

ORAL HYGIENE PRACTICES AMONG DENTAL STUDENTS OF PESHAWAR CITY A COMPARATIVE STUDY

Zia ur Rehman Khalil¹, Aamir Hameed¹, Aliya Khan², Mehreen Zia³, Kanwal Nazir Arbab¹

¹Department of Community & Preventive dentistry Peshawar Dental College Peshawar

²Department of Preventive & Community Dentistry, Khyber College of Dentistry, Peshawar

³Department of Dental Materials, Peshawar Dental College Peshawar

ABSTRACT

Objectives: The present study aimed to compare oral hygiene practices among the undergraduate dental students of the preclinical and clinical years in the dental colleges of district Peshawar.

Materials and Methods: A structured, pre-tested, self-administered 16-item questionnaire survey followed by a brief clinical examination was conducted among the undergraduate students in all the dental colleges of district Peshawar. The sample was drawn from both the preclinical first year and the final clinical years of the Peshawar Dental College, Rapha International University, Khyber college of dentistry, Peshawar University and Sardar Begum Dental College, Gandhara University. The questionnaire included demographic details and questions on the students' oral health attitudes and self-reported practices. Chi-square analysis was performed for group comparisons of data collected through the questionnaire.

Results: Amongst the preclinical group a total of 62.7% (42 out of 205) students were found to be in the bad practice range as compared to the clinical group. Only 37.3% of students scored in the bad practice range. Statistically there is a trend of significance (0.074).

Conclusion: Thus the apparent oral health status and oral hygiene practices of dental students had improved as they advance towards clinical years.

Key words: Oral Hygiene, Oral health, Chi-square test, Dental Caries, Self-reporting

INTRODUCTION

Good oral hygiene practices are pre-emptive methods to avoid dental diseases. Preventive approach to dental diseases is economical in terms of cost than restorative approach. Thus good oral hygiene practices are more cost-effective in managing dental diseases and maintaining better oral health¹, which is considered a fundamental part of individual's general health.²

The World Health Organization (WHO) defines oral health as "a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling,

speaking, and psychosocial wellbeing".³ Thus Oral health is an integral part of general health and essential for overall wellbeing. Aesthetically oral health is not only important for psychological and physiological wellbeing but viability for a successful social life. It shows that personality and social status is reflected by an oral and maxillofacial build-up, as face is the index of mind.^{4,5} Oral hygiene can be described as the state or practice of keeping the oral cavity in a healthy condition through an effective regimen of regular brushing, flossing, and rinsing twice or thrice a day followed by a periodic check-up by a dentist.⁶

Tooth brushing is considered to be the most reliable and most commonly recommended means of oral hygiene method.⁷ It is considered a primary mechanical means of removing a substantial amount of plaque and preventing halitosis. Secondarily it is used as a mean of delivering the chemotherapeutic agents of toothpaste.⁸ The majority of people in developed countries use a toothbrush in routine, but its adequacy in controlling plaque is still questioned as

Correspondence:

Dr. Aliya Khan

Assistant Professor, Department of Preventive & Community Dentistry, Khyber College of Dentistry, Peshawar
Cell: +923199218186

Email: dr.aliya.khan@hotmail.com

compliance with brushing methods is quite variable.⁹

The modern focus of oral health professionals is towards the useful preventive regimes, as the cost of restorative dental treatments can exceed the available resources for health care.¹⁰

Dental students are a valuable resource for developing community awareness of good oral hygiene practices; for effective community service, they need to become role models.¹¹ In the field of dentistry, universally the students are trained in two phases. In first two pre-clinical year students are made well aware of the gross basic principles in their field. In the later clinical year's necessary skills are incorporated through a well-programmed training. Furthermore future dentists, during their educational period, acquire knowledge about prevention, control, treatment of dental diseases and maintenance of oral health.

Future Dentists are expected to educate and promote the public regarding oral health in the most effective way. This, in turn, reflects their understanding of the importance of disease prevention and their commitment to improving their patient's oral health¹⁰.

An additional factor that contributes to a better oral status of dental students is their family origin. Some studies show that frequently dental or medical students have parents that are highly educated health professionals of good socio-economic status, and inhabitants of urban regions.¹² This study aims to assess whether dental education will influence the oral hygiene practices of the undergraduate students in the pre-clinical and clinical years of district Peshawar?

MATERIALS AND METHODS

The present study was undertaken to assess Oral hygiene practices of dental students through a cross-sectional comparative survey. This survey was conducted in all the dental colleges of Peshawar city. The 16 item questionnaire was adapted from J Nitika et al. study.¹⁴ The questionnaire included information related to the patient's name, age, and gender. It was further categorized to evaluate future dentist's practices and behavior patterns related to oral health. The total population of the present study included all the undergraduate students of district Peshawar. This population was further divided into two groups, the preclinical and clinical group, for comparison.

First-year and second-year were included in the preclinical group. Third and the Final year students were group as the clinical group. To statistically test and compare the oral hygiene practices of dental students in the clinical and pre-clinical groups a total of eight binominal questions (yes/no) were collectively accessed. An arathematic mean of the target variables was computed using SPSS version 22. For this study, consensus of all the students was done, present on the day of data collection that consented to participate in the study. All the students either absent on the day of data collection or missing due to other reasons were excluded from the study. In the present study, the questionnaire was distributed to 380 undergraduate dental students in total.

RESULT

In the present research, results from the twelve oral hygiene practice questions were compared to determine the influence of dental training on the student's motivation for self-oral hygiene practices in pre-clinical and clinical years.

All of the students included in the survey used a toothbrush along with toothpaste to clean their teeth. Thus there was no difference amongst the students in the clinical and pre-clinical groups as far as the preferred method for mouth cleaning.

A comparison of the two groups for the frequency of renewal of toothbrush showed a statistically significant result, with 60.0% respondents from the pre-clinical group changing the brush every three months as compared to 40.0% among the clinical group. On the other hand a majority of the clinical group 63.6% preferred to change their toothbrushes after six months compare to the 36.4% of pre-clinical group. (Table No. 5.6)

The result was statistically significant between both the groups ($p=0.002$) at a 95% confidence interval.

As to the frequency of brushing, out of the total sample, a majority of the dental students (194 out of 380) respond twice daily, followed by (153 out of 380) once daily brushing. While comparing the sample group-wise, 55.2% of the preclinical students brushed twice daily, and 48.4% brushed once daily. In the clinical group 44.8% brushed twice daily, and 51.6% of the clinical students brushed once daily.

Regarding the kind of toothbrush used, soft

brush was preferred by both the groups equally. It was evident that a majority of preclinical students were either using a hard brush (55.3%) or were unaware (83.3%) of the type of brush used by them (Table No. 5.7).

Students were unaware of interdental aids. In the clinical group out of 175 students only 17(19.8%) students did not know about interdental aids (Figure No. 5.8), which showed a high statistically significant difference (p= .000).

As to inquiry about knowledge related to oral hygiene aids, 69(80.2%) out of 205 preclinical stu-

Amongst the other oral hygiene aids practice by pre-clinical and the clinical groups; the use of dental

Table 5.6: Comparative Frequency of toothbrush renewal among the preclinical and clinical groups

How often do you change your tooth-brush?	Class		Total
	Preclinical group	Clinical Group	
When useless	57	38	95
	60.0%	40.0%	100.0%
Once in 3 month	108	72	180
	60.0%	40.0%	100.0%
Every 6 months	32	56	88
	36.4%	63.6%	100.0%
Once a year	8	9	17
	47.1%	52.9%	100.0%
Total	205	175	380
	53.9%	46.1%	100.0%

Table 5.7: Comparative Frequency of type of toothbrush commonly used by the preclinical and clinical groups

What type of brush do you use?	Class		Total
	Preclinical group	Clinical Group	
Hard	21	17	38
	55.3%	44.7%	100.0%
Soft	112	109	221
	50.7%	49.3%	100.0%
Medium	52	45	97
	53.6%	46.4%	100.0%
Never noticed	20	4	24
	83.3%	16.7%	100.0%
Total	205	175	380
	53.9%	46.1%	100.0%

Table 5.9: Comparative Frequency of type of Interdental aids used by the preclinical and clinical groups

Do you use any of these interdental aids	Class		Total
	Preclinical group	Clinical Group	
Floss	53	82	135
	39.3%	60.7%	100.0%
Inter dental brush	25	19	44
	56.8%	43.2%	100.0%
Wooden toothpick	127	74	201
	63.2%	36.8%	100.0%
Total	205	175	380
	53.9%	46.1%	100.0%

floss (39.3% preclinical group Vs. 60.7% clinical group) and toothpick (63.2% preclinical group Vs. 36.8% clinical group) was found statistically significant ($p=.000$) (Table No. 5.9).

Whereas rinsing of mouth after meals showed significant results ($p=.004$) with 59% of pre-clinical students do rinse mouth as compared to the 41% of clinical group (Figure No. 5.10). Around 62.2% of the preclinical students have notice bleeding in their gums in comparison to 37.8% of clinical students. That shows a significant difference among both-groups ($p=.001$). (Figure No. 5.11).

Amongst the preclinical group, a total of 62.7% (42 out of 205) students were found to be in the bad practice range as compared to the clinical group. In the clinical group only 37.3% of students scored in the bad practice range (Table No. 5.14 a). Statistically this difference was found noteworthy (0.074) at 95% confidence interval (Table No. 5.14 b).

There was no statistically significant difference found between the two groups as far as the use of

mouthwash (47.8% preclinical group vs. 44% of the clinical group), and tongue cleaning practices (53% pre-clinical vs. 47% clinical group) were compared. Amongst the preclinical group a total of 62.7% (42 out of 205) students were found to be in the bad practice range as compared to the clinical group. In the clinical group only 37.3% of students scored in the bad practice range (Table No. 5.12). Statistically

Do you rinse your mouth after eating?

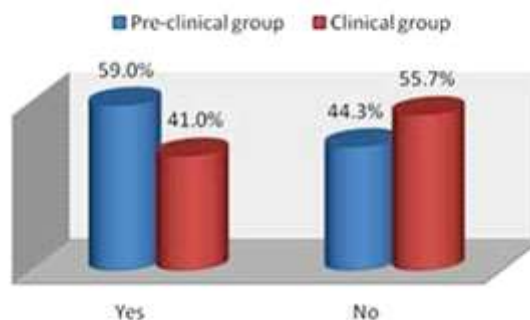


Fig 5.10: Comparative bar chart of Mouth rinsing after meal amongst the preclinical and clinical groups

Do you know what interdental aids are?

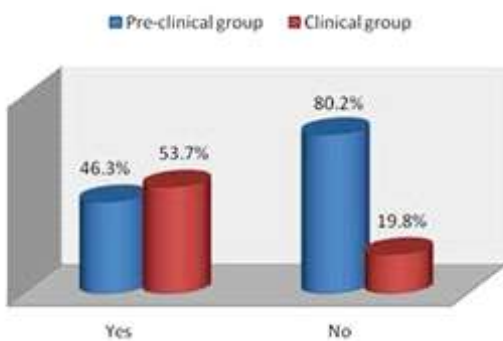


Fig 5.8: Comparative bar chart of Knowledge regarding inter-dental aids amongst the preclinical and clinical groups of students

Have you ever noticed bleeding in your gums?

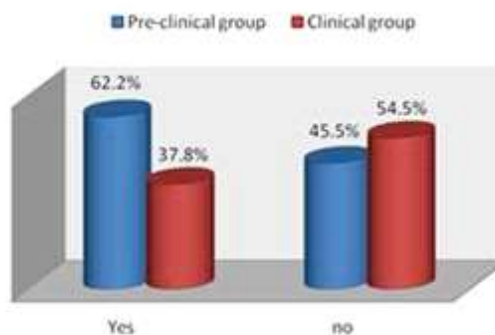


Fig 5.11: Comparative bar chart of self-reported Gum bleeding amongst the preclinical and clinical group

Table 5.12: Comparative oral health practices amongst the dental students in pre-clinical and clinical group

Oral Hygiene Practice	Class		Total
	Preclinical group	Clinical Group	
Good Practices (score 8-12)	163	150	313
	52.1%	47.9%	100.0%
Bad Practices (score 13-16)	42	25	67
	62.7%	37.3%	100.0%
Total	205	175	380
	53.9%	46.1%	100.0%

this difference was found noteworthy (0.074) at 95% confidence interval.

DISCUSSION

In the present study, as a whole, the oral hygiene practices of the dental undergraduate students, irrespective of the education level were good. This observation was in agreement with several of the previous studies that were conducted in 2010¹⁰, in United Arab Emirates 2010¹⁵, in Turkey 2011¹⁶, in Bangalore 2013¹⁷, in Kaunas 2003¹⁸ and King Saud University 2003.¹⁹ Unlike the present study, Dagli R.J et al. in 2007²⁰ found the oral health behaviors of Indian dental student's comparatively unsatisfactory. This might be because preventive dentistry was taught in third year according to university curriculum.²⁰

As to an inquiry of whether the students were cleaning their mouth and what was the preferred method of mouth cleaning? All the students were using toothbrushing for mouth cleaning, with an average 97% toothbrush renewal rate (Figure No. 5.2). But In wise group comparison, it was noteworthy that 60% of the pre-clinical students were renewing their toothbrushes after the recommended three months period whereas almost an equal proportion of clinical group (63.6%) was renewing toothbrush on an average after six months (Table No. 5.6a). This difference was statistically significant, giving an impression of better toothbrush renewal practice amongst the preclinical group.

The American Dental Association (ADA)²¹ studies were done in different parts of the world²²⁻²⁴, and literature all unanimously agrees that toothbrush along with toothpaste is the most recommended and effective way of plaque removal. Tooth brushing in itself mechanically deprive plaque, and toothpaste is used for delivering chemotherapeutic agents. Factors like the brushing technique, brushing frequency, brush type, and tooth brush replacement duration are known to affect the efficacy of tooth brushing.²³

According to the Asadoorian J²³, no ideal toothbrush replacement interval was evident, whereas literature supports a three to four-month period or sooner in case of wear of the bristles.^{22,24}

Studies done by Khan H²⁵, Özyemişçi-Cebeci in 2014²⁶, Mohammad 2009²⁷ and Nadeem et al. 2011²⁸ are in accordance with the present findings;

almost all the students (more than 96%) preferred manual toothbrushing alone for mouth cleaning. But no significant difference was observed as far as the brush renewal or brushing frequency was concern. In a study done in King Saud University, College of Dentistry, Riyadh; brushing was prevalent method of mouth cleaning too (81% of male and 99% of female students) but additionally, miswak (chewing sticks) along with tooth brushing was also practiced by a substantial amount of sample (53% male and 83% female students).¹⁹ The propensity towards traditional medicine was high, as education level did not consider such a further comparison to the present study was difficult.

As to an inquiry into the frequency of brushing, a good proportion (51%) of the whole sample was in the habit of brushing twice a day, which is the recommended frequency^{23,29} (Table No.5.1). As a whole, the present study result was less as compared to the 90.5% more than once brushing agreement rate of a study done by Mani PM in 2013¹⁷ and (94%) Kawas SA et al. respectively.³⁰

In the present study group-wise comparison, the pre-clinical students (55.2%) precede the clinical group by following the recommended brushing frequency (Table No. 5.7 a and b). Still this finding is way less than Nadeem et al. study results.²⁸ In their study the maximum number of students that were following the recommended twice brushing regime was observed in the third year (72.9%) rather than the final year. In Brusokaite J et al. study¹⁸, the majority of students (87%) followed the recommended twice brushing belong to the final year. Thus in the present study student sample was not sufficiently aware of brushing frequency.

According to studies done by Kanellis M²² and Canadian Dental Hygiene Association²³, the most recommended type of toothbrush that would not have any traumatic wedging onto the tooth surface when used with appropriate forces would be a soft filament brush.

When inquired about the type of toothbrush, mostly (58.2%) soft brush was preferred amongst the dental students (Table No.5.2). The Intergroup comparisons showed a significantly high proportion of the pre-clinical students, either using the hard brush or were not concerned about the type of brush. Thus the clinical students were more aware of the recom-

mended brush type to be used (Table No. 5.8a and b). This was found to agree with a previous study, which also found that the use of hard brush among clinical students was comparatively found less (9.4%) than the pre-clinical students (19.7%)¹⁰. Yildiz S, in 2014 also agrees that statistically preclinical students were using more of the hard bristle brushes than the clinical students.¹⁶ In UAE, a substantially comparative number of both dental²⁹ and medical³³ students were using hard brush.³⁰

In the present study's results, it was evident that most of the dental students were practicing the recommended combine and circular brushing technique^{24,31} with no statistical difference among the clinical and the pre-clinical group (Table No. 5.3). Thus the basic oral hygiene practices of both the group had no or little statistical difference if at all. This statement was agreed upon by various studies.^{20,19}

Since the oral cavity has the largest variety of both soft and hard tissues, in 2006 the Canadian Dental Hygiene Association, in a position paper recommended that daily tooth brushing should be augmented by some additional dental or oral hygiene means.³² Interdental aids like flossing have a limited effect in case of recession, attachment loss or embrasure spacing as well as needs motivation and dextral integrity. Thus an interdental brush or the Tepe brush is considered to be an effective alternative to the flossing.³³

In the present study, when inquired about the knowledge and practices related to the extraoral hygiene practices, a high proportion of the students (77.4%) were aware of interdental aids (Figure No. 5.3). In the case of a wise group comparison, most of the pre-clinical students (80%) did not know about interdental aids as compared to the clinical students (19.8%). Thus a highly significant difference ($p=0.00$) amongst the two groups was noted (Table No. 5.9).

It was noteworthy that as a whole, a low proportion of dental students use the most effective interdental aid, i.e. interdental brushes (11.6%) or dental floss (35.5%) (Table No. 5.4). While comparing the data group-wise it was evident that a high proportion of clinical students (60%) were following the suggested interdental aids (Table No. 5.10a and b).

Generally, in several studies a significant quantity of dental students showed awareness of interdental aids and gave positive feedback to the use of floss more than interdental brushing, especially in the clinical or advanced levels of dental training.^{28,15-19,27}

The tongue is a muscular organ, has a unique cover characterized by the presence of numerous lingual papillae. It is in direct contact with the external environment and considered to be the perfect habitat for microorganisms leading to problems like halitosis.³⁴ Therefore correct and adequate cleaning of the tongue with a specific instrument is recommended.³⁵ A majority of the present study sample (71%) were in the habit of cleaning their tongue (Figure No. 5.4). But statistically this practice was equally common amongst the two groups. Mouth rinsing was also seen ample amongst the whole sample (65.5%) with the practice more common in the pre-clinical students (59%) in comparison to the clinical group (41%) (Figure No. 5.12 and Table No. 5.12). Still a majority of the sample preferred not to use mouth wash (54%) irrespective of their education levels (Table No. 5.13). Whereas in 2002, the International Association for Dental Research (IADR) supported the benefit of oral rinsing with chemotherapeutics as an adjunct for controlling plaque and maintaining gingival health.³⁶

Amongst the extraoral hygiene aids, the clinical group seemed more aware of interdental aids and were willing to follow the suggested regimes in comparison to the pre-clinical groups whereas tongue cleaning and mouth wash use were equally practiced amongst the two groups. Only mouth rinsing without mouth wash was found more common in the pre-clinical group.

Most of the students included in this study, irrespective of educational level, were concern about gum bleeding (51% in Figure No. 5.7), halitosis (42% in Figure No. 5.8), and considered professional mouth cleaning essential for themselves (96.3% in Figure No. 5.9). Still mostly (68.7%) revealed that they would visit dentists only when faced with dental problems (Table No. 5.5). These findings of the present study were in agreement with and endorsed by other such studies.^{28,10,17, 37}

CONCLUSION

The self-assumed oral hygiene practices of the

dental students in Peshawar were statistically found to improve as the student's progress through the four years of dental course.

It was evident from the present study's results that an improvement in oral hygiene practices and was observed with the advancement in dental training.

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