

Assessment of Oral Health Knowledge, Attitude and Practices among the Pre-clinical and Clinical Dental Students of Three Dental Colleges in Calicut District- A Questionnaire Based Cross-Sectional Study

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Abstract:

Background: Education of oral health of the individual and community has a major impact from the knowledge of the dentists, which ultimately depends on the knowledge, attitude and practices of the dental students. Dental students are the future leaders in oral-health care, and have a significant role to play in public oral health education and its promotion. Increased awareness of the oral health care among the dental students through academic learning can motivate their patients for the maintenance of the oral health and prevention of the development of the different oral diseases. Dental students in general have been found to have oral health knowledge, but their attitude and oral hygiene practices needs improvement if they are to serve as positive models for their patients, families, and friends. Therefore this present study aims to assess the oral health knowledge, attitude and behaviour among the Pre-clinical and Clinical dental students in the three Dental Colleges in Calicut district.

Materials and Methods: This cross-sectional 25 point Questionnaire was distributed among the dental students of the three dental colleges in Calicut district. The scores obtained from the responses were entered and analysed using the statistical analysis software SPSS version 20. Descriptive statistics was calculated, and mean scores, standard deviation, and frequency distribution was obtained. The difference of the oral health knowledge, attitude and practices between dental students was assessed by Student's t-test

Results: A statistically significant knowledge and Attitude Scores was observed for clinical students when compared with preclinical students. But when oral hygiene practices are analyzed it is seen that the preclinical students have higher scores when compared to clinical students. A statistically significant higher mean score of knowledge and oral hygiene practices for female students was observed when compared to male students. But in relation to the attitude scores, the male students showed higher mean scores than female students

Conclusion: The findings of the present study shows that the knowledge of the preclinical dental students is low compared to the clinical students. The oral-health attitude and practices of dental students' needs improvement with the increase in the level of education. So, adequate measures should be undertaken to reinforce positive attitude and oral hygiene practices in clinical students, so as to motivate their patients for maintenance of oral health and prevention of different oral diseases.

Key Word: Knowledge, Attitude. Oral hygiene Practices, Preclinical, Clinical, Dental students

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I. 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 Many systemic diseases are related to oral conditions and thus general health requires efforts of both medical and dental health professionals.² The dental health professionals can play an important role in the oral health education of their patients, families, and friends; and also at the community levels. However before dental health professionals play a role as oral health educators, it is important to know the level of their own knowledge, attitude, and

behaviour toward oral health.³ It is of primary need that, as the dental students are specialists in conditions related to oral regions, they have good knowledge and expertise in oral health behaviours according to professional criteria. The attitude and behaviour toward oral health maintenance of the dental professionals reflect their understanding of the preventive oral health measures, and this is very important for the improvement of their patient's oral health.⁴ Hence, the present study was carried out to assess the oral health knowledge, attitude and behaviour among the Pre-clinical and Clinical dental students in the three dental colleges in Calicut district.

II. Material And Methods

This cross-sectional Questionnaire based study was carried out among dental students in three dental colleges in Calicut district, Kerala.

Study Design: Cross-sectional Questionnaire based study

Study Location: This study was done among dental students of Government Dental College, Kozhikode, KMCT Dental College, Kozhikode and Sree Anjaneya Institute of Dental Sciences, Modakkallur, Kozhikode.

Study Duration: December 2020

Sample size: 240 students.

Sample size calculation: Sample size was calculated based on the formula

$$\text{Sample Size (n)} = \frac{Z_{(1-\alpha/2)}^2 SD^2}{d^2}$$

Where,

$Z_{(1-\alpha/2)} = 1.96$ for 95% confidence interval

SD -Standard deviation calculated from the previous study (0.79)

d - Precision of the study

With a precision of 10 %, the samples size required for the present study is calculated as 239 rounded to 240.

Procedure: This cross-sectional study was conducted among preclinical and clinical dental students of the three dental colleges in Calicut district. Only those who were willing to participate and present on the day of distribution of Questionnaire were included. Standard procedures of informed consent were taken from the study group students. No other academic records except year of study were obtained of the participant study group students.

A total of 25 questions were designed to evaluate the oral health knowledge, attitude and oral hygiene practices of students. The questionnaire was in the format of multiple choice questions and yes/no type questions. The students were told to pick up only one answer for each question. The students were allowed to interact with the study committee for the meaning of any word or question.

Questionnaire and scoring criteria:

The questionnaire was organized into 4 parts: The first part elicited information 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 15 questions on purpose of tooth brushing, time interval for change of tooth brush, 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 6 questions regarding attitude towards dental care, cost associated with treatment, role of dentist in treatment and prevention of oral diseases and their choice of preference for oral prophylaxis by dentists. The last part assessed the practices in relation to oral health by using 4 questions regarding, 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.

Statistical analysis: Scores was calculated according to the options selected by the students. The data was analysed using the statistical analysis software SPSS version 20. Descriptive statistics was calculated, and mean scores, standard deviation, and frequency distribution was obtained. The difference of the oral health knowledge, attitude and behavior between dental students was assessed by Student's t-test.

III. Result

400 printed questionnaires were distributed among the students in the three dental colleges of Calicut District. The questionnaire was then sorted into their respective year of study and then randomly 60 questionnaire each from the year of study was selected to make the sample size of 240 ie 60 from each year .

Table 1: Gender distribution within Preclinical and clinical students

		Female	Male	Total
Preclinical	Count	99	21	120
	% within Clinical/Preclinical	82.5%	17.5%	100.0%
Clinical	Count	99	21	120
	% within Clinical/Preclinical	82.5%	17.5%	100.0%
Total	Count	198	42	240
	% within Clinical/Preclinical	82.5%	17.5%	100.0%

The observations in Table 1 shows that in the study population, in both the groups Preclinical and Clinical there were 99 females and 21 males. First and second year students were included in Preclinical group and third and fourth year students were included in Clinical group.

Table :2 Distribution Of Gender Versus Year of study

Year		Female	Male	Total
First year	Count	53	7	60
	% within YEAR	88.3%	11.7%	100.0%
Second year	Count	46	14	60
	% within YEAR	76.7%	23.3%	100.0%
Third year	Count	48	12	60
	% within YEAR	80.0%	20.0%	100.0%
Fourth year	Count	51	9	60
	% within YEAR	85.0%	15.0%	100.0%
Total	Count	198	42	240
	% within YEAR	82.5%	17.5%	100.0%

The observations in Table 2and Diagram 1 shows the distribution of female and male students with respective year of study. Even though the male students are less when compared to female students with respect to their year of study ,but the ratio of female and male students when grouped as Preclinical and clinical strata, are same. (Table 1)

Diagram 1: Gender versus year of study

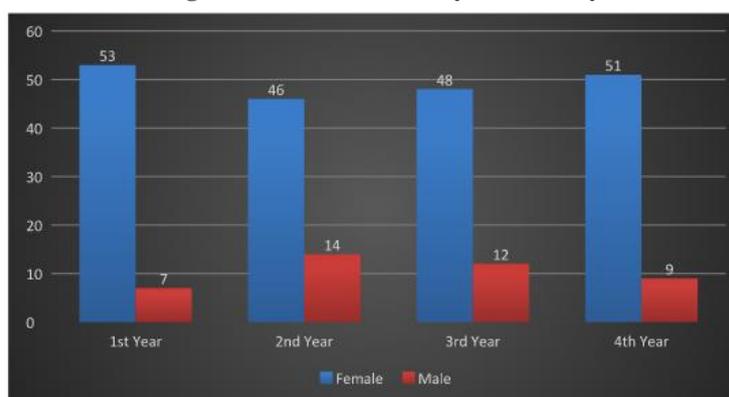


Table 3: PERCENTAGE AND ANALYSIS OF RESPONSES IN PRECLINICAL AND CLINICAL STUDENTS IN KNOWLEDGE REGARDING ORAL HEALTH

	KNOWLEDGE QUESTIONS		Responses Given				Correct Response		
			a	b	c	d	Right	Wrong	p value
Q1.	1. Number of dentition sets in life of an individual: a) 1 b) 2 c) 3 d) Don't know	Preclinical	1 0.8%	109 90.8%	10 9.2%	0 0.0%	109 90.8%	11 9.2%	.327
		Clinical	0 0.0%	113 94.2%	7 5.0%	0 0.0%	113 94.2%	7 5.8%	

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Q2.	2. Total number of deciduous and permanent teeth: a) 5 and 24 b) 20 and 32 c) 32 and 32 d) Don't know	Preclinical	0 0.0%	119 99.2%	1 0.8%	0 0.0%	119 99.2%	1 0.8%	.316
		Clinical	0 0.0%	120 100%	0 0.0%	0 0.0%	120 100.0%	0 0.0%	
Q3.	3. Main purpose of tooth brushing: a) Prevention of tooth decay and gum disease. b) Achievement of cleaner and brighter teeth. c) To remove stains on teeth. d) Don't know.	Preclinical	91 75.8%	26 21.7%	3 2.5%	0 0.0%	94 78.3%	26 21.7%	.038
		Clinical	107 89.1%	9 7.5%	4 3.3%	0 0.0%	106 88.3%	14 11.7%	
Q4.	4. Meaning of dental plaque: a) Discoloration of teeth b) Soft deposits on teeth c) White patches on teeth d) Don't know	Preclinical	9 7.5%	88 73.3%	21 17.5%	2 1.7%	90 75.0%	30 25.0%	.000
		Clinical	1 0.8%	114 95.0%	5 4.2%	0 0.0%	115 95.8%	5 4.2%	
Q5.	5. Meaning of gum bleeding: a) Gum disease (inflammation of gums) b) Infection of tooth c) Calcium deficiency d) Don't know	Preclinical	105 87.5%	3 2.5%	11 9.2%	1 0.8%	104 86.7%	16 13.3%	.001
		Clinical	119 99.9%	1 0.8%	0 0.0%	0 0.0%	119 98.3%	2 1.7%	
Q6.	6. Effect of retention of sweet food on teeth: a) Can lead to decaying of teeth b) Calcium deficiency c) Leads to bleeding gums d) Don't know	Preclinical	118 98.3%	2 1.7%	0 0.0%	0 0.0%	118 98.3%	2 1.7%	.408
		Clinical	118 98.3%	0 0.0%	2 1.7%	0 0.0%	118 98.3%	2 1.7%	
Q7.	7. Effects of fluorides on teeth: a) Prevention of gum disease b) Prevention of tooth decay c) Cleaning of teeth d) Don't know	Preclinical	7 5.8%	107 89.2%	3 2.5%	3 2.5%	108 90.0%	12 10.0%	.002
		Clinical	2 1.7%	118 98.3%	0 0.0%	0 0.0%	118 98.3%	2 1.7%	
Q8.	8. Can health of teeth and mouth affect health of body: a) Yes b) No c) Don't know	Preclinical	113 94.2%	7 5.8%	0 0.0%	0 0.0%	112 93.3%	8 6.7%	.053
		Clinical	118 98.3%	1 0.8%	1 0.8%	0 0.0%	118 98.3%	2 1.7%	
Q9.	9. Reasons of oral cancer: a) Calcium deficiency b) Gutkha and tobacco chewing, smoking. c) Vit. C	Preclinical	0 0.0%	113 94.2%	4 3.3%	3 2.5%	113 94.2%	7 5.8%	.031
		Clinical	1 0.8%	119 99.2%	0 0.0%	0 0.0%	119 99.2%	1 0.8%	

	deficiency d) Don't know								
Q10.	10.Is it possible to correct irregularly placed teeth: a) Yes b) No c) Don't know	Preclinical	116 96.7%	4 3.3%	0 0.0%	0 0.0%	116 96.7%	4 3.3%	1.000
		Clinical	116 96.7%	2 1.7%	2 1.7%	0 0.0%	116 96.7%	4 3.3%	
Q11.	11. what is the time interval to change tooth brush? a.. one month b. two months c. every three months	Preclinical	24 20.0%	33 27.5%	63 52.5%	0 0.0%	69 57.5%	51 42.5%	.000
		Clinical	11 9.2%	7 5.8%	102 85.0%	0 0.0%	101 84.2%	19 15.8%	
Q12.	12. Does consumption of soft drinks cause deleterious effect on teeth ? a. yes b. No	Preclinical	114 95.0%	6 5.0%	0 0.0%	0 0-0%	114 95.0%	6 5.0%	.055
		Clinical	117 97.5%	3 2.5%	0 0.0%	0 0.0%	119 99.2%	1 0.8%	
Q13.	13. is flossing good for oral health? a.yes b. no	Preclinical	87 72.5%	33 27.5%	0 0.0%	0 0.0%	88 73.3%	32 26.7%	.000
		Clinical	114 95.0%	6 5.0%	0 0.0%	0 0.0%	114 95.0%	6 5.0%	
Q14.	14.will gingivitis and periodontitis cause halitosis? a.yes b. no	Preclinical	100 83.3%	20 16.7%	0 0.0%	0 0.0%	101 84.2%	19 15.8%	.000
		Clinical	118 98.3%	2 1.7%	0 0.0%	0 0.0%	119 99.2%	1 0.8%	
Q15.	15 . Does hardness of bristles have an effect on teeth and gums? a.Yes b.No	Preclinical	114 95.0%	6 5.0%	0 0.0%	0 0.0%	114 95.0%	6 5.0%	.150
		Clinical	118 98.3%	2 1.7%	0 0.0%	0 0.0%	118 98.3%	2 1.7%	

The breakdown observations of Table 3 shows that the percentage of wrong responses to questions 3,4,5,7,8,9,11,13 and question 14 were more in preclinical students when compared to clinical students. Statistically significant responses was observed in respect to Questions regarding purpose of tooth brushing (Q3); gum bleeding (Q5); effect of fluorides(Q7); effect of oral health on general health (Q8);cause of oral cancer(Q9);and effect of soft drinks on teeth (Q12).

Table 4: PERCENTAGE AND ANALYSIS OF RESPONSES IN PRECLINICAL AND CLINICAL STUDENTS IN ATTITUDE

The observations in Table 4 shows a higher percentage of correct responses to the five set of attitude based questions in both preclinical and clinical students. The response to Question 4 in both preclinical and clinical students a higher percentage gave No as answer. The responses to questions regarding visit to dentist (Q1), role of dentist in treatment (Q4), cost of dental treatment (Q5) and referral to dentist for oral prophylaxis (Q6) was statistically significant.

Q1.	1. Dentists should be visited regularly? Yes / No		No	yes	p value
		Preclinical	26 21.7%	94 78.3%	.013
		Clinical	12 10.0%	108 90.0%	
Q2.	2.Smoking in any form is a bad habit? Yes / No	Preclinical	9 7.5%	111 92.5%	.076
		Clinical	3 2.5%	117 97.5%	
Q3.	3. Immediate replacement of missing teeth by artificial teeth is	Preclinical	49 40.8%	71 59.2%	.000

	necessary? Yes / No	Clinical	5 4.2%	115 95.8%	
Q4.	4.Dentists plays role only in treatment part and not in the treatment and prevention? Yes/No	Preclinical	98 81.7%	22 18.3%	.006
		Clinical	112 93.3%	8 6.7%	
Q5.	5.Do you think cost of dental treatment is costly? yes/no	Preclinical	31 25.8%	89 74.2%	.009
		Clinical	50 41.7%	70 58.3%	
Q6.	6. will you advise oral prophylaxis by dentists ? yes /No	Preclinical	14 11.7%	106 88.3%	.001
		Clinical	1 0.8%	119 99.2%	

Table 5: PERCENTAGE AND ANALYSIS OF RESPONSES IN PRECLINICAL AND CLINICAL STUDENTS IN ORAL HYGIENE PRACTICES

The observations in Table 5 among the preclinical and clinical dental students with respect to their oral hygiene practices showed higher percentage using brush and paste as aids in brushing, frequency of brushing twice a day, and use of mouth wash. In both groups it was seen that a higher percentage didn't use floss. The responses given to Questions regarding brushing aids (Q 1), frequency of brushing (Q2) and use of mouth wash (Q3) was statistically significant

Q1.	1. Brushing Aids used a) brush and paste b) finger and paste		a	b	c	p value
		Preclinical	117 97.5%	3 2.5%	0 0.0%	.028
		Clinical	120 100%	0 0.0%	0 0.0%	
Q2.	2. frequency of brushing a) Once in a day b) Twice in a day c) between meals	Preclinical	4 3.3%	116 96.7%	0 0.0%	.051
		Clinical	10 8.3%	107 89.2%	3 2.5%	
Q3.	3. Use of oral hygiene aids like mouth wash: a) Yes b) No	Preclinical	99 82.5%	21 17.5%	0 0.0%	.016
		Clinical	83 69.2%	37 30.8%	0 0.0%	
Q4.	4. Do you floss your teeth? a) yes b) no	Preclinical	45 37.5%	75 62.5%	0 0.0%	.590
		Clinical	41 34.2%	79 65.8%	0 0.0%	

Table 6: Student's ttest for Comparison of scores of knowledge, attitude and practices of male and female students

	GENDER	N	Mean	Std. Deviation	p-value
KNOWLEDGE	Male	42	13.3810	1.51339	0.094
	Female	198	13.8283	1.57738	
ATTITUDE	Male	42	4.3571	.98331	0.649
	Female	198	4.2778	1.03178	
PRACTICE	Male	42	2.8095	.91700	0.143
	Female	198	3.0253	.85161	

The observations in Table 6 and Diagram2 shows that the mean score of knowledge and oral hygiene practices of female students is comparatively higher when compared to male students. But in relation to the attitude scores, the male students have higher mean scores than female students.

Diagram 2:

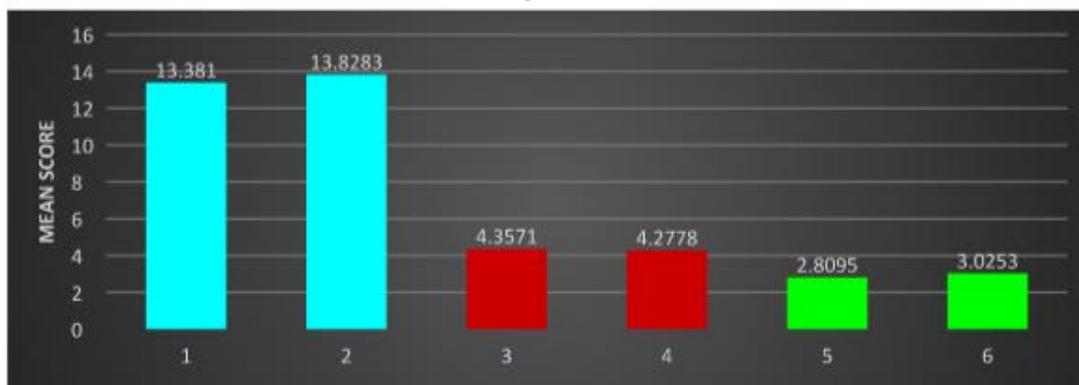


Table 7: Student’s t test for comparison of scores of knowledge, attitude and oral hygiene practices of preclinical and clinical students

	Clinical/Preclinical	N	Mean	Std. Deviation	P-VALUE
KNOWLEDGE	Clinical	120	14.3917	1.23190	0.001
	Pre clinical	120	13.1083	1.61815	
ATTITUDE	Clinical	120	4.4750	.77744	0.005
	Pre clinical	120	4.1083	1.19379	
PRACTICE	Clinical	120	2.8333	1.01529	0.006
	Pre clinical	120	3.1417	.65203	

The observations in Table 7 and Diagram 3 shows that the knowledge and Attitude Scores of clinical students are higher than preclinical students and it is statistically significant. But when oral hygiene practices are analyzed it is seen that the preclinical students have higher scores when compared to clinical students which was statistically significant.

Diagram 3:

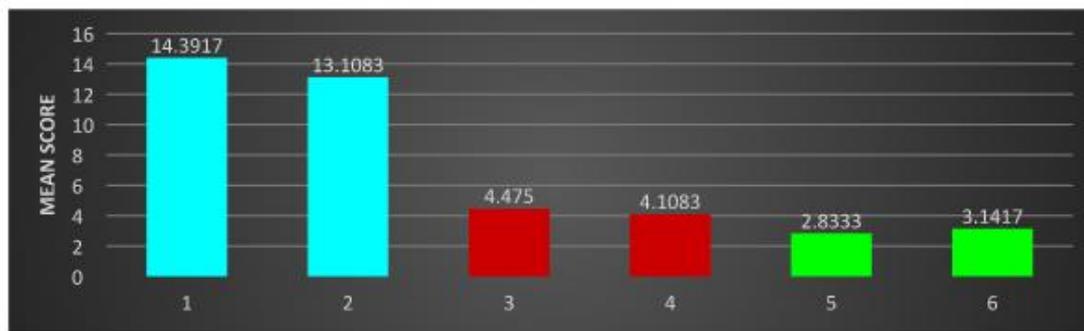
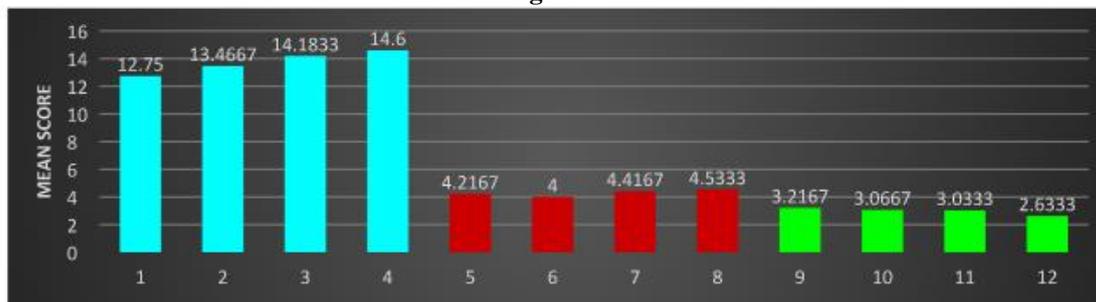


Table 8: Comparison of scores of knowledge, attitude and oral hygiene practices of Dental students with respect to their year of study

		N	Mean	Std. Deviation	Minimum	Maximum	P-value
KNOWLEDGE	1st Year	60	12.7500	1.97119	6.00	15.00	0.001
	2nd Year	60	13.4667	1.06511	11.00	15.00	
	3rd Year	60	14.1833	1.62075	5.00	15.00	
	4th Year	60	14.6000	.58802	13.00	15.00	
	Total	240	13.7500	1.57251	5.00	15.00	
ATTITUDE	1st Year	60	4.2167	.90370	2.00	6.00	0.023
	2nd Year	60	4.0000	1.42615	1.00	6.00	
	3rd Year	60	4.4167	.84956	2.00	6.00	
	4th Year	60	4.5333	.70028	3.00	6.00	
	Total	240	4.2917	1.02190	1.00	6.00	
PRACTICE	1st Year	60	3.2167	.61318	1.00	4.00	0.002
	2nd Year	60	3.0667	.68561	1.00	4.00	
	3rd Year	60	3.0333	1.05713	1.00	4.00	
	4th Year	60	2.6333	.93820	1.00	4.00	
	Total	240	2.9875	.86533	1.00	4.00	

The observation in Table 8 and Diagram 4 shows statistically significant scores in relation to knowledge, Attitude and Practices within the year of study. The fourth year students have higher scores in knowledge and Attitude whereas the first year students exhibited higher scores in Oral hygiene Practices when compared to students of higher grades.

Diagram 4:



IV. Discussion

Dentists are considered experts in the field of oral-health education and promotion. The first step in establishing a positive oral-health habit is to provide significant knowledge to the patients and to raise their awareness regarding the ways to prevent oral diseases. High awareness regarding oral self-care among dental students enables them to assess their patients' oral health condition and to motivate their patients and may help them to spread oral awareness in the general population.⁵

The results of the present study indicated that the percentage of oral health knowledge of clinical students were higher than that of preclinical students. This finding is in agreement with the studies by Daya et al,⁶ Kawamura et al,⁷ Tseveenjav et al⁸ and Rong et al⁹. This variation in knowledge status might be due to the exposure to clinical subjects from the third year of dental education. It was interesting to note that 21.7% of the preclinical students were of the opinion that the main purpose of brushing was to get brighter teeth. These findings indirectly points to the influence of advertisements of various tooth paste in entertainment medias.

In the present study, majority of the preclinical and all clinical students used tooth brush and paste for cleaning their teeth as they are better informed about the mechanical removal of plaque by tooth brush and the secondary role of tooth paste. This is in accordance with the study of Polychronopoulou et al.¹⁰ Regarding the frequency of tooth brushing, in the present study, it was observed, 96.7% preclinical students had the habit of brushing their teeth twice daily while only 89.2% of clinical students brushed their teeth twice daily. This is in contrast to the study by Barriesh Nusair et al¹¹ who reported higher percentage of clinical students claiming to brush twice daily. It was surprising to observe that in this present study, habit of using mouth wash and flossing was seen to be higher in preclinical than in clinical. This suggests that the level of student's self-care is not influenced by their course contents alone, but by other factors like values, attitude and influence of family members. This finding emphasises that more measures need to be implemented on clinical students so as to bring a positive change in the oral hygiene practices.

Regarding the responses to Attitude based Questions in this study, it was observed that both preclinical and clinical dental students are of the opinion that regular visits to dentists is needed, smoking is a bad habit and role of dentists is not only treatment but also in prevention of oral diseases. Both the study groups are also of the opinion that dental treatment is costly and are aware of the need of oral prophylaxis by dentists as higher percentage of both groups showed interest in referral for oral prophylaxis. It was also observed that, higher percentage of preclinical students were ignorant about the need for replacing missing teeth.

In this present study it was observed that the female dental students showed more scores in knowledge and oral hygiene practices than their male counterparts. But in terms of Attitude scores the male dental students exhibited higher scores than females. This is contradictory to the study by Baseer et al¹² and Astrom and Masalu¹³ where females exhibited significantly more positive attitudes than males. This difference between males and females in the present study might be due to more number of female students in the study sample or may be due to the more complacent and submissive nature of the female students to imbibe what is taught in dental schools. It was also interesting to observe higher scores in knowledge and Attitude in the fourth year of study but the first years exhibited higher scores in terms of oral hygiene practices. This shows that the values regarding the oral hygiene practices which they acquired from their family members have been neglected during their higher years of study and needs proper emphasis on improvement strategies on this regard.

Limitations of the study: This study was mainly based on responses to a questionnaire, without taking into account, the intraoral clinical status of the participants so no correlations could be made. There is

also a chance of bias, as the scores could be over and under reported due to social desirability, even though confidentiality was guaranteed.

V. Conclusion:

The findings of the present study shows that the knowledge of the preclinical dental students is low compared to the clinical students. The oral-health attitude and practices of dental students' needs improvement with the increase in the level of education. So, adequate measures should be undertaken to reinforce positive attitude and oral hygiene practices in clinical students, so as to motivate their patients for maintenance of oral health and prevention of different oral diseases.

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