

Knowledge, Attitude and Practices Regarding Preventive Dentistry among Dental Undergraduate Students

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Abstract

Objective: The aim of this study was to assess the knowledge, attitude and practices regarding Preventive Dentistry among the dental undergraduate students from various dental colleges in Karachi.

Methodology: A structured questionnaire was distributed to undergraduate students of nine different dental colleges in Karachi. Data was collected from a convenience sample of 302 students. IBM SPSS statistics software version 25.0 was used for statistical analysis of the collected data.

Results: 360 students responded, with a healthy response rate of 83.8% and after exclusion, data from 302 students was used. 58.6% of the respondents were female. Generally, the students were noted to possess competent knowledge regarding preventive dentistry, whereas their attitude and practices seem to need some improvement. Significant relationships were found regarding age with practices (p-value = 0.00), gender with knowledge (p-value = 0.02) and practices (p-value = 0.01) and year of study with practices (p-value = 0.00)

Conclusion: Preventive dentistry is the basis of avoiding many dental problems and maintaining optimum oral health. Generally, dental undergraduates are up to the mark in following the preventive dental practices.

Keywords: Knowledge; Attitude; Practices; Preventive Dentistry; Dental Undergraduate Students

Introduction

Preventive Dentistry as defined by Dr Gerrie, "is the summation of all efforts to prevent dental diseases and disorders, or to prevent the sequelae of an individual's dental diseases and disorders". He outlined a two-stage prevention guide, where the "primary prevention refers to measures applied in the pre-pathogenic period before a preventable disease or disorder appears" and secondary prevention refers to prevention and retarding of some of the sequelae of preventable and non-preventable diseases [1].

According to the WHO, preventable oral diseases are one of the most expensive diseases to treat, worldwide. The fact that they continue to be so ubiquitous makes their burden a very heavy one, especially on LMIC countries like Pakistan [2].

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A 2018 study on Pakistani children between the ages of 6 - 12 years concluded that 69.9% of the children in their sample had caries, with a mean DMFT score of 2.98 [3]. Not only does this indicate that oral disease is a major problem in Pakistan, it brings to the forefront a public health concern that children, being the future stakeholders of society, should be taught simple oral healthcare practices. These early changes in habits will translate into the reduction of future complications from tooth and periodontal deterioration, which in turn may reduce the socio-economic damage to our society as these children become adults [1,4].

Preventive dentistry is not a new concept to dental health professionals and has increasingly been applied in higher-income countries as the first line of defense against preventable oral diseases. The use of fluoride, the commitment to maintaining a good oral hygiene, dietary changes, and dental procedures such as diagnostic radiographs and sealant application have all been an integral part of dental counselling and treatment which has led to a decline in caries trends in these countries [1,5]. Unfortunately, in Pakistan, although the curriculum provides comprehensive knowledge about caries management, the primary focus of dentistry is on the conservative management of existing diseases through invasive practices [6]. It is therefore imperative that current dental students, as future professionals in oral healthcare, are properly educated and trained in the niche of preventive dentistry, as prioritized by the World Health Organization (WHO) [7].

Dental caries and periodontal illnesses are the two greatest and most regular dangers to oral wellbeing. These dental issues are bacterial in inception, exacerbated by dietary sugars, deficient plaque expulsion, not exactly ideal fluoride accessibility and lacking oral cleanliness technique [8].

Preventive dentistry is a particular part of dentistry which manages the anticipation and block attempt of the advancement of all dental and oral ailments. It incorporates two parts of dental care, which are performed to assist patients with staying away from dental sickness or target them at initial more treatable stage [9].

Dental specialists assume significant part in the oral wellbeing training of the network. In this manner it is imperative to know the status of information, demeanor, and conduct toward the support of oral wellbeing at the understudy level. The point of the current investigation was to assess and evaluate the oral wellbeing information, disposition and conduct among preclinical dental students [10].

Aim of the Study

Therefore, this study aims to assess the knowledge, attitude, and self-perceived competency concerning preventive dentistry among undergraduate students from nine dental colleges in Karachi.

Methodology

This cross-sectional questionnaire-based study was conducted in October 2020 in Karachi, Pakistan using random sampling method. The sample consisted of undergraduate dental students belonging to various colleges and universities of Karachi, Pakistan. A well-formed questionnaire was constructed using Google forms that was self-administered. The questionnaire consisted of four parts, 1) Demographic data, 2) Knowledge about preventive dentistry, 3) Attitude regarding preventive dentistry and 4) Practices followed regarding preventive dentistry. The formulated questionnaire was circulated using various social media outlets such as Facebook, WhatsApp, Twitter and Emails, to dental undergraduate student of various institutes in Karachi and the response was recorded. OpenEpi software was used to calculate sample size for the study from previous studies on the similar topic. Keeping the confidence interval at 95% and desired percentile of 50, the sample size was calculated to be 255. (n = [$Z12-\alpha/2$. p. q]/d2). Reference. A consent statement was included at the beginning for the questionnaire to make sure participants understood the nature and objective of this study and give voluntary consent for participation.

Firstly, in this study, knowledge levels of the participants were evaluation through various questions such as not cleaning teeth every-day leads to what, reason for brushing the teeth, which type of toothbrush is better, factors that may lead to bad breath, how can high sugar

consumption be detrimental, can fluoridated toothpaste prevent tooth decay or not. Furthermore, questions included whether presence of cavity indicated tooth decay or not, and is bleeding gums a sign for some gum's abnormalities.

Secondly to assess attitude of the participants regarding preventive dentistry, questions that were asked included after how long should a toothbrush be changed, frequency of visit to the dentist, necessity of regular dental visits, whether dentists give importance to treatment more than prevention, modalities used at home to keep teeth clean, motivating friends and family to maintain proper oral hygiene, number of times visited to the dentists during lifetime. Moreover, questions consisted of does frequent soft drinks consumption leads to tooth decay or not, and determination of getting teeth cleaned.

Lastly to determine the practices being followed regarding preventive dentistry, questions were asked which consisted of methods used to clean your teeth, frequency of brushing teeth per day, how much toothpaste is used on the toothbrush, duration of brushing your teeth, how often dental floss is used per day or not used at all, technique used to brush teeth, rinsing mouth after having food, cleaning tongue every once in a while, and do you recommend friends and family to visit a dentist.

The participation in this study was based on dental undergraduate students belonging to various dental colleges and universities in Karachi, Pakistan only. Those who did not belong to Karachi and were not dental students were excluded from this study. The information that was gathered from the participants was kept anonymous and confidential throughout this study. The ethical approval was taken from Ethics Review Committee of Altamash Institute of Dental Medicine.

For data analysis, SPSS statistical analysis software version 25 was used. Firstly, descriptive statistics were performed and then for analyzing any significant relation between age, gender and year of study with knowledge, attitude and practices, spearman's correlation test was used. A p-value of ≤ 0.05 was considered to be as statistically significant.

Results

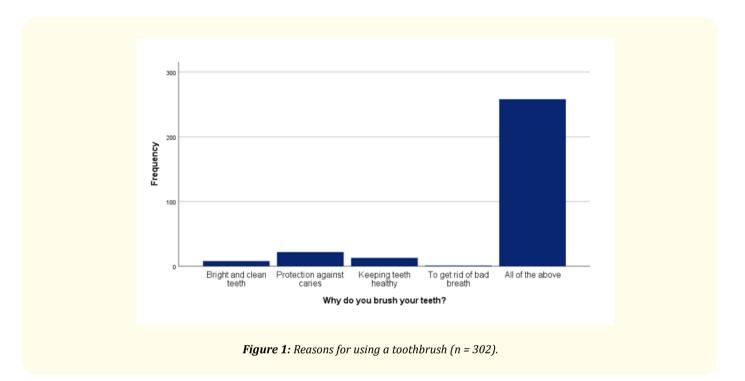
In this cross-sectional study, we received a total of 360 forms. After performing thorough scrutiny, 58 forms were excluded on the basis of being partially filled and being irrelevant. A total of 302 participant's data was included in this study. The response rate was found out to be 83.8%. Descriptive statistics, followed by spearman's correlation test was used to analyze presence of any significant relation of age, gender and year with knowledge, attitude and practices of the participants regarding preventive dentistry.

Of the 302 participant's, 177 (58.6%) were females and 125 were males (41.4%). The mean age of the participants was 21.1± 1.79. Of the data collected from various dental institutes of Karachi, predominantly most of the 178 (58.9%) participants belong to Altamash Institute of Dental Medicine, with participants next most commonly after it belonging to Karachi Medical and Dental College (12.3%) and Ziauddin University (5.0%). Regarding year of study, 93 (30.8%) belong to First Year BDS, 98 (32.5%) in Second Year BDS, 45 (14.9%) in Third Year BDS and 66 (21.9%) in Final Year BDS as shown in table 1.

	Variables	n	%
Gender	Male	125	41.4
	Female	177	58.6
Institute	Altamash Institute of Dental Medicine	178	58.9
	Liaquat College of Medicine and Dentistry	10	3.3
	Fatima Jinnah Dental College	10	3.3
	Jinnah Medical and Dental College	14	4.7
	JSMU	11	3.7
	DUHS	17	5.6
	Karachi Medical and Dental College	37	12.3
	Bahria University Medical and Dental College	9	3.0
	Ziauddin University	15	5.0
Year of Study	First Year	93	30.8
	Second Year	98	32.5
	Third Year	45	14.9
	Final Year	66	21.9

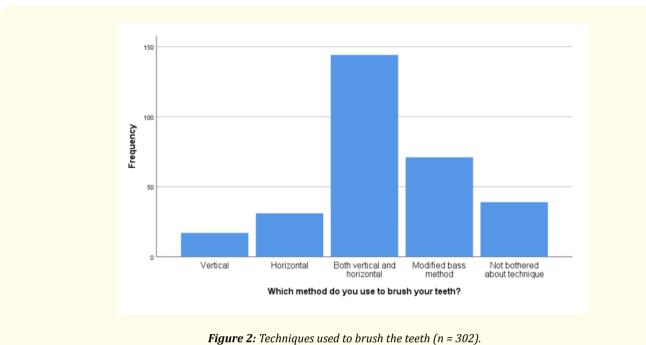
Table 1: Sociodemographic characteristics of the participants (n = 302).

Regarding Knowledge of the participants, majority of the 256 (84.8%) participants believed not cleaning your teeth everyday leads to tooth decay, bad breath and gums disease. About reason for brushing, most of the 258 (85.4%) respondents brushed their teeth to keep them bright and clean, protection against caries, health of the teeth, and to eliminate bad breath as shown in figure 1. For the hardness of the bristles of the toothbrush, 154 (51%) preferred soft whereas 126 (41.7%) went for medium. Determining the cause of bad breath, the majority i.e. 188 (62.3%) selected dental caries, gastrointestinal disease and gums diseases as possible etiological factors for bad breath. The majority i.e. 199 (65.9%) respondents believed that excessive sugar intake leads to development of dental caries. About using fluoridated tooth paste, predominantly 250 (82.8%) participants believed that brushing with fluoridated toothpaste prevents tooth decay. Moreover, 244 out of 302 (80.8%) participants supposed that presence of cavity in a tooth indicated decay. After brushing if bleeding gums are encountered, 201 (66.6%) participants believed that some abnormalities of the gums can be suspected, with a few 30 (9.9%) not agreeing to it.



About attitude of the participants in following preventive dentistry, majority of 194 (64.2%) of the participants changed their tooth-brush in 1 - 3 months' time period. About frequency of dental visits, predominantly 139 (46.0%) respondents only visited dental clinics when they have dental problems, with some 50 (16.6%) participants visiting the dentists once a year as a routine. Regarding the necessity of regular visit to the dentist, 172 (57.0%) participants agreed to it with 86 (28.5%) declining its importance. Majorly, 127 (42.1%) participants believed that dentists give more importance to treatment rather than prevention. For modalities to keep the oral cavity clean at home, 108 (35.8%) selected toothbrush and mouthwash, with 116 (38.4%) selected toothbrush, mouthwash and floss as methods to maintain oral hygiene. A total of 108 (35.8%) participants motivated their family members and friends "Sometimes" to maintain proper oral hygiene. The majority of 107 (35.4%) participants visited the dental clinics "3 times or more" in their lifetime up till now. About frequent consumption of soft drinks, most of the 235 (77.8%) participants believed that it led to tooth decay. For willingness to get teeth cleaned, predominantly 244 (80.8%) respondents selected "Yes" to get their teeth cleaned.

About practices being followed for preventive dentistry, the method most commonly used by the 170 (56.3%) of the participant to clean their teeth was toothbrush with toothpaste only. Furthermore, brushing twice a day was the most commonly followed practice by the 202 (66.9%) of the participants with few 69 (22.8%) brushing only once a day. In regards to use to toothpaste on the toothbrush, 115 (38.1%) placed toothpaste on the toothbrush half of the length of brushing plane, with some 91 (30.1%) placing the toothpaste on full length of the brushing plane of the toothbrush. For duration of toothbrushing, majority of 176 (58.3%) respondents brushing for at least 1 - 2 mins. About use of dental floss, 122 (40.4%) participants never used it, with 129 (42.7%) using it once a day. Regarding the technique for brushing the teeth, majority of 144 (47.7%) participants using both horizontal and vertical methods in combination to brush their teeth with a some 71 (23.5%) using the modified bass technique as shown in figure 2. After eating food, most of the 156 (51.7%) rinsed their mouth frequently with few 44 (14.6%) not rinsing at all. The majority of 174 (57.6%) participants cleaned their tongue. About recommendation to visit dental clinic to friends and family, 235 (77.8%) did recommend it.



For analysis for possible relation of knowledge, attitude and practices regarding preventive dentistry with age, gender and year of study, spearman's correlation test was used. A significant relation was found amongst age with practices (p-value = 0.00), gender with knowledge (p-value = 0.02) and practices (p-value = 0.01) and year of study with practices (p-value = 0.00) as shown in table 2.

Parameters	Correlations	Age	Gender	Year of Study	Knowledge	Attitude	Practice
Age	Correlation	1.000	-0.268	0.738	0.109	0.000	0.307
	Sig. (2-tailed)		0.000	0.000	0.058	0.993	0.000
Gender	Correlation	-0.268	1.000	-0.175	0.126	-0.020	-0.149
	Sig. (2-tailed)	0.000		0.002	0.029	0.726	0.010
Year of Study	Correlation	0.738	-0.175	1.000	0.052	0.066	0.273
	Sig. (2-tailed)	0.000	0.002		0.370	0.250	0.000
Knowledge	Correlation	0.109	0.126	0.052	1.000	-0.019	0.081
	Sig. (2-tailed)	0.058	0.029	0.370		0.740	0.158
Attitude	Correlation	0.000	-0.020	0.066	-0.019	1.000	0.269
	Sig. (2-tailed)	0.993	0.726	0.250	0.740		0.000
Practice	Correlation	0.307	-0.149	0.273	0.081	0.269	1.000
	Sig. (2-tailed)	0.000	0.010	0.000	0.158	0.000	

Table 2: Correlation of age, gender and year of study with knowledge, attitude and practices.

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Discussion

Preventive dentistry is very critical to reduce oral health disease burden on the patient and enhancing quality of life. Methods through which oral hygiene can be maintained includes tooth brushing with fluoridated toothpaste, brushing twice a day, usage of dental floss, reducing sugar intake and rinsing mouth with mouthwashes particularly those with chlorhexidine. These preventive measures are the main modalities through which oral diseases can be easily avoided. This aspect of dentistry is something that should be taught at the undergraduate level so that the new generation of dentists does encourage their patients and they themselves perform preventive dentistry to avoid leaning towards restorative dentistry.

In this present study, table 1 shows descriptive statistics for sociodemographic characteristics of the study participants. the frequency distribution table shows that study sample of 302(83.8%) consisted of variable like gender; females 177 (58.6%) Males 125 (41.4%), Mean age; 21.1 ± 1.79, Institutes; 178 (58.9) participants from Altamash institute of dental medicine, 37 (12.3%) Karachi medical and dental college and 15 (5.0%) Ziauddin university, Year of study; first year BDS 93 (30.8%), second year BDS 98 (32.5%), third year BDS 45 (14.9%), final year BDS 66 (21.9%) respectively.

There is sufficient proof to think about twice as a day as the prescribed frequency of tooth brushing so as to augment the impact of utilizing fluoridated toothpaste. in the present study, 256 (84.8%) dental students knew the purpose of brushing of teeth every day, which is in accordance with Saudi students (81%). On the contrary, dental students of Mongolia (97%), Spain (100%), Iranian (93%) and Indian (92.67%) [8-11] respectively, whereas, 85.4% brush to keep teeth bright and clean, to protect against caries, health of teeth and to eliminate bad breath.

In present study, half of the dental students preferred soft bristles tooth brush and 42.7% preferred medium bristles tooth brush. On the contrary, Kumar H., *et al.* [12] reported 92.33% students opted for hard or soft tooth brush. while determining the cause of the bad breath 62.3% respondent dental caries, gastrointestinal diseases and gums diseases as possible etiological factor.

Eighty two percent of dental students felt that using fluoridated tooth paste will prevent tooth decay, which is in accordance with study conducted by Kumar H., et al. (82%) [12], Cebeci., et al. (79%) [13] and Ahamed., et al. (81%) [14] respectively.

In our study, it was seen that 80.8% students believed that presences of cavity in a tooth indicates tooth decay, which is in consistent with results of Kumar H., et al. (79.3) [12]. On the other hand, Ansari., et al. [15] reported 93.8% indicating high level of awareness.

It was also noted that 65.9% of the dental participants believed that excessive intake of sugars will lead to development of dental caries, which is in accordance with the results of Sushant., *et al.* (64.9%) [16] and Bhardwaj T., *et al.* (60.95%) [17], whereas, Ansari., *et al.* [15] and Kumar, *et al.* [12] in his study found it to be 93.8% and 79.33%, thus showing high level of awareness as compared to our study participants.

In our study, 66.6% believed that after brushing if bleeding gums are encountered it is due to any abnormality of the gums while 9.9% did not agree to this statement.

In terms of visiting dentist, 46% of the dental students in our study visited dentist only when they had a dental problem, whereas, 16.6% reported the frequency of dental visit once a year as a routine whereas 64.2% reported to change their tooth brush after every 1-3 months. On the contrary, a study conducted by Halawany HS., *et al.* [18] and Usman., *et al.* [19] reported 72.6%, 69% against the query 'dental visit only when have dental problem' and 21.8% reported once a year visit to the dentist.

In our study response to the question 'necessity of regular dental visit', 57% agreed and 28.5% disagreed and declined its importance. This indicates lacunae in the existing knowledge of preventive dentistry among dental students. On the contrary, Halawany HS., *et al.* reports 61.8% [18] regular visits to dentist, 16.4% reported to visit when necessary. Meanwhile Kumar H., *et al.* [12] reported it 89.33%.

In this study, 38.4% dental students chose tooth brushing, mouth wash and flossing as a part of the oral hygiene aid at home, thereby suggesting that the curriculum had exerted a positive effect on student health behavior, whereas, 35.8% selected tooth brushing and mouth wash as oral hygiene method at home. On the contrary, a study reports 32.3%, 16% of Turkish [20] and Indian [24] dental students flossed regularly respectively.

The present study indicates that the dental students are not acting as a role model for their family members and friends to maintain proper oral hygiene as they found preventive dentistry difficult to practice (35.8%) and personally disreputable. similar findings were reported by Ghasemi., et al. [22] and Khami., et al. [21].

Only 35.4% of our study participants felt that need to visit dentist 3 times or more in their lifetime. On the other hand, 77.8% dental students in our study were more aware of the effect of soft drinks on teeth, which is in accordance with Kumar H., et al. [12] 74% as compared to studies by Ansari., et al [15].

The most common method use to clean teeth was reported to be 56.3% by toothbrush with toothpaste. However, toothbrushing twice a day was common; only 66.9% of the respondent were brushing as generally recommended. Also, the proportion of students who were brushing once a day was high 22.8%. These findings were in accordance with Halawany HS., et al. (63.9%) [18].

Pea size amount of tooth paste is recommended for cleaning teeth and most of the manufactures in their advertisements uses this amount. However, only 38.1%, 30.1% uses toothpaste half and full length of brushing plane. On the contrary, Ansari., *et al.* [15], reported 11% and 55% students engages half and full length of brushing plane. As the amount of toothpaste does not improve the mechanical cleaning or preventive effect, these dental students must follow professional recommendations in their own behavior.

A total of, 58.3% dental students brushes at least 1 - 2 min, which is in contrast with Halawany HS., et al. 50% [18]. Meanwhile, in our study, 47.7% employed horizontal and vertical method, 23.5% used modified bass technique for tooth brushing.

In this study, 40.4% dental students never used dental floss and 42.7% used dental floss once a day. Meanwhile, on the contrary, Halawany HS., et al. [18] and Madan C., et al. [23] reported 61.5% and 15.3% respectively.

All of the total, 51.7% rinsed frequently, 14.6% did not rinse at all after eating. Meanwhile, 57.6% of the respondent cleaned their tongue, which is in contrary, with Halawany HS., *et al.* (74%) [18]. However, 77.8% of the dental students recommended their friends and family to visit dental clinic.

The present study has shown that the score value of practice has increased as the year of the study has increased and it is suggested that students in the undergraduate level should be introduced early to oral health care education which is in accordance with Khinda PK., et al [24].

Conclusion

Preventive Dentistry is an important part of learning phase in undergraduate dental studies and its importance is very much emphasized in order to preventive dental problems and maintain optimal oral health. In general, the dental undergraduates are abiding by the basic modalities through which they can maintain their oral health.

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