.2138*	-	
	Practice	r=0.1257	r=0.0996	-

r=Pearson's correlation coefficient

Only 79.33% of our study participants felt that there was a role of sugary foods in causing tooth decay, whereas Ansari *et al*. in his study found that it to be 93.8%; thus, showing higher level of awareness compared to our study participants.[14] On the other hand, both dental and medical students in our study were much more aware of the effect of soft drinks on teeth as compared to studies by Ansari *et al*.[14] Most of the dental (92.67%) and medical (87.33%) students considered oral health to be important in maintaining good general health, and this is compatible with the findings of the study by Usman *et al*. (dental 96%, and medical 80%).[3] On the other hand, 80% dental and 67% medical students in Kanpur city considered oral health to be a part of overall health.[18]

The question of knowledge regarding smoking and tobacco chewing as the cause of oral cancer showed much higher frequency of correct answers among both dental (98%) and medical (94%) students in our study, and this was consistent with the findings of Frola and Barrios.[19] On the other hand, Ahamed *et al*. reported that only 78% of the dental students were aware about the cause of oral cancer.[17]

In terms of visiting a dentist, 84% of dental students in our study had visited once in their lifetime in contrast to 30% and 32% reported by Peker *et al*. and Neeraja R *et al*. respectively.[12,13] This was significantly lower than that reported among Jordanian students (86%) as reported by Al Omari *et al*. Mani *et al*. reported that 92.4% of the dental students disagreed in terms of not worrying much about visiting a dentist, which was in accordance with our study.[11,20] Similarly, Al Kawas *et al*. reported only 8% of the dental students were not much worried about visiting a dentist as compared to 30% of the medical students who were.[10] On the contrary, Usman *et al*. reported 88.3% and Ansari *et al*. reported 60% of the medical, dental, and paramedical students to have visited a dentist at least once in their lifetime.[3,14]

A total of 89.33% of our dental students and 81% of medical students felt the necessity of regular visits to a dental surgeon. On the contrary, Al Kawas *et al*. reported that 46% of the medical students put off going to the dentist until they had toothache as compared to 20% of dental students.[10] Usman *et al*. reported that 75% of medical students, 86% of paramedical students, and 69% of dental students put off visiting a dentist till they encountered a dental problem.[3]

Our study showed female participants to be better than their male counterpart in terms of knowledge and practice. This was in accordance with several studies including Al Omari *et al*., Porat *et al*., Nanakorn *et al*., Kassak *et al*., Halboub *et al*. and Rashid *et al*., and contrary to the studies reported by Ahamed *et al*., Sharda and Shetty, and Khami *et al*.[11,17,21-27] Ostberg and Fukai reported female dental students to have better oral health attitudes than males.[28,29] This has been attributed to the positive self care attitudes for internal psychological reasons to improve their appearance and self esteem.[10] On the contrary, Tseveenjan *et al*. reported no differences between male and female Mongolian dental studies in terms of practice.[30]

Several studies have shown oral health knowledge and attitude to be high among the dental students because it forms a significant part of their curriculum, and hence, positively influences their attitude and behavior.[9,10,31] Because good oral health is essential for good general health, medical education should include oral health as an integral component of their curriculum. Moreover, our study showed that though dental students had better knowledge and attitude towards oral health, rightly practicing it remains a concern. On the contrary medical students showed better practice of oral health and hygiene.

The only limitation of this study is that, even though the confidentiality is maintained, scores depends on self-reported data, which may be over- or underreported due to social desirability.

Several areas such as knowledge regarding association of chronic trauma and oral cancer, reasons for a delayed dental visit including cost factor, and use of other oral hygiene methods in addition to tooth brushing still remain unexplored,

which warrant the need for conducting more such studies. Moreover, the present study is limited to a questionnaire. To study the effect of oral health education among dental and medical students, cross-sectional and longitudinal comparisons would be more helpful. Clinical examination of the students to substantiate the answers to the questionnaire would be more desirable.

Conclusion

In the present study, we found that oral health knowledge of dental students were better compared to medical students as oral health is a significant component of the dental curriculum. Female students had better oral health knowledge and took better care of their teeth than male students. Further emphasis on oral health is necessary in undergraduate training to improve oral health knowledge, attitude, and practice among the students. These students who are the future providers of dental and medical care will act as role models for oral health education among individuals and community at large.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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