

Assessment of the Oral Health Care Practices and Basic Knowledge of Dental and Periodontal Diseases Among Dental Undergraduate Students: A Cross Sectional Study

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ABSTRACT

Background: Oral health plays a vital role in overall health and quality of life. Hence, it is professional duty of undergraduate dental students to possess good knowledge of a pristine oral health, all the pros of maintenance of it, cons pertaining to poor maintenance of it and thus be able to invoke awareness and impact the masses of a developing country like Pakistan, in a positive way.

Aim: The aim of the study was to assess the behavior, attitude and knowledge of 2nd and 3rd year dental undergraduate students regarding practices and maintenance of good oral health.

Methods: A Questionnaire was designed to assess the routine practices of the students, their habits and methods used for maintenance of good oral hygiene along with testing their basic knowledge regarding its influence over the oral and systemic health of the patient.

Results: It was noted that the undergraduate students needed improvement in their practices of maintaining oral hygiene. Although in their clinical years, Third Year undergrads showed adequate knowledge but inferior oral hygiene maintenance practices as compared to their Second Year counterparts. Results obtained from the questionnaires distributed among the undergrads showed that 49.5% of 3DS, and 58.5% of 2DS used Modified Bass technique for brushing whereas usage of dental cleaning aids like wooden toothpicks, interdental brushes, dental floss and oral rinses was found to be 15.5%, 14.2%, 42.3% and 50.7% among 3DS whereas 20.5%, 25.4%, 50.8%, and 60.5% in 2 DS respectively. Variations in the basic knowledge of the undergrads regarding causative agents leading to tooth decay, diseases involving the periodontium and other diseases involving various systems of the human body, are shown in Table 3.

Conclusion: The cross-sectional study we carried out among our dental students provided us with a new insight into knowledge, practices, condition and maintenance of oral health among dental students, the results of which, may help to reshape dental undergrad education and thus establish a model for dentists to improve oral health care awareness, practices and services.

Keywords: Knowledge of good oral hygiene, Oral hygiene maintenance methods, Dental undergrad students, Pakistan.

INTRODUCTION

Oral health is a reflection of the general health and wellbeing, [1] so good oral hygiene is a key to maintaining good oral health and thus, overall wellbeing of an individual. People who are unable to maintain proper oral hygiene often develop oral health issues like halitosis, tooth decay, periodontal disease etc. Periodontal disease (PD) which further includes gingivitis and periodontitis is characterized by chronic inflammation. It could affect not only oral health but also systemic health. When inflammation becomes deregulated and persistent, PD may result in a systemic pro-inflammatory state which associated with an increased risk of developing cardiovascular disease, chronic respiratory disease, metabolic disease, and mental ill health. [2]

The numerous factors which contribute to poor oral health and the pro-inflammatory state include unhealthy diet, physical inactivity, tobacco and alcohol consumption, psychological stress, poor sanitation. In addition to socio-economic factors, insufficient oral health care knowledge, limited access to dental services, and poor oral health care behavior are also barriers for oral health. [3]. Therefore, it is of utmost importance that oral health literacy is increased amongst the health care students and masses alike because of the generally accepted fact that oral health literacy is one of the most important determinants of oral health [4] along with the presence of significant evidence which indicates that primary health care users with lower OHL levels have more severe periodontal diseases. [5] Conversely, people with higher oral health literacy tend to have better self-rated oral health and oral health-related quality of life [6, 7].

Since cognition and behavior of oral health professionals reflect their understanding of oral preventive measures and practices, which have a great impact on their delivery of oral health care and then affect the oral health of patients [8, 9], it is of utmost importance that our dental undergrads possess a good knowledge regarding appropriate oral hygiene practices and methods to be able to become caretakers, instructors and promoters of impeccable oral health care services in future. Since little was known regarding oral health care knowledge and practices among Pakistani dental undergraduates, the present study was conducted to assess the same, so as to determine the areas where the dental undergrads lacked and pave way for improvement of future dental health care services.

MATERIAL AND METHODS

Recruitment: This cross sectional study was conducted by distribution of a structured questionnaire among the graduating classes of second and third year dental undergraduate students of Avicenna Dental College Lahore. All the students fully understood the essence and objective of the survey. They were demonstrated how to fill in the questionnaire after which they filled it out under supervision. The questionnaires were collected as soon as the students completed their forms.

Questionnaire design: Participants were told to fill out their basic demographic details first, which included their name, age, gender, grade, field of specialization and academic year of education.

The questionnaire consisted of 12 questions, which were designed to evaluate basic knowledge of the second year and third year dental undergraduates regarding their knowledge of dental

and periodontal disease pathogenesis along with their oral hygiene practices. First section of the questionnaire contained 6 questions (options for the questions are shown in Table 2).

- 1 Which method of brushing do you usually use in daily routine?
- 2 Do you use any dental cleaning aids like wooden toothpick, interdental brush, dental floss etc.?
- 3 The number of times you brush your teeth each day (one time, two times, thrice a day or more)
- 4 The length of time you give to your daily brushing routine (Less than a minute, at least a minute, at least two minutes or more, at least four minutes or more)
- 5 The number of times you changed your toothbrush (two months or less, 3 months or more, 6 months or more, a year or more, other)
- 6 The number of times you visited the dental office? (every month, every three months, every six months or more?)

In the second half of the questionnaire, basic knowledge of the second and third year undergrads was tested regarding dental and periodontal disease pathogenesis

Six questions were given to the students, options for which are shown in Table 3,

- 1 Dental plaque plays a vital role in which of the following?
- 2 What do you think are the possible causative agents of tooth decay?
- 3 What do you think are the causes of inflammation and increased bleeding while brushing?
- 4 Which of the following systemic involvements might be associated with oral health issues?
- 5 Which of the following preventive measures are used to control oral health issues?
- 6 Which of the following do you think is important for maintenance of oral health?

In the end, we tried to investigate the condition of oral health of the students by inquiring if they suffered with any other oral health issues which were not asked or mentioned in the survey. Where it applied, the undergrads were allowed to choose multiple options for a given question.

Table 1: Demographic Data

Year	Batches	Sample Size	Breakdown
Second Year	D 18, D 19	95	48, 49
Third Year	D 18, D 19	90	46, 44
Total		185	

Data analysis: The collected data was analyzed by IBM SPSS Statistics v. 25

RESULTS

A total of 185 questionnaires was distributed among the third year and second year students and 185 were collected back after the subjects were done with filling out their responses. Demographic data of the students was shown in Table 1. There was no significant change in their age and ethnicity hence data in regards to that has not been displayed.

Intraoral Hygiene Practices: Practices adopted by the subjects in the maintenance of oral hygiene are shown in Table 2. To our surprise, significant differences were observed among the third year and second year students with second year students, despite being juniors showed way better oral hygiene practices than their senior third year counterparts. More Second-year dental students brushed their teeth twice a day for two or more than two minutes every day, changed their brush twice at least within 6 months and paid regular visits to the dental office for routine check-ups. 58.5% of the Second Year students brushed their teeth using Modified Bass Technique in contrast to 49.5% of their Third Year counterparts. Only 8% of the Second Year students utilized a wrong method of brushing, horizontal scrub technique that is, whereas more of their Third Year counterparts (13.2%) utilized the same method for brushing.

In addition to that 50.8 % of the Second Year students used dental floss for interdental cleaning as compared to only 42.3% of

their Third Year counterparts. 60.5% of the Second Year used oral rinses as compared to 50.7% of their Third Year fellows. Astonishingly, as compared to 69.0% of the Second Year, only 40.4% of the Third Year Undergrads paid regular visits to the dental office for routine check-ups with majority of them delaying the visit until they faced some sort of oral health issue.

Table-2: Oral Hygiene Practices among Second Year and Third Year Dental Students

Questions	Second Year Students	Third Year Students
Technique commonly used for toothbrushing		
• Fones	• 12.0%	• 2.0 %
• Horizontal Scrub	• 8.0 %	• 13.2 %
• Bass	• 6.0%	• 4.5 %
• Modified Bass	• 58.5%	• 49.5%
• Stillmans'	• 3.3%	• 2.5%
• Modified Stillmans'	• 2.2%	• 16.6%
• Leonard's Technique	• 0%	• 0%
• Other	• 1.0 %	• 10.0%
Usage of Dental Cleaning Aids		
• Wooden Tooth pick	• 20.5%	• 15.5%
• Interdental brush	• 25.4%	• 14. 2%
• Xylitol gum	• 2.5%	• 1.2%
• Dental floss	• 50.8%	• 42.3%
• Oral rinses	• 60.5%	• 50.7%
• Water irrigator	• 1.5%	• 1.0%
• None	• 15%	• 31.6%
Number of times brushing is done each day (>1)	• 85.6%	• 50.5%
Length of time given to brushing (>1 min)	• 75.4%	• 50.8%
Change of toothbrush (< 6 months)	• 78.5%	• 55.8%
Number of visits to the dental office periodically (< 6 months)	• 69.0%	• 40.4%

Basics of the Dental Undergrads regarding Dental and Periodontal Diseases:

In contrast, basic knowledge regarding dental and periodontal diseases of the Third Year dental students was found to be better than their Second Year counterparts. In reference to the data shown in Table 3, Third Year dental students possessed more information in regards to the role of dental plaque in initiating caries, gum diseases, affecting aesthetics, causing halitosis with results being 82.5%, 80.3%, 3.4%, 40.9% and 0% respectively. The Second year students on the other hand showed the percentages of 72.5%, 75.6%, 1.5%, 10.8%, 5.4% for the same.

More than half of the Third Year dental students thought that susceptibility of the host (60.2%), oral micro-floral imbalance (75.6%), poor oral hygiene (90.5%), inadequate supply of fluoride (72.5%), Gastroesophageal Reflux Disease-GERD (65.3%) and other oral (Xerostomia: 89.8%) and systemic issues played major role in initiating tooth decay whereas the Second Year students showed the percentages of 20.8%, 15.6%, 85.6%, 23.4%, 15.0%, 40.2% respectively. To add to that, more than 80% of the Third Year thought that the use of sealants, fluoride application treatment and other prophylactic measures like Ultrasonic scaling were important preventive measures to control oral health issues with 78.6, 84.5, 54.6 and 3.4% of the Second Year students who thought the same.

Similar trends were seen in understanding of the Third Year students regarding increased inflammation being a major sign of periodontal (85.8%) or systemic disease (76.6%) in a patient, whereas only 34.7% and 54.8% of Second Year shared the same opinion. However, not many students thought that any systemic disease (like cardiac, renal, hepatic, etc.) except Diabetes Mellitus (84.5% 3rd Year, 78.6% 2nd Year) had any relation to the oral health issues of a patient.

As far as the opinion regarding maintenance of good oral health and hygiene via self-maintenance at home and regular visits at the dental office were concerned, more than 95% of both the

years unanimously agreed that both of them were equally important.

DISCUSSION

Healthy mouth is a unique and priceless treasure, and it is regarded as a fundamental human right to maintain a good oral health [10]. 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 mouth [11]. In 2016, the Federal Dental International (FDI) Dental World Federation redefined the oral health comprehensively, recognizing that oral health was multifaceted and involved the ability to smell, touch, taste, chew, swallow, smile, speak, and convey a lot of emotions through facial expressions with confidence and without discomfort, pain, and disease of the craniofacial region [12].

In the field of dentistry, current dental students are most likely to become future pioneers of the profession, so they are expected to be equipped with excellent basic knowledge regarding oral health issues and adopt good oral hygiene practices to be able to become future role models, not only for their juniors but for the masses as well.

Since the status of oral tissues not only affects the student's health and quality of life as an individual but also reflects his or her seriousness, the overall outlook towards our profession and the society, so it is of utmost importance to assess not only every student's oral health condition, the routine which each individual adopts for the maintenance of it but also, his or her knowledge regarding various initiating factors of the oral diseases, which are not only of significance to their own selves but for their patients as well.

To gain more insight into the oral hygiene practices, we consider the most commonly used methods adapted by the students and patients alike. The most effective and widespread method of oral hygiene is toothbrushing. [13]. Oral self-care, including toothbrushing and interdental cleaning, is important for preserving oral health and preventing oral diseases, because it disrupts and removes microbial plaque, thus preventing its accumulation on the teeth and the gingiva [14]. Inappropriate toothbrushing techniques may be ineffective in plaque removal and even cause hard tissue abrasions or gingival recessions [15]. This is one of the reasons why, knowledge about oral hygiene, including the products, procedures and practices, is an important factor in preventing oral diseases, achieving good oral health and therefore, should be properly assessed among the dental undergraduates. [15,16,17]

At the time of the survey, both the second year and the third year undergraduates were headed towards the end of their respective academic sessions. Although formal clinical training truly takes place in the final year of BDS but third year undergrads in our study received far more research and chairside clinical experience over the patients having various oral health issues than their second year fellows. By collecting and comparing the self-made questionnaires, we aimed to reveal the actual oral hygiene practices of our untrained and partially trained undergraduate students so as to be able to get a clearer picture of which areas our students lacked and which areas of our dental education needed reform. In our study we found that dental undergrads in their second year of professional education adopted way better oral hygiene practices than their third year counterparts. When asked about the reason for the same, much of the third year's batch thought that they were so occupied in their hectic pursuit of completing their clinical quotas, constantly under the pressure of balancing their theoretical studies with their clinical ones that they barely had time to focus on proper maintenance of their own oral hygiene or health. The data obtained from the questionnaires proved that they did possess good knowledge, with their second year fellows close behind, regarding the causative agents of various dental and periodontal diseases but due to their hectic academic schedule, were unable to focus on maintenance of their own oral health.

While assessing their knowledge, questions related to the role of dental plaque in initiating dental caries, periodontal diseases, measures that could lead to the prevention of oral diseases or indications of systemic diseases that might be related to the oral health issues, the values found suggested that the second year undergrads did not lag far behind than their third year counterparts in possessing basic knowledge about oral health or the factors which could adversely affect it. This might be explained by the fact that the second year dental students had gained information from alternate ways in dental college even when they hadn't received conventional training or any formal lectures like their third-year colleagues. The second years were found to be more than enthusiastic to search for more clinical and theoretical knowledge regarding their field on their own probably because majority of them will start observing at clinics in their upcoming clinical years or take up jobs as full time employed dentists in future.

Table 3: Basics of the Dental Undergrads regarding Dental and Periodontal Diseases

Question	Second Year Dental Students	Third Year Dental Students
Role of dental plaque in <ul style="list-style-type: none"> Initiating caries Initiating gum diseases Affecting aesthetics Causing Halitosis No role 	<ul style="list-style-type: none"> 72.5 75.6 1.5 10.8 5.4 	<ul style="list-style-type: none"> 82.5 80.3 3.4 40.9 0
Causative factors of tooth decay <ul style="list-style-type: none"> Susceptibility of host Imbalance of oral microflora Poor maintenance of oral hygiene Inadequate Fluoride Use of dentifrices lacking fluoride Gastroesophageal reflux disease (GERD) Xerostomia Eating Disorders Faulty dental restorations or appliances No Idea 	<ul style="list-style-type: none"> 20.8 15.6 85.6 60.4 20.2 15.0 40.2 34.5 65.8 2.4 	<ul style="list-style-type: none"> 60.2 75.6 90.5 72.5 30.8 65.3 89.8 54.6 75.5 1.2
Causes of inflammation and hence increased bleeding while brushing <ul style="list-style-type: none"> Vigorous tooth brushing Use of hard toothbrush Physiologic condition Disease affecting Periodontium Systemic condition or disorder Increased metabolic rate No Idea 	<ul style="list-style-type: none"> 2.3 3.4 2.1 34.7 54.8 23.4 5.6 	<ul style="list-style-type: none"> 2.1 1.4 5.5 85.8 76.6 40.9 1.1
Systemic involvements that might be associated with oral health issues <ul style="list-style-type: none"> Cardiac diseases Renal diseases Arthritis Blood Dyscrasias Diabetes Hepatic disease Other No idea 	<ul style="list-style-type: none"> 32.5 5.2 1.2 6.5 78.6 2.3 7.8 1.6 	<ul style="list-style-type: none"> 36.8 10.6 3.4 45.2 84.5 1.2 2.1 0.4
Preventive measures to control oral health issues <ul style="list-style-type: none"> Use of pit and fissure sealants Use of fluoride Oral prophylactic measures No idea 	<ul style="list-style-type: none"> 78.6 84.5 54.6 3.4 	<ul style="list-style-type: none"> 82.3 86.7 88.9 0.2
Which of the following is important for maintenance of oral health? <ul style="list-style-type: none"> Self-maintenance at home Maintenance via regular visits at the dental office 	<ul style="list-style-type: none"> 90.5 93.6 	<ul style="list-style-type: none"> 92.4 95.5

Though knowledge of third year dental students was found to be better than their second year counterparts, both of them did not show desirable results regarding the oral manifestations of various systemic diseases. To add to that neither of the batches showed impressive results regarding the causes of inflammation or trauma a patient might have due to the usage of hard brush or perhaps a wrong brushing technique.

In addition to that more than 70% of the second year students were aware of the fact that how critical a role, bacterium and plaque play in the initiation of caries, however more than half of them had no idea that gingival bleeding might be a presenting symptom of some systemic disease. Considering their crucial role in dental education, it is important to take measures to enhance the knowledge of our future dentists.

In assessment of the knowledge regarding oral health and its diseases, over 70% of both the years proved to possess a good perception of the issues of "plaque induced gingivitis" and "bleeding gums suggesting periodontal disease" Actually, 90% of bleeding gums are caused by periodontitis or gingivitis, and a few of them are caused by systemic diseases. In addition to that, periodontal disease is a risk factor for cardiovascular disease, diabetes, cancer, hypertension and so on, which posed a great threat to human health. Students of both the years were found to have a significant lack of knowledge regarding this problem. It appears diseases related to the periodontium and diseases related to various systems of the body are inter-related with one another intricately. Basic periodontal examination and prophylactic scaling, in addition to proper tooth brushing techniques and regular use of interdental cleaning aids and oral rinses are effective means to prevent diseases related to the periodontium. Hence, it is crucial to adopt good oral hygiene practices in day to day life. [18]

It was noteworthy in our study that only 3.8% of 2nd Year Dental Students and 26.9% of 3rd Year Dental Students claimed to be free of oral health issues. For example, 2.8% and 20.3% of D 18 and D 19, respectively, admitted that their gums tended to bleed when they brushed their teeth. Although Third Year Dental Undergrads possessed better knowledge as compared to their Second Year companions on many fronts, both of them still had room to strengthen their knowledge regarding oral health issues, adoption of good oral hygiene practices to finally be competent enough to provide satisfactory services to their future patients and improve their own quality of life as well. Much of the second year batch was found to be overly enthusiastic to gain more knowledge regarding oral hygiene practices, intraoral cleaning aids used to augment oral hygiene practices as well as the various factors which could affect the oral tissues negatively, however, due to their own tight academic schedule, they found themselves unable to participate in volunteer work or observational activities to enhance their knowledge. Oral Workshops or lectures related to the prevention and control of oral diseases should be arranged for the dental undergrads at the earliest to be able to provide them with adequate information and making them aware of the significance of good oral health at the very beginning of their professional lives. On the other hand, educators should take the responsibility to elevate students' knowledge and awareness of oral health including preventive measures, and to advance the translation of knowledge into stable behavior regardless of their personal characteristics [19- 21].

CONCLUSION

Our study revealed that although third year dental students performed better than the second year ones, both of them need to improve their knowledge regarding the oral health issues. More emphasis should be placed on regular tooth brushing, usage of interdental cleaning aids and oral rinses, awareness of the association of periodontal and systemic diseases, regular visits to a dental health care facility for routine check-ups and oral examination for adequate maintenance of oral health.

Conflict of Interest: None

REFERENCES

- Bhole SS, Vibhute NA, Belgaumi U, Kadashetti V, Bommanavar S, Kamate W. Effect of an educational intervention on manual toothbrush bristle wear: A lightmicroscopic study. *J Indian Soc Periodontol.* 2022 Nov-Dec;26(6):604-608.
- Barranca-Enriquez A, Romo-González T. Your health is in your mouth: A comprehensive view to promote general wellness. *Front Oral Health.* 2022 Sep 14; 3:971223.
- An R, Chen WF, Li S, Wu Z, Liu M, Sohaib M. Assessment of the oral health literacy and oral health behaviors among nurses in China: a cross-sectional study. *BMC Oral Health.* 2022 Dec 13;22(1):602.
- Das D, Menon I, Gupta R, Arora V, Ashraf A, Ahsan I. Oral health literacy: A practical strategy towards better oral health status among adult population of Ghaziabad district. *J Family Med Prim Care.* 2020 Feb 28;9(2):764-770.
- Bado FMR, Barbosa TS, Soares GH, Mialhe FL. Oral Health Literacy and Periodontal Disease in Primary Health Care Users. *Int Dent J.* 2022 Oct;72(5):654-658.
- Bado FMR, De Checchi MHR, Cortellazzi KL, Ju X, Jamieson L, Mialhe FL. Oral health literacy, self-rated oral health, and oral health-related quality of life in Brazilian adults. *Eur J Oral Sci.* 2020 Jun;128(3):218-225.
- Silva-Junior MF, Rosário de Sousa MDL, Batista MJ. Health literacy on oral health practice and condition in an adult and elderly population. *Health Promot Int.* 2021 Aug 30;36(4):933-942.
- Pacauskiene IM, Smaliene D, Siudikiene J, Savanevskyte J, Nedzelskiene I. Self-reported oral health behavior and attitudes of dental and technology students in Lithuania. *Stomatologija.* 2014;16(2):65-71.
- Ahamed S, Moyin S, Punathil S, Patil NA, Kale VT, Pawar G. Evaluation of the Oral Health Knowledge, Attitude and Behavior of the Preclinical and Clinical Dental Students. *J Int Oral Health.* 2015 Jun;7(6):65-70.
- Jin LJ, Lamster IB, Greenspan JS, Pitts NB, Scully C, Warnakulasuriya S. Global burden of oral diseases: emerging concepts, management and interplay with systemic health. *Oral Dis.* 2016 Oct;22(7):609-19.
- 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 Prev Community Dent.* 2017 Jan-Feb;7(1):58-63.
- Glick M, Williams DM, Kleinman DV, Vujicic M, Watt RG, Weyant RJ. A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. *J Public Health Dent.* 2017 Dec;77(1):3-5.
- Aranza D, Nota A, Galić T, Kozina S, Tecco S, Poklepović Perićić T, Milavić B. Development and Initial Validation of the Oral Health Activities Questionnaire. *Int J Environ Res Public Health.* 2022 May 3;19(9):5556.
- Choo A, Delac DM, Messer LB. Oral hygiene measures and promotion: review and considerations. *Aust Dent J.* 2001 Sep;46(3):166-73.
- Badovinac A, Božić D, Vučincinac I, Vešligaj J, Vražić D, Plančak D. Oral health attitudes and behavior of dental students at the University of Zagreb, Croatia. *J Dent Educ.* 2013 Sep;77(9):1171-8.
- Marchetti E, Mummolo S, Di Mattia J, Casalena F, Di Martino S, Mattei A, Marzo G. Efficacy of essential oil mouthwash with and without alcohol: a 3-day plaque accumulation model. *Trials.* 2011 Dec 15;12:262.
- Marchetti E, Tecco S, Caterini E, Casalena F, Quinzi V, Mattei A, Marzo G. Alcohol-free essential oils containing mouthrinse efficacy on three-day supragingival plaque regrowth: a randomized crossover clinical trial. *Trials.* 2017 Mar 31;18(1):154.
- Yao K, Yao Y, Shen X, Lu C, Guo Q. Assessment of the oral health behavior, knowledge and status among dental and medical undergraduate students: a cross-sectional study. *BMC Oral Health.* 2019 Jan 29;19(1):26.
- Freeman R. The psychology of dental patient care. 5. The determinants of dental health attitudes and behaviours. *Br Dent J.* 1999 Jul 10;187(1):15-8.
- Polychronopoulou A, Kawamura M, Athanasouli T. Oral self-care behavior among dental school students in Greece. *J Oral Sci.* 2002 Jun;44(2):73-8.
- Tseveenjav B, Vehkalahti M, Murtomaa H. Preventive practice of Mongolian dental students. *Eur J Dent Educ.* 2002 May;6(2):74-8.