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Assessment of oral health behavior, knowledge, and practice among medical and dental undergraduate students of Peshawar Medical and Dental College, Pakistan

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ABSTRACT

Background and Objective: Oral health is integral to overall well-being and the desired knowledge, positive behavior and optimal practices regarding oral health among medical and dental students are crucial in their roles as healthcare professionals. This study aimed to evaluate the behavior, knowledge, and practice of undergraduate medical and dental students regarding oral health.

Methods: This descriptive cross-sectional study was conducted among medical and dental undergraduate students of Peshawar Dental College, Khyber Pakhtunkhwa, Pakistan. Data collection involved distributing a three-part questionnaire to 385 participants on-site, ensuring convenience and consistency. Participants were required to provide voluntary consent, and statistical analysis using the latest software-generated descriptive statistics to summarize responses, including frequencies and percentages.

Results: A total of 49.6% of students believed in brushing after meals, 41.3% associated excess food consumption with dental caries, and 62.6% recognized bleeding gums as a sign of inflammation. In addition, 55.6% thought regular brushing prevents all dental problems. Notably, 91.9% acknowledged sugar's role in tooth decay, while 88.1% linked dental plaque with caries. Most participants (87.8%) believed fluorides strengthen teeth, and 89.6% recognized a link between overall body health and oral health. The majority (51.9%) brushed their teeth twice daily, with popular additional methods being mouthwash (31.4%) and Miswak (30.4%). In addition, 50.9% adhered to the recommended 2-minute brushing duration. Dietary habits varied, with 44.7% consuming sweets 2-4 times daily, and soft drink consumption being reported once a week (51.2%). A total of 8.1% of students admitted to smoking.

Conclusion: The study reveals both strengths and areas for improvement in oral health behaviors among medical and dental undergraduates. While many students adhere to recommended brushing practices, there is a need to enhance their knowledge and education on oral hygiene, brushing duration, and dietary habits. Tailored interventions are essential to promote healthier behaviors ensuring their preparedness to deliver comprehensive oral healthcare in the future.

Keywords: Oral health, behavior, knowledge, practices, medical students, dental students, undergraduates.

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Introduction

The importance of dental health cannot be emphasized in the context of healthcare education¹. In addition to being essential to general health, maintaining good dental health also helps to avoid a host of other systemic health problems^{2,3}. It is crucial to comprehend student behavior, knowledge, and practices related to oral health in the context of undergraduate medical and dental education. To evaluate future healthcare professionals' preparation and

preparedness to successfully handle oral health concerns, it is important to use this evaluation as a critical lens⁴.

An important source of information on the status of oral health education in these fields nowadays is the evaluation of students in medicine and dentistry about their behavior, knowledge, and practice in relation to oral health⁵. Many variables, including curriculum material, clinical experiences, and personal views, influence students' attitudes and actions

about oral health as they go through their medical and dental training^{6,7}.

Undergraduates studying medicine and dentistry make up a group of people who will soon be front-line medical professionals who will be tasked with encouraging patients' oral health and avoiding oral disorders⁸⁻¹⁰. As such, assessing their behavior, knowledge, and practice in relation to oral health is not only necessary but also acts as a gauge for the efficacy of oral health education in dentistry and medical or dental curricula¹¹.

In an effort to provide a thorough picture of the current situation, this study explores the complex relationship between students studying medicine and dentistry and their oral health practices, knowledge, and behavior. This research looks for areas of strength and those in need of development by evaluating variables such as oral hygiene habits, knowledge of oral health concerns, and use of preventative measures.

Methods

This descriptive cross-sectional study comprised 385 medical and dental undergraduate students of Peshawar Dental College, Peshawar, Pakistan. The study was conducted within the premises of the college to ensure convenient access to participants and to maintain consistency in data collection procedures after obtaining ethical approval from the Institutional Ethical Review Committee. Informed consent was obtained from all participants, emphasizing their voluntary participation while ensuring anonymity and confidentiality of their responses throughout the research process.

The inclusion criteria for participants were currently enrolled medical and dental undergraduate students of

both genders, of all professional years, and those who provided voluntary consent to participate. Exclusion criteria encompassed individuals who were not willing to participate or those who were not available at the time of data collection.

Participants were provided with a three-part, self-designed, customized, and expert-validated questionnaire that comprised questions to gather information on their oral health behavior, knowledge, and practice. The questionnaire included both closed-ended and open-ended questions to capture a comprehensive understanding of participants' attitudes and practices regarding oral health. Data collection was conducted through self-administered questionnaires distributed to participants during designated study sessions.

Statistical analysis

The collected data were analyzed using the Statistical Package for the Social Sciences version 25. Descriptive statistics such as frequencies and percentages were computed to summarize participants' responses to the questionnaire items.

Results

In the present study, the responses from 385 participants concerning various oral health-related questions are depicted in Figure 1. For the question "Is it necessary to brush your teeth after every meal?" 49.6% (191 participants) responded "Yes," while 50.4% (194 participants) responded "No." Regarding the query "Do you think consuming too much food causes caries?" 41.3% (159 participants) answered "Yes," whereas 58.7% (226 participants) responded "No." In the case of "Does bleeding gums mean inflamed gums?" 62.6% (241 participants) answered "Yes," and 37.4% (144 participants) answered "No." Similarly, for "Does regular tooth brushing prevent all tooth problems?" 55.6% (214 participants) answered "Yes," and 44.4% (171 participants) answered "No." For "Does sugar promote tooth decay?" 91.9% (354 participants) answered "Yes," and 8.1% (31 participants) answered "No." For "Does dental plaque lead to caries?" 88.1% (339 participants) answered "Yes," and 11.9% (46 participants) answered "No." For "Do you think using fluorides strengthens the teeth?" 87.8% (338 participants) answered "Yes," and 12.2% (47 participants) answered "No." For "Does general body health have a relationship to oral health and dental diseases?" 89.6% (345 participants) answered "Yes," and 10.4% (40 participants) answered "No."

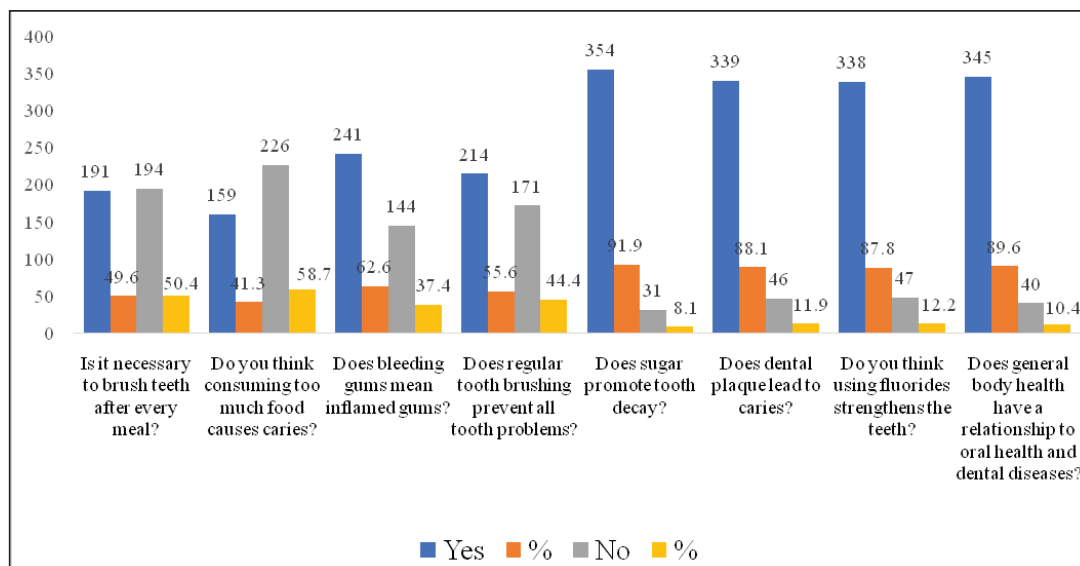


Figure 1. Responses on oral health-related questions from 385 participants.

tooth brushing prevent all tooth problems?” 55.6% (214 participants) agreed, and 44.4% (171 participants) disagreed. Notably, a significant majority, 91.9% (354 participants), acknowledged that sugar promotes tooth decay, while only 8.1% (31 participants) disagreed. Similarly, for the question “Does dental plaque lead to caries?” 88.1% (339 participants) agreed, and 11.9% (46 participants) disagreed. Regarding the use of fluorides, 87.8% (338 participants) believed it strengthens teeth, while 12.2% (47 participants) disagreed. Finally, concerning the relationship between general body health and oral health, 89.6% (345 participants) affirmed a connection, while 10.4% (40 participants) did not.

The survey on oral health habits revealed several noteworthy findings. First, an overwhelming majority, 96.4% (*n* = 371) of participants, underscored the importance of dental care. When it came to dental visits, responses varied significantly. Nearly half, 47.8% (*n* = 185), reported visiting the dentist only when experiencing pain, while a notable portion, 26.5% (*n* = 102), admitted to never visiting. Interestingly, a slight majority, 52.2% (*n* = 201), indicated that they continue with dental visits even after experiencing pain relief. Finally, in terms of toothbrush replacement habits, there was considerable diversity. Around one-fifth of participants, 17.7% (*n* = 68), replaced their toothbrushes monthly, whereas nearly half, 44.2% (*n* = 170), did so every 3 months. However, a concerning 8.6% (*n* = 33) reported never replacing their toothbrushes, suggesting potential gaps in oral hygiene practices among some respondents (Table 1).

Further interesting insights into their oral hygiene practices (Table 2) were revealed. Regarding the frequency of teeth cleaning, the majority of respondents (51.9%) reported brushing their teeth twice a day, followed by 34.3% who brushed once a day. Only a small percentage (8.6%) claimed

to brush their teeth thrice a day, while 5.2% admitted to not cleaning their teeth daily. When asked about additional oral hygiene practices besides tooth brushing, the most commonly used methods were mouthwash (31.4%) and Miswak (30.4%). In terms of brushing duration, a significant portion of participants (50.9%) reported spending 2 minutes. The frequency of consuming sweets per day varied with 44.7% admitting to eating sweets 2-4 times a day and only 11.4% reported consuming sweets more than 4 times a day. In addition, soft drink consumption was predominantly once a week (51.2%) or 2-3 times a week (33.5%). Finally, in terms of smoking habits, the majority of participants (91.9%) reported not smoking, while 8.1% admitted to smoking.

Discussion

The findings of the present study provide an important insight into the oral health behaviors, attitudes, and practices of students studying medicine and dentistry in Pakistan. According to our research, 51.9% of participants reported they brushed their teeth twice a day, which is in line with suggestions for the best possible oral hygiene. This percentage is rather greater than that reported by Nguyen et al.¹² who found that among a comparable group of college students, fewer participants brushed twice a day. On the other hand, our research also revealed that 34.3% of participants only brushed once a day, which is consistent with the results by Kobayashi et al.¹³ and suggests that there is a persisting difference in young people’s daily brushing behaviors.

In terms of other dental hygiene habits, our research showed that participants significantly used mouthwash (31.4%) and Miswak (30.4%). The results of other studies by Al-Dabbagh et al.¹⁴ and Al-Hammadi et al.¹⁵ which also showed

Table 1. Survey results on oral health behavior among 385 participants.

Questions	Response options	Participants number (<i>n</i>)	Percentage (%)
Q1. Is it important to look after teeth?	Yes	371	96.4
	No	14	3.6
Q2. How often you visit a dentist in a year?	Once	47	12.2
	Twice	52	13.5
	When I have pain	185	47.8
	Never	102	26.5
Q3. Do you do dental visits even after relieving your pain?	Yes	201	52.2
	No	184	47.8
Q4. How often do you replace your toothbrush?	After 1 month	68	17.7
	After 2 months	114	29.6
	After 3 months	170	44.2
	Never	33	8.6

Table 2. Assessment of oral health practice among medical and dental undergraduates.

Questions	Response options	Participants number (n)	Percentage (%)
1. How many times do you clean your teeth everyday?	Once a day	132	34.3
	Twice a day	200	51.9
	Thrice a day	33	8.6
	Not daily	20	5.2
2. Which oral hygiene besides tooth brushing do you use?	Miswak	117	30.4
	Finger	81	21.0
	Mouthwash	121	31.4
	Flossing	66	17.1
3. How much time do you spend for brushing?	Less than 1 minute	124	32.2
	2 minutes	196	50.9
	More than 2 minutes	65	16.9
4. Frequency of eating sweets per day?	Less than 1 time	169	43.9
	2-4 times	172	44.7
	More than 4 times	44	11.4
5. Frequency of taking soft drink?	1 time a week	197	51.2
	2-3 times a week	129	33.5
	More than 3 times	59	15.3
6. Do you smoke?	Yes	31	8.1
	No	354	91.9

that mouthwash and other alternative cleaning techniques were widely used by college students, are consistent with this finding. The results of research by Fleming et al.¹⁶, revealed greater rates of flossing among 8,356 adults (31.6%), in contrast with the comparatively lower prevalence of flossing (17.1%) in our study¹⁶.

When it came to the length of time spent brushing, 50.9% of participants in our survey took the suggested 2 minutes. This is in line with the findings of Akhimie et al.¹⁷ who similarly found that a significant percentage of participants were brushing for the recommended amount of time. However, compared to the results by Erbe et al.¹⁸, our study showed that 32.2% of students studying medicine and dentistry spent less than a minute brushing, suggesting a possible area for improvement in brushing behaviors.

In terms of eating patterns, 44.7% of participants in our survey reported that they consumed sweets two to four times a day, indicating a worryingly high prevalence of sugar consumption. This result is in line with a study conducted in 2019 by Farmaki et al.¹⁹ which similarly found that young individuals often consume sugary meals. Finally, compared to studies by Hoepfner et al.²⁰ and Eticha²¹, which found greater rates of smoking among college students, our study's results showed that 8.1% of participants reported smoking^{20,21}. This indicates a potentially encouraging trend toward a decrease in the prevalence of smoking among

students studying medicine and dentistry. This trend may be explained by growing knowledge of the negative effects of smoking on oral and general health. The insights revealed from the data of the present study can serve as a guiding tool for targeted strategies to optimize oral health education and practice among medical and dental students, ensuring they are well-equipped to deliver comprehensive health care in their future roles.

Conclusion

It may be concluded that most of the medical and dental students adhere to the recommended brushing practices; however, there exists a need to further enhance their education on oral hygiene, particularly in terms of duration of brushing and pattern of dietary habits. These findings underscore the importance of tailored interventions to promote healthier behaviors among future healthcare professionals.

Limitations of the study

One limitation of the study is the potential for self-report bias, as participants may have provided socially desirable responses rather than accurately reflecting their actual behaviors and knowledge regarding oral health. This could affect the validity of the findings and the generalizability of the results beyond the specific context of the study population at Peshawar Medical and Dental College.

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List of abbreviations

Not applicable.

Conflict of interest

None to declare.

Grant support and financial disclosure

None to disclose.

Ethics approval

The ethical approval for the study was taken from the Institutional Review Board of Peshawar Medical and Dental College vide Letter No. Prime/ERC/2024-26 dated August 8, 2023.

Authors' contributions

AMJ and MY: Drafting of manuscript, acquisition, and analysis of data.

FK and MY: Conception and design of study.

FK: Critical intellectual input and supervision of work.

OHJ: Drafting of manuscript and data interpretation.

ALL AUTHORS: Approval of the final version of the manuscript to be published.

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