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Assessment of Oral Health Behavior and Gingival Status among Dental Undergraduate Students in a Dental College in Bangalore

Anagha Reji[1*], R. Murali[2], Shamala. A[3], Mansi Yalamalli[4], Pradeep N[5], Suchetha GM[6]

[1]*Postgraduate Student, Department of Public Health Dentistry, Krishnadevaraya College of Dental Sciences, Bangalore, Karnataka, India.*

[2]*Proffesor and Head of the Department, Department of Public Health Dentistry, Krishnadevaraya College of Dental Sciences, Bangalore, Karnataka, India.*

[3,4]*Reader, Department of Public Health Dentistry, Krishnadevaraya College of Dental Sciences, Bangalore, Karnataka, India.*

[5,6]*Senior Lecturer, Department of Public Health Dentistry, Krishnadevaraya College of Dental Sciences, Bangalore, Karnataka, India.*

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[*]**Corresponding Author**: Anagha Reji**,** Postgraduate Student, Department of Public Health Dentistry, Krishnadevaraya College of Dental Sciences, Bangalore, Karnataka, India.

E-mail: dr.anaghareji@gmail.com

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ABSTRACT

Introduction: Oral health is a critical but overlooked component of overall health and well-being among children and adults. Behavioural and social factors significantly impact oral health. Dental health professionals have an important role in the improvement of the public's health education level. Therefore, the acquisition of their status regarding oral health behaviour and gingival health during the future dentist's training period is very important.

Aim: to assess the oral health behaviour and gingival status of undergraduate dental students in a dental college in north Bangalore.

Methodology: A cross-sectional study was conducted to assess the oral health behaviour and gingival status of undergraduate dental students in a dental college. The study population consisted of a total of 210 dental students who were administered. structured questionnaire for dental behaviour titled "Hiroshima University-Dental Behavioral Inventory" (HU-DBI). Gingival status was assessed by measuring Full Mouth Plaque Score (FMPS), Full mouth Bleeding Score (FMBS), and Papillary Bleeding Index. (PBI).

Results: This survey shows that the knowledge regarding the importance of brushing and oral hygiene maintenance increases as students advance in their dental courses. A statistically significant (p-value < 0.05) relationship between FMBS and PBI and dental health behaviour of participants is seen.

Conclusion: The results of oral health behaviour and gingival status of dental students reveal that there exists a positive association between oral health and gingival health of the students and that as years pass in dental school students tend to care more and have a positive impact towards dental health.

Keywords: Dental Health Behaviour, Dental Students, FMPS, FMBS, Gingival Status, PBI.

Introduction

Oral health is a critical but overlooked component of overall health and well-being among children and adults.[1] It is an essential and vital component of overall health and is much more than just healthy teeth.[2] Oral health is traditionally defined as an oral status that is free of diseases, which not only makes people look beautiful but also contributes to the normal function of the mouth.[3]

Behavioural and social factors significantly impact oral health.[4] Attitudes towards oral health determine the condition of the oral cavity.[5] Dental health professionals have an important role in the improvement of the public's health education level.[6] As future leaders in oral health care, their attitudes toward their oral health have been proposed to affect the quality of care delivered to patients. To equip the general population with proper knowledge of oral health, general dental practitioners must take positive approaches to their own oral health so that they can effectively teach what they believe.[7] The acquisition of their status regarding oral health behaviour and the gingival status during the future dentist's training period is very important. 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 status and behaviour pattern. Hence, the present study was conducted to assess the oral health behaviour and gingival status of undergraduate dental students in a dental college in north Bangalore.

Methodology

This study was a descriptive cross-sectional survey conducted to assess the oral health behaviour and gingival status of undergraduate dental students in a dental college in North Bangalore during the period of October 2021 to November 2021. Ethical clearance to conduct the research was obtained from the Ethical Committee of Krishnadevaraya College of Dental Sciences & Hospital. The study population consisted of a total of 210 dental students. All the first to final-year BDS students and interns from Krishnadevaraya College of dental sciences and Hospital, Bangalore City were invited to participate in this survey using a self-administered structured questionnaire for dental behaviour entitled "Hiroshima University-Dental Behavioral Inventory" (HU-DBI).[8] The participants were followed up after obtaining informed consent with a clinical examination which was conducted at the Department of Public Health Dentistry for assessing their gingival status by measuring Full Mouth Plaque Score (FMPS)[9], Full mouth Bleeding Score (FMBS)[10], and Papillary Bleeding Index. (PBI)[11] The HU-DBI questionnaire consisted of twenty dichotomous responses (agree/disagree) regarding oral health-related behaviour.

To compare the self-reported oral health behaviour with the actual oral health status of participants, a calibrated dentist measured FMPS, FMBS, and PBI of the participants. Both FMPS and FMBS scores were calculated dichotomously according to the absence (0) or presence (1) of plaque or bleeding on all the tooth surfaces. FMPS and FMBS per person were calculated by dividing the sum of all scores by no. of surfaces examined. The presence or absence of bleeding was determined by gentle probing of the gingival crevice with a probe.

Papillary Bleeding Index was recorded for six index teeth (16,21,26,36,41 and 46) using a periodontal probe according to the following criteria:-

0: no bleeding.
1: one bleeding point appears.
2: multiple bleeding points or one bleeding line appear.
3: interdental triangle filled with blood.
4: excessive bleeding when probing and blood flow to the marginal sulcus.

The data was entered into SPSS version 22.0 (SPSS Inc., Chicago, IL for statistically analysed. The normality of the data was assessed using the Shapiro-Wilkinson test. Chi-square tests and Post hoc test was used for gender and year comparisons. Regression analysis was used to find

out the significant predictors. The significance level was set at p≤0.05.

Results

The number of dental students who participated in the study was 210. Table 1 shows the year and sex-wise distribution of study participants. There was no statistical significance found in any of the questions when gender comparison was done expect for "I have had my dentist tell me that I brush well" with a p-value of 0.038. it was noted that the females received more appreciation regarding their brushing than males.

Year	1st year		2nd year		3rd year		4th year		Interns	
	M	F	M	F	M	F	M	F	M	F
No of participants	15	30	16	26	16	24	14	23	16	30
Total	**45**		**42**		**40**		**37**		**46**	

Table 1: Year and sex wise distribution of study participants

Sl no	HU-DBI Item Description	1st year		2nd year		3rd year		4th year		Interns		P-value
		Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	
1	I don't worry much about visiting the dentist	39	6	32	10	22	18	28	9	32	14	0.022
2	My gums tend to bleed when I brush	9	36	3	39	0	40	2	35	2	44	0.007
3	I worry about the color of my teeth	34	11	31	11	21	19	21	16	31	15	0.106
4	I have noticed some white sticky deposits on my teeth	4	41	14	28	10	30	14	23	24	22	0.000
5	I use a child sized toothbrush	4	41	0	42	3	37	0	37	0	46	0.029
6	I think that I cannot help having false teeth when I am old	21	24	8	34	6	34	6	31	15	31	0.003

7	I am bothered by the color of my gums	23	22	14	28	12	28	8	29	9	37	0.012
8	I think my teeth are getting worse despite my daily brushing	6	39	14	25	3	37	2	35	4	42	0.001
9	I brush each of my teeth carefully	24	21	22	20	34	6	25	12	37	9	0.001
10	I have never been taught professionally how brush	24	21	19	23	3	37	8	29	9	37	0.000
11	I think I can clean my teeth well without using toothpaste	9	36	4	38	3	37	0	37	0	46	0.002
12	I often check my teeth in a mirror after brushing	35	10	34	8	34	6	31	6	41	5	0.668
13	I worry about having bad breath	33	12	30	12	30	10	19	18	18	28	0.001
14	It is impossible to prevent gum disease with tooth brushing alone	19	26	27	15	21	19	22	15	25	21	0.310
15	I put of going to dentist until I have a toothache	26	19	27	15	16	24	14	23	16	30	0.018
16	I have used a dye to see how clean my teeth are	4	41	7	35	6	34	0	37	3	43	0.082
17	I use a toothbrush that has hard bristles	12	33	8	34	3	37	6	31	10	36	0.228

18	I don't feel I've brushed well unless I brush with strong strokes	18	27	13	29	10	30	6	31	6	40	0.025
19	I feel sometimes take too much time to brush my teeth	26	19	18	24	15	25	11	26	13	33	0.033
20	I have had my dentist tell me that I brush very well	26	19	20	22	25	15	25	12	35	11	0.078

Table 2: Post Hoc test for comparison of Dental Health Behaviour among Dental students in their 1st year to internship.

Comparison of year wise students

Most of the dental students were worried about their own visit to the dentist and colour of their teeth. (Q.1,3) but, it was noted that the majority of them did not recognise dental plaque as 'white sticky deposits' on their teeth (Q.4) Most of the study participants were aware not to use a child-size toothbrush for brushing (Q.5) it was noted that majority of the study participants responded that they brush each of their teeth carefully. (Q.9) This trend was seen to increase with increasing years of dental education. It was seen that participants were taught how to brush professionally in their senior years. The responses showed that the participants were more concerned about their bad breath in junior year. This might be due to the fact that as years pass in dental college, they were more exposed to ways of maintaining a healthy mouth.

	FMPS	FMBS	PBI
I don't worry much about visiting the dentist	0.45	0.91	0.70
My gums tend to bleed when I brush	0.89	0.29	0.14
I worry about the color of my teeth	0.32	0.26	0.18
I have noticed some white sticky deposits on my teeth	0.83	0.23	0.03
I use a child sized toothbrush	0.97	0.44	0.27
I think that I cannot help having false teeth when I am old	0.60	0.60	0.17
I am bothered by the colour of my gums	0.96	0.94	0.45
I think my teeth are getting worse despite my daily brushing	0.79	0.12	0.86
I brush each of my teeth carefully	0.92	0.34	0.29
I have never been taught professionally how brush	0.34	0.59	0.80

I think I can clean my teeth well without using toothpaste	0.80	0.44	0.13
I often check my teeth in a mirror after brushing	0.19	0.00	0.22
I worry about having bad breath	0.36	0.49	0.83
It is impossible to prevent gum disease with tooth brushing alone	0.52	0.54	0.45
I put of going to dentist until I have a toothache	0.28	0.10	0.57
I have used a dye to see how clean my teeth are	0.66	0.03	0.10
I use a toothbrush that has hard bristles	0.33	0.58	0.04
I don't feel I've brushed well unless I brush with strong strokes	0.95	0.02	0.27
I feel I sometimes take too much time to brush my teeth	0.99	0.36	0.55
I have had my dentist tell me that I brush very well	0.73	0.69	0.70

Table 3: Correlation between dental health behaviour and gingival status in the study population.

Table 3 shows the mean HU-DBI scores in relation to the plaque/ bleeding scores and agreement/disagreement with HU-BDI questions. When plaque scores and bleeding scores were related to the HU-DBI responses, a statistically significant relation was found between seven items (P<.05).

There was a statistically significant relation between the agreement of "I often check my teeth in a mirror after brushing"(Q.12) and the FMBS score with a p-value < 0.001. It was also noted that there was a statically significant relation between "I have used a dye to see how clean my teeth are" (Q.16) and "I don't feel I've brushed well unless I brush with strong strokes" (Q.18) FMBS score with p-value < 0.05. There was a statistically significant relation found between PBI and "I use a toothbrush that has hard bristles" (Q.17)

A summary of the main results is that there were areas of substantial improvements in oral hygiene behaviour of the final year students and interns over 1st and 2nd-year students. And this behaviour had an impact on the plaque accumulation and bleeding status of the gingiva.

Discussion

The aim of this research was to assess the dental health behaviour and gingival status of undergraduate dental students in a college in north Bangalore. The results of the present study indicated that the knowledge regarding the importance of brushing and oral hygiene maintenance increases as students advance in their dental courses. This result is similar to the previous studies by a study conducted by AJ Sharda et al[12], Kawamura et al[13], Tseveenjav et al[14], and Rong et al.[15]

Gender was not a major factor influencing the HU-DBI percentage of agree/disagree responses in the present study unlike the study conducted by Rahman et al.[16] Whereas the results of the study conducted by A J Sharda et al[12] agree with the current study, who found no significant difference in the dental health behaviour of male and female dental students.

The majority of the students with higher HU-DBI scores (with better self-reported behaviour and awareness) had less moderate plaque and gingival bleeding scores. This could be an important factor that reflects the oral health attitudes of students entering the dental field. This is in agreement with the findings of the study conducted by Rahman et al.[16]

Our reason to choose dental students was to understand the immediate effects of the

knowledge they acquired in preventive dentistry this year and its effects on their oral health attitudes, actual oral hygiene, and gingival health. There seems to be a contradiction between acquired knowledge and its practice among dental students. This study reflected a significant relationship between brushing twice daily or more and high plaque and bleeding scores.

There was statistical significance noted between those who identified white sticky deposits on their teeth and PBI score in the present study. It was similar to the study conducted by Rahman et al[16], but the same study also showed that there was a correlation with plaque score also but that was not found in the present study.

Many general health factors are of direct relevance to oral health, e.g. smoking, diabetes, alcohol, stress, and medication. In the present study, very few students reported having habits like smoking and most of them were males which shows that the behaviour does not necessarily depend on the knowledge. This finding agrees with the finding of Al-Omari et al[17] who reported that smoking was much more frequent among males than among female dental students in Jordan.

This study done among undergraduate students in a dental college indicated that there is a positive association between oral health behaviour and the gingival health of the students.

Limitations

The present study was a cross-sectional self-reported questionnaire study with single-point prevalence measurement.

Recommendations

Even though students showed concern about their dental health, it was not reflected in their gingival health. Hence we recommend modifications in the curriculum of preventive dentistry courses. The inclusion of attractive and effective educational materials such as practical sessions on brushing and flossing techniques along with the use of other interdental cleaning aids, oral irrigation devices, and plaque-disclosing agents would help achieve optimum gingival health. And there is a need for repeated reinforcements, which will ensure the success rates. Further studies are vital in this population since they are future leaders in oral health.

Conclusion

The evaluation results of oral health behaviour and gingival status of dental students reveal that there exists a positive association between oral health and gingival health of the students and that as they advance in dental school students tend to care more and have a positive impact towards dental health.

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