

Oral Hygiene trends among Undergraduate Students of a Medical University: A Cross-sectional study

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^{1,2,3,4,5} Analysis/Interpretation/Discussion

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⁵ Critical Review

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Abstract

Introduction: Oral hygiene has an impact on a person's health as well as on social life. Toothpastes, Miswak, toothpicks, and dental floss are the different methods of cleaning the mouth.

Objectives: The objectives were to determine the practices of oral hygiene among undergraduate students of a medical university. Also, it aimed to determine the effect of eating habits on oral health, along with the effect of oral health on a person's daily life activities.

Materials and Methods: A cross-sectional study was conducted among 301 participants using the WHO Standardized Oral Hygiene Questionnaire for Adults. Participants filled out online forms after giving consent. Collected data was processed using descriptive analysis based on WHO guidelines, and the prevalence of practicing oral hygiene measures and their relevance to eating habits was assessed. The analysis was done using SPSS v27.

Results: Results showed that 177 of 301 students (58.8%) cleaned their teeth once daily and 107 (35.5%) twice or more per day. Toothpaste is a common method of cleaning teeth, as 297/301 students (98.7%) use it, with the use of fluoride toothpaste by 207 (69.7%) participants. Dental visits frequency was: 43 (14.3%) visited in 2-5 years, 58 (19.3%) visited in >5 years, 31 (10.3%) visited in 6-12 months, 44 (14.6) visited in <6 months, 30 (10%) visited in 1-2 years, and 95 (31.6%) never received dental care. Eating jam or honey was related to tooth pain (p-value = 0.029).

Conclusion: The study showed that students had overall good oral hygiene practices and dental status. But regular dental checkups must be made compulsory, and students should be encouraged to maintain their oral hygiene.

Keywords: Hygiene, Oral, Medical Students

Introduction

The oral cavity is not only involved in eating and speaking, but it is also an important part of a person's wellbeing, having importance in psychosocial life as well. Oral health is the state of the mouth and orofacial structures, such as teeth, gingiva, tongue, and buccal cavity, that help a person to perform essential tasks like eating, drinking, speaking, and breathing easily. It enables a person to work without pain, embarrassment, or discomfort.¹ Oral hygiene means keeping your oral cavity clean and free from disease. Good oral health helps prevent infections, tooth loss, and other oral diseases like gingivitis, plaque, dental caries, periodontal diseases, and halitosis so that a person can live a healthy life.²

In the past, oral hygiene was maintained by the use of wooden sticks and miswak, but advances include toothpastes, mouth rinses, gels, and chewing gums to improve oral hygiene.³ Use of fluoride toothpaste is crucial nowadays for daily oral hygiene. Detergents like sodium lauryl sulfate improve the cleaning action in the mouth but may irritate the mucous membrane. Use of dental floss, interdental brushes, and dental sticks can also help maintain oral hygiene if used properly.⁴ Mouth washes with chlorhexidine or sodium fluoride are also recommended for adults.⁵ Regular use of toothpaste is considered an important public health indicator and is the primary method to prevent common dental diseases.⁶ Most current guidelines suggest chlorhexidine for periodontal

disease and fluoride mouthwash for the management of caries.⁷ Use of tobacco and smoking causes serious concerns regarding oral health.⁸ It is believed that there is a strong correlation between oral health knowledge and practices.⁹ Thus, overall habits regarding oral hygiene can be changed by effective oral health promotion and education programs.¹⁰

The objective of our study is to know the oral hygiene practices among students of Rawalpindi Medical University, to analyze the effect of eating habits on oral health, and to relate its effect on daily life activities.

Materials and Methods

A cross-sectional descriptive study that aimed to evaluate oral hygiene trends among medical students was conducted at Rawalpindi Medical University, Pakistan, from October 2023 to March 2024. After receiving informed consent, data were collected from medical students using the WHO Standardized Oral Hygiene Questionnaire for Adults.¹¹

Ethical approval was obtained from the Ethical Review Board of Rawalpindi Medical University. Anonymity and confidentiality of data were maintained throughout the study to minimize the chances of negatively affecting the study participants' health (mental or physical).

The researchers remained committed to ethical research practices and ensured adherence to the highest standards. Informed consent was taken from the participants, ensuring they understood

the purpose and scope of the study. Participants' confidentiality and identities were upheld.

Students of MBBS at Rawalpindi Medical University (1st to Final Year) made up the study population. Participants who had removable dentures at the time of collection were excluded.

Using Raosoft sample size calculator from an estimated population of 1750, the sample size was 297 with a confidence level 95% and a margin of error 5% with a population proportion of 63.4% through non-random convenience sampling.¹⁰ (301 responses were used for analysis to increase the impact of the study and the generalizability of the study).

WHO Oral Health Questionnaire for Adults was used as a data collecting tool with some modifications according to the age of students (questions regarding removable dentures and educational level were excluded). Consent form and demographics were added at the start. Any response that is missing was discarded. Collected data was processed using descriptive analysis based on WHO guidelines, which provided an overview of percentages in each of the operational categories as well as their relationship with categorical variables such as gender, year of study (independent variables), and level of knowledge and practicing dental care (dependent variables). The relation between practicing dental care and the prevalence of dental problems was assessed, and differences in behavior by gender were analyzed. The relevance of eating habits on dental health was assessed. The analysis tool for this purpose

was SPSS v27, and the techniques employed were descriptive statistics (frequency, percentage).

Results

Data was collected from a total of 301 participants, with 244 of them being females (81.1%) and 57 of them being males (18.9%). The study investigated the trends followed by medical students in taking care of their oral hygiene.

Findings showed that 177 out of 301 (58.8%) participants clean their teeth once daily, followed by 107 (35.5%) cleaning them twice or more per day, 16 (5.3%) clean them 2-6 times a week, and only 1 participant (0.3%) cleans them once a month. The study revealed that among all the provided combinations of methods of cleaning teeth, 193 subjects (64.1%) selected toothbrush making it the most prevalent method of cleaning teeth. There is strong evidence that toothpaste is common for cleaning teeth, as 297 out of 301 students (98.7%) use it. Furthermore, 207 (69.7%) of them are using specifically fluoride toothpaste, but 79 out of the total participants (26.2%) don't know about fluoride toothpaste.

The frequency of visits to dentist and various possible reasons of these visits were also investigated showing 43 (14.3%) visited in tenure of 2-5 years, 58 (19.3%) visited in more than 5 years, 31 (10.3%) visited in 6-12 months, 44 (14.6) visited in less than 6 months, 30 (10%) visited in 1-2 years tenure, and majority of 95

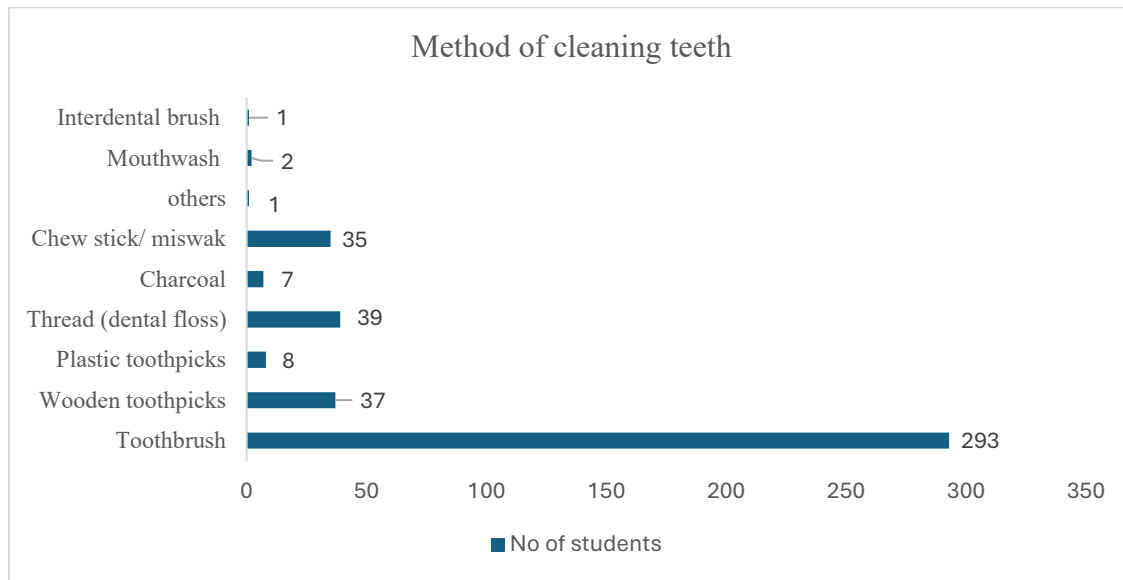
(31.6%) never received a dental care. Among those who visited the dentist, 32 (15.5%) went for consultation, 68 (33%) went for pain or trouble with mouth or teeth, 26 (12.6%) went for routine checkup, and 59 (28.6%) went for follow-up treatment.

The study also analyzed oral hygiene based on different troubles that participants may face as a consequence of poor oral hygiene. In the past 12 months, 177 participants out of 301 (58.8%) didn't have any pain in their gums and teeth, while 112 (37.2%) felt pain. It was also found that 205 out of 301 (68.1%) didn't experience any difficulty in chewing or biting, followed by 63 out of 301 (20%) experiencing it sometimes. Among those who don't experience any difficulty, 73 (35.6%) have a good state of teeth, 142 (69.3%) use fluoride toothpaste, 191 (93.2%) have never smoked, 89 (43.4%) have fresh fruits several times a week. 248 out of 301 (82.4%) didn't experience any difficulty in speech. Upon looking into the trend of dry mouth, 189 (62.8%) didn't experience it, while 78 (25.9%) experienced it sometimes. Further, it showed that 181 (60.1%) didn't feel embarrassed

by their teeth appearance, 81 (26.9%) sometimes get embarrassed, 20 (6.6%) fairly often, and 17 (5.6%) very often, but there were no significant differences found in their oral routine. Out of 301, 206 (68.4%) don't avoid smiling, 54 (17.9%) sometimes do that, 18 (6%) fairly often do that, and 13 (4.3%) very often do it. Lastly, 235 (78.1%) don't have interrupted sleep, and 255 (84.7%) don't take off from work.

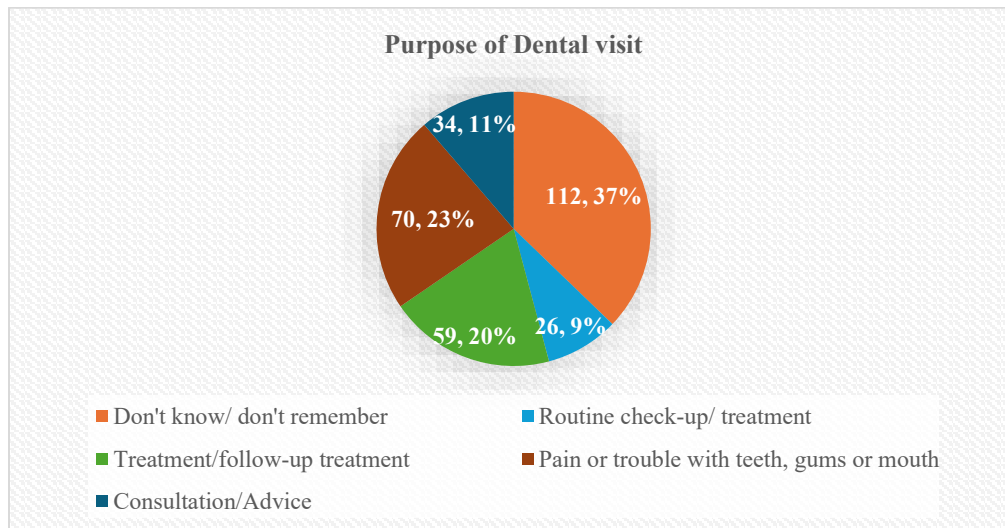
Some related practices were asked of participants that can have an impact on their oral hygiene. It was found that 127 (42.2%) participants eat fresh fruits several times a week, 16 (5.3%) eat them several times a day, 87 (28.9%) eat them every day, 33 (11%) eat them once a week, 29 (9.6%) eat several times a month whereas, 9 (3%) never eat them. Upon inquiring about drinking tea or coffee, 124 (41.2%) have them every day, 55 (18.3%) have them several times a day, 46 (15.3%) have them several times a week, whereas 32 (10.6%) seldom have them. The majority of participants don't use cigarettes, making them 275 out of 301 (91.4%) followed by 9 (3%) who have them several times a month.

Figure 1 *Methods of Cleaning Teeth by Medical Students*



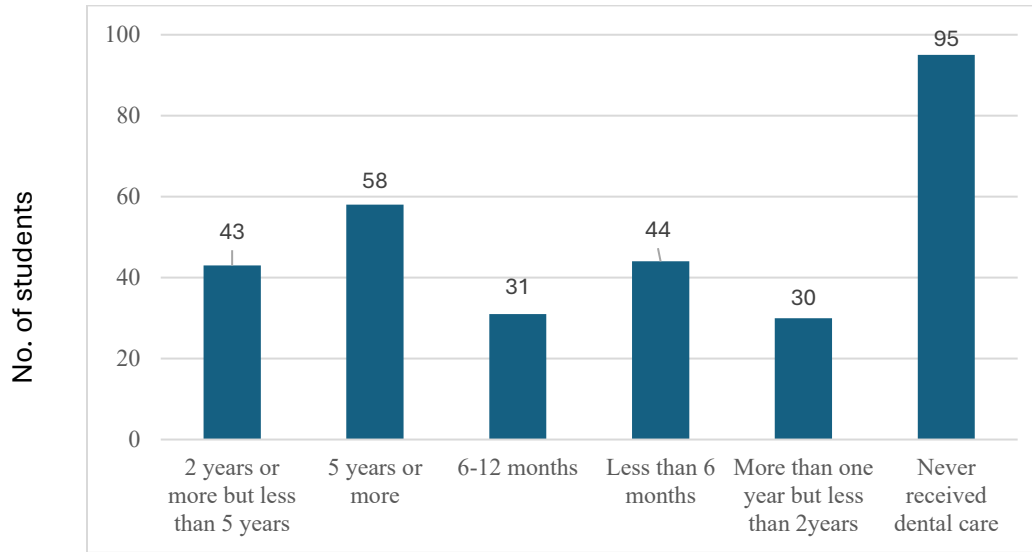
Note. This figure demonstrates that toothbrush is the most common method used for cleaning teeth followed by dental floss, wooden toothpick, and miswak. Not frequently but plastic toothpicks and charcoal are also in use.

Figure 2 *Purposes of Visiting Dentist*



Note. The statistics showed the majority didn't have to visit whereas amongst those who visited the dentist were mainly having pain and trouble with teeth, gums and mouth followed by visits for treatment.

Figure 3 *Time Elapsed since Last Visit to Dentist*



Note. Figure reveals that most students didn't ever visit the dentist followed by those who last visited 5 years back, next coming up those who visited in less than 6 months followed closely by those who visited in between last 2 to 5 years.

Table 1 *Relationship between eating jam and honey and pain in teeth for the last 12 months.*

		Pain in teeth for last 12 months		
		Don't know	No	Yes
Frequency of Brushing	Everyday	0 (0%)	14 (4.7%)	8 (2.7%)
	Once a week	1 (0.3%)	33 (11%)	18 (6%)
	Seldom/never	9 (3%)	69 (22.9%)	35 (11.6%)
	Several times a day	1 (0.3%)	4 (1.3%)	1 (0.3%)
	Several times a month	0 (0%)	36 (12%)	23 (7.6%)
	Several times a week	1 (0.3%)	21 (7%)	27 (9%)

Note. Brushing teeth daily or more than once every day reduced the incidence of experiencing pain in teeth for last 12 months compared to those who brushed seldom or several times a month.

Table 2 *Relationship between frequency of cleaning and experience difficulty in chewing and biting*

Frequency of Brushing	Experienced difficulty in chewing and biting				
	Don't know	Fairly often	No	Sometimes	Very often
2-6 times a week	0 (0%)	0 (0%)	12 (4.0%)	4 (1.3%)	0 (0%)
Once a day	5 (1.7%)	12 (4.0%)	118 (39.2%)	36 (12%)	6 (2.0%)
Once a month	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.3%)
Twice or more a day	2 (0.7%)	3 (1%)	75 (24.9%)	23 (7.6%)	4 (1.3%)

Note. The table shows that people who brushing teeth daily or more than once every day have decreased incidence of difficulty in chewing and biting.

Discussion

Medical students throughout the world have a very demanding lifestyle with long study hours, stressful environments, and irregular routines, which can negatively influence their oral hygiene. Medical students, in particular, must be well aware of the concept of oral hygiene and religiously practice it because they are the reflection of the knowledge, attitudes, and practices of future healthcare providers. Poor oral hygiene poses serious threats to the general well-being of an individual, increasing the risk of various systemic diseases.¹² This study focuses on the oral hygiene practices among the medical students at Rawalpindi Medical University.

The study showed that only 35.5% students brushed their teeth twice daily, whereas a majority of about 58.8% students cleaned their teeth only once. A similar study among dental

students across the nation suggests the same once daily brushing habit among dental students as well.¹³ This may be attributed to their hectic lifestyle. A vast majority (98.7%) used toothbrushes to clean their teeth because it is a more convenient practice. 69.7% students were familiar with fluoride toothpastes, whereas a significant number of students did not know if their toothpaste had fluoride in it.

According to the American Dental Association, it is recommended to visit a dentist at least once every 6-12 months.¹⁴ Only 10.3% had visited a dentist in the last 6-12 months, and 31.6% never went to a dentist. A similar trend was observed in another study.¹³ Regular dental screening must be done by the university to promote dental hygiene trends among the students.

A study shows that good oral hygiene promotes confidence, and people feel more positive.¹⁵ Our study revealed that 60.1% students were

confident about their teeth and never felt embarrassed, and 68.4% smiled without any hesitation. This shows that students feel positive about their dental status.

Practices like fresh fruit intake, tea or coffee use, and smoking also affect oral hygiene.¹⁶ 42.2% students had fresh fruit intake several times a week, and 91.4% were non-smokers, which may also be a factor contributing to good oral hygiene. Medical students generally have poor dietary habits,¹⁷ but our study suggests otherwise.

While this study is a valuable addition to the literature, there are certain limitations associated with it. As the study relies on self-reported data by the participants, there is a chance of response bias due to misreporting and a lack of clinical examination of participants. There is also a possibility that participants could not recall the information, and caused recall bias. The study was conducted in a single medical college, so it may not be generalized. It is suggested that future studies may be longitudinal.

Conclusion

The study showed that medical students at Rawalpindi Medical University had good oral hygiene and dental status. Although a gap in dental care practices is observed. Many don't even know the concept of fluoride toothpaste, and the majority haven't visited their dentist for more than a year.

Keeping in view the busy lifestyle of medical students, they are vulnerable to oral diseases. Therefore, regular dental checkups must be made compulsory, and frequent workshops and structured preventive oral health educational campaigns must be conducted.

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