

Oral Hygiene Practice And Perceived Oral Malodour Among Dental And Medical Undergraduate Students Of Bahria University Medical And Dental College

Beenish Fatima Alam, Hira Raza, Shizma Junejo, Marium Azfar, Tuba Saleem, Ahmer Shakeel, Perah Shaikh, Madiha Perveen

ABSTRACT:

Objective: To determine the differences of self-perception of halitosis and oral hygiene practices among the medical and dental undergraduate students.

Methodology: A cross-sectional study conducted over duration of 9 months amongst the medical and dental undergraduate students of Bahria University Medical and Dental College. The questionnaires were distributed to 298 students. Questionnaire employed for this study was adopted and modified from the study conducted by Khalid Almas et al. Descriptive statistics were checked by means of percentages and frequency for all variables. Chi-square test was applied to check significant difference among the responses given by the medical and dental undergraduate students.

Results: The response rate for the survey was about 85%. 55% of dental and 17 % of medical students were able to smell their breath. About having examination by dentist about 73% of medical students agreed as compared to 53% of dental students. Both medical and dental students preferred having examination done by the dentist. For management of halitosis, dentist was preferred by 62% of the dental students, while 97% of the medical students did not agree. 62% of the dental students preferred using traditional medications, while 82% of the medical students preferred using self-medications for treatment.

Conclusion: The results suggest that there is not a high level of agreement among dental and medical students concerning the detection and management of halitosis. Although large percent of the respondents claimed to be aware of dentistry, our findings revealed low level of knowledge and attitude to Dentistry by the medical undergraduate students. Efforts should be made towards closing this knowledge gap to attain effective oral health.

Key words: Halitosis, oral hygiene, awareness, dental students, medical students

INTRODUCTION:

Halitosis can be commonly referred as an unpleasant odor or smell that is coming from the mouth¹. It is one of the

common most problems affecting the general population at large. It has been found that about 50 % of people worldwide are affected by halitosis². Moreover in a study initiated in Japan has revealed that about 47 % of individuals suffer from this condition³.

There are numerous causes identified responsible for the existence of this condition. The most common intra-oral reasons being accumulation of food products within the mouth, reduced salivary flow rate; inadequate cleaning of denture or other appliances, occurrence of several decay, exhibition of calculus, periodontal conditions, ulcerations or soreness in mouth, dry socket & tongue coating^{4,5,6}.

Extra oral causes of halitosis typically includes usage of medications such as antidepressants, anti-hypertensive, narcotics, habit of betel nut and tobacco products or due to presentation of any underlying disease such as diabetes, upper respiratory tract infections, leukemia, alcohol consumption and disease related to gastro intestinal tract such as gastro-esophageal reflux disorder^{7,8}.

Several microbes have been recognized as causative factor that leads to halitosis which includes "Porphyromonas gingivalis, Porphyromonas endodontalis, Treponema denticola, Fusobacterium nucleatum, Prevotella intermedia, Bacteroides loescheii, Enterobacteriaceae, Tannerella forsythensis and Eikenella corrodens"^{9,10}. Additionally decomposition of food products by many of these gram negative bacteria on the surface of tongue or within the

Beenish Fatima Alam

Assistant Professor & Head Oral Biology Department
Bahria University Medical and Dental College
Email: nish_alam@yahoo.com

Hira Raza,

Lecturer Oral Biology Department
Bahria University Medical and Dental College

Shizma Junejo

Senior Lecturer, Department of Biochemistry
Bahria University Medical and Dental College

Marium Azfar

Associate Professor & Head
Community Dentistry
Jinnah Sindh Medical University

Tuba Saleem

Final Year BDS student

Ahmer Shakeel,

Final Year BDS student

Perah Shaikh,

Final Year BDS student

Madiha Perveen,

Final Year BDS student

Hansa Bai

Final Year BDS student

Received: 06-07-2018

Accepted: 18-09-2018

periodontal pockets may cause production of volatile sulphur bi-products such as Methyl mercaptan and Hydrogen sulphide that initiates production of potential “malodour” coming from the mouth^{7,10,11,12,13}.

Moreover halitosis can be categorized into three types, which are True halitosis, Pseudo halitosis and halitophobia. True halitosis is identified when malodor can be felt visibly. It is described as Pseudo halitosis where it remains un-observed visibly and lastly regarded as Halitophobia, where the patients are actually certain of having malodour although in actual it's does not exist^{13,14,15}.

Halitosis can have major impact on a person's daily routine life, as it can hinder and the effect the communication skills and self-reliance of an individual. Prompt and timely detection plays a key role. However due to lack of public awareness, many times it remains untreated or gets masked due to usage of different mouthwashes available in the market. Therefore the aim of this study is to learn and acquire about the oral hygiene practice amongst the students and identify the occurrence of halitosis and to assess the difference in awareness and management among the medical and dental undergraduate students of Bahria University Medical & Dental College in Karachi.

METHODOLOGY:

It was a cross-sectional study carried out over a time period of 9 months amongst the medical and dental undergraduate students of Bahria University Medical and Dental College. The questionnaires were distributed to 350 students after their lectures and lab sessions. 298 filled questionnaires were received which included 129 dental and 169 medical students while 52 were received unfilled.

The main idea of the research was explained to all students before asking them to fill the questionnaires. Verbal consent was taken from students before distributing the questionnaires. The students were assured that their anonymity will be retained. Formal Approval of the study was obtained from the Ethical Review Committee of Bahria University Medical and Dental College (ERC 34/17) before starting the study, which was carried out in accordance with the Declaration of Helsinki.

It required five to ten minutes to completely fill the questionnaires. Survey utilized for this study was adopted and modified from the study conducted by Khalid Almas et al.¹⁶ Healthy dental and medical undergraduate students were included in this study, while students who did not give consent for study along with those having widespread periodontal problems, numerous or extensive carious lesion, undertaking any medication or suffering from any medical conditions like diabetes were all excluded from the study.

The initial part of survey comprised of the demographic details of the student which included the age, gender, and year at medical or dental college were asked. The next part

of the survey was more focused upon the questions related to oral hygiene which included; smelling one's own breath, examination of bad breath by dentist or physician, mode of treatment received, treatment by whom, bad breath effecting personal life, time breath found to be worst, frequency of brushing teeth, usage of toothpaste, mouthwash and habit of smoking.

Sample size calculation was done using OpenEpiTM (v-3). All the responses were coded and statistical analyzed using SPSS (v-23). Descriptive statistics were checked by means of percentages and frequency for all variables. In order to check significant difference among the responses given by the medical and dental undergraduate students' Chi-square test was applied. P-value less than 0.05 was considered significant.

RESULTS:

The response rate for the survey was about 85% (n= 298) out of 350 completely filled forms were received. Table 1 shows the results in which 43% (n= 129) were dental students while about 57% (n= 169) were medical students.

In response to the question asked related to smelling one's own breath, significant difference was noted as 55% (n= 71) of dental students responded positively when compared with 17% (n= 28) of medical students. Though 55% (n=71) of dental and 83% of medical students stated not being able to smell their breath. (P value 0.000)

When inquired about having examination done by dentist considerably about 73% (n= 123) of medical students agreed as compared to 53% (n= 68) of dental students (P-Value 0.000). In response to checkup by general practitioner both medical and dental students strongly denied having examination done by medical practitioner. (P- Value 0.000)

For the management for bad breath by dentist, 62% (n=80) of the dental respondents agreed, while 97% of medical students did not agree. (P-value 0.000)

Approach of treatment option for halitosis revealed; 62% (n=80) of dental students preferred using traditional medications, while 82% (139) of the medical students preferred using self-medications for treatment (P-value 0.000). 62% (n=87) of dental students felt bad breath to affect their social life while 97% of the medical students felt it did not affect them.

Moreover table 2 showed that the frequency of teeth brushing was 78% (n=101) by dental students and 60% (n=101) by the medical students. Significantly 60% of medical and dental students preferred using mouthwash. While 85% (n= 109) of the dental students complained of bleeding gums but reported by only 44% (n= 74) of the medical students.

DISCUSSION:

Limited data is available in Pakistan in relation to Halitosis. It is often neglected and masked due to consumption of mouthwashes and other products available widely within

Queries:		Dental Students (n=129)	Medical Students (n=169)	P-value	
Patients ability to smell their breath	Yes	71, 55.0%	28, 16.6%	0.000	
	No	58, 45.0%	141, 83.4%		
Examination for bad breath by dentist	Yes	68, 52.7%	123, 72.8%		
	No	61, 47.3%	46, 27.2%		
Examination for bad breath by practitioner	Yes	63, 48.8%	17, 10.1%		
	No	66, 51.2%	152, 89.9%		
Treatment for halitosis by practitioner	Yes	26, 20.2%	20, 11.8%		0.049
	No	103, 79.8%	149, 88.2%		
Treatment for halitosis by dentist	Yes	80, 62.0%	5, 3.0%	0.000	
	No	49, 38.0%	164, 97.0%		
Treatment using self-medications	Yes	49, 38.0%	139, 82.2%		
	No	80, 62.0%	30, 17.8%		
Treatment using Traditional medications	Yes	69, 53.5%	51, 30.2%		
	No	60, 46.5%	118, 69.8%		
Breath affecting social life	Yes	87, 67.4%	7, 4.1%		
	No	42, 32.6%	162, 95.9%		

Table 1: Frequency of responses of healthcare professionals about the diagnosis and treatment of halitosis

Queries:		Dental Students (n=129)	Medical Students (n=169)	P-value
Tooth brushing	Yes	101, 78.3%	101, 59.8%	0.001
	No	28, 21.7%	68, 40.2%	
Usage of Mouthwash	Yes	78, 60.4%	100, 59.1%	0.000
	No	50, 38.7%	69, 40.8%	
Habit of Smoking	Yes	8, 6.2%	12, 7.1%	0.759
	No	121, 93.8%	157, 92.9%	
Presence of Bleeding gums	Yes	109, 84.5%	74, 43.8%	0.000
	No	20, 15.5%	95, 56.2%	

Table 2: Frequency of responses of healthcare professionals about dental awareness

the market. Despite the fact correct assessment and detection of malodour still remains crucial, as it is identified mostly through self-perception of the individual. However many primary care professional do not consider it as an effective means of diagnosing as it is not consistent and many underlying reasons could be responsible for occurrence of this condition.

Moreover a study commenced by Greenman et al. stated that halitosis is one of the utmost common problem described by patients to the dentists¹⁷. Another study initiated on dentist practicing in United States revealed that 41% of dentist had at least six patients presented complaining of bad breath¹⁸.

In the current study no significant association was noted

among genders, which is similar to study conducted in Thailand¹⁹ and turkey²⁰.

Self-perception plays a key role in identifying the presence of any underlying problem. In the current study majority of dental students which were around 55 % were able to smell their breath when equated to medical students, where majority were not able to smell their breath. This is similar to study conducted by Penmetsa et al²¹ and Sujatha et al²² who concluded that only 25% of the medical students had good oral health awareness, this can be due to lack of awareness and interest and also possibly due to busy study schedules.

Surprisingly many medical students wanted to visit a dentist for examination of oral cavity rather than general physician, this could be linked to the fact that social media has increased

awareness for maintaining good oral hygiene, this is in correspondence to a study conducted by Doshi et al, in which it was stated that about 80% of medical students had visited the dentist for dental checks²³.

For treatment of bad breath, many dental students sought a dentist to examine them and treat them accordingly, this finding is similar to survey conducted by Andreas et al, where it was concluded by the author that 90 % of dentist believed that halitosis is best dealt by a dentist only²⁴. However majority of the medical respondents did not reach agreement upon having treatment done by a dentist, which could be attributed to the fact that medical students have lower level of knowledge regarding dentistry and lacks awareness regarding different methods of maintaining good oral hygiene, furthermore it can also be due to their busy work schedules or fear of having dental treatment done²⁵. This is similar to study conducted by Elijah et al, who identified that medical undergraduates have poor responsiveness with respect to oral health problems²⁶.

Different treatment strategies are available for treating malodour ranging from basic advice to complex treatment options. In case of intra-oral cause correction of underlying problem is needed, followed by advice on use of mouthwashes, lozenges, toothpaste. Treatment modality for extra-oral cause depends upon identifying the root cause and to manage it accordingly. In the current study when inquired about management strategies for halitosis, majority of the dental students refused self-treating themselves but preferred use of traditional medications; on the other hand many of the medical students favored using self-medications to treat them by use of mouthwashes and chewing gums. This is in agreement to a study conducted by Elijah et al²⁶ where author stated that medical students generally work within hospitals and thus preferred use of self-medications as it's a quicker option.

Mouthwashes and chewing gums are quicker and economical approach to overcome malodour. Chewing gums have the ability to profoundly increase salivary flow rate and also elevates salivary pH, while mouthwashes also contains different active ingredients such as triclosan, chlorhexidine which are helpful in improving bad breath. Many of the respondents significantly preferred utilizing mouthwash was for cleaning mouth besides tooth brushing, as it is revealed by the results, this is consistent with the study conducted by Sharda²⁷ in which the author stated that about 64% of the respondents used mouthwash to further maintain oral hygiene. Majority of medical and dental candidates assured about brushing their teeth, once daily, which revealed that respondents are aware of importance of brushing their teeth once daily, this is consistent with the study conducted upon students of high school, where it was noted that many of students had habit of daily brushing their teeth²⁸. Additionally it cannot be assumed that all the students were following proper brushing technique as this is beyond the scope of our

study.

Halitosis no doubt can affect the self-confidence of an individual, and can hinder their ability to liberally socialize with others. The present study demonstrated that majority of dental students agreed that bad breath does have an impact on a person's social and personal lifestyle. While majority of medical students found that bad breath did not affect or influence their personal and social life, as it could be due to lack of oral hygiene awareness.

Researches conducted in past have revealed that malodour was noted to be worst on waking up in the morning^{29, 30}. However no statistical association was noted in our study regarding the time when the respondents found their breath to be the worst.

Smoking is a well-known cause responsible for malodour. In the current study no statistical association was noted. Bleeding gums was a collective problem recognized by many of the medical and dental students. Periodontal disease have has been strongly associated with poor oral hygiene³¹. Accumulation of food or bacterial by-products within the periodontal pockets or within faulty or ill-fitting dental appliance all can lead to formation of bad breath.

CONCLUSION:

Results of the study point towards the fact that incidence of self-perceived bad breath among Pakistani population is within the range. Yet, these conclusions need to be further explored by means of definitive analysis to determine the exact incidence. Many Medical students are not completely aware about the possible causes for manifestation of malodour and about the different treatment approaches available. Hence it is recommended to teach basics of dentistry to medical students, which will be beneficial in long term in identifying need for interdisciplinary approach for management of bad breath which will play a key role in preventing the needless treatment opted. Moreover the role of dental professionals is important and depends on upon emphasizing on different features useful to sustain good oral hygiene to the patients.

ACKNOWLEDGMENT:

We would like to thank Mr. Faisal Fahim, statistician at Bahria University Medical and Dental College for his support and help with the results of our study.

REFERENCES:

1. Goel S, Chaudhary G, Kalsi D. S., Bansal S, Mahajan D. Knowledge and Attitude of Indian Population toward "Self-perceived Halitosis". *Indian J Dent Sci* 2017; 9:79-83.
2. Bhat MYS, Alayyash AAG. Social stigma related to halitosis in Saudi and British population: A comparative study. *J Dent Res Rev* 2016; 3: 65-8.
3. Miyazaki H, Sakao S, Katoh Y, Takehara T. Correlation between volatile sulphur compounds and certain oral health measurements in the general population. *J Periodontol*. 1995; 66 (8):679-84.

4. Cortelli JR, Barbosa MD, Westphal MA. Halitosis: a review of associated factors and therapeutic approach. *Braz Oral Res*. 2008; 22(1): 44-54.
5. Ashwath B, Vijayalakshmi R, and Malini S. Self-perceived halitosis and oral hygiene habits among undergraduate dental students. *J Indian Soc Periodontol* 2014; 18(3): 357–360.
6. Umezudike KA, Oyetola OE, Ayanbadejo PO, Alade GO, Ameh PO. Prevalence of self-reported halitosis and associated factors among dental patients attending a tertiary hospital in Nigeria. *Sahel Med J* 2016; 19:150-4.
7. Porter SR and Scully C. Oral malodour (halitosis). *BMJ*. 2006; 333(7569): 632–635.
8. Shooriabi M, Hojjat SM, Satvati SAR and Sharifi R. Evaluating the Knowledge and Performance of Dentists about Halitosis in Ahvaz, Tehran and Gorgan during 2014-2015. *Int J Med Res Health Sci*. 2016, 5(9):167-173
9. Cortelli JR, Barbosa MDS, Westphal MA. Halitosis: a review of associated factors and therapeutic approach. *Braz Oral Res* 2008; 22(1):44-54
10. Broek AVD, Feenstra L, de Baat C. A review of the current literature on management of halitosis. *Oral Diseases* 2008; 14: 30–39
11. Setia S, Pannu P, Gambhir RS, Galhotra V, Ahluwalia P, and Sofat A. Correlation of oral hygiene practices, smoking and oral health conditions with self-perceived halitosis amongst undergraduate dental students. *J Nat Sci Biol Med*. 2014; 5(1): 67–72.
12. Mubayrik AB, Hamdan RA, Al Hadlaq EM , Al Bagieh H, Al Ahmed D, Jaddoh H, Demyati M, Shryei RA. Self-perception, knowledge, and awareness of halitosis among female university students. *Clinical, Cosmetic and Investigational Dentistry* 2017;9 45–52.
13. Yılmaz B, Yılmaz O, Aktan AM, Çiftçi ME. Evaluation of Halitosis Using Different Malodor Measurement Methods and Subjective Patients' Opinion Related Own Malodor. *International Journal of Dental Sciences and Research*, 2016; 4(4): 72-75
14. Yaegaki K, Coil JM. Examination, classification, and treatment of halitosis; clinical perspectives. *J Can Dent Assoc*. 2000; 66(5): 257-61.
15. Zürcher A, Filippi A. Findings, Diagnoses and Results of a Halitosis Clinic over a Seven Year Period. *Schweiz Monatsschr Zahnmed* Vol. 122 3/2012
16. Almas K, Al-Hawish A. Oral Hygiene Practices, Smoking Habits, and Self-Perceived Oral Malodor among Dental Students. *J Contemp Dent Pract* 2003; (4)4:077-090.
17. Greenman J, Duffield J, Spencer P, Rosenberg M, Corry D, Saad S, et al. Study on the 24. Organoleptic Intensity Scale for Measuring Oral Malodor. *J Dent Res* 2004; 83:81-5.
18. Chakraborty M, Dhamali D, Swamy DF, Chandradas D, Divakar R. Self-perceived halitosis and oral hygiene habits among patients attending medical college in India. *Int J Prev Clin Des Res* 2017;4(4):265-267
19. Youngnak-Piboonratanakit P, Vachirarojpisan T. “Prevalence of self-perceived oral malodor in a group of thai dental patients,” *Journal of Dentistry (Tehran)*, 2010; 7(4):196–204.
20. R. Nalcaci and I. Baran, “Factors associated with self-reported halitosis (SRH) and perceived taste disturbance (PTD) in elderly,” *Archives of Gerontology and Geriatrics*. 2008; 46(3): 307–316.
21. Penmetsa GS, Singh S, Gadde P, Teja RG, Bhaskar UR. Periodontal Health Awareness and Self-perceived Halitosis among Various Professional Students of West Godavari District of Andhra Pradesh. *J Indian Assoc Public Health Dent* 2017; 15:378-82.
22. Sujatha B, Yavagal PC, Gomez MSS. Assessment of oral health awareness among undergraduate medical Students in Davangere city: a cross-sectional survey. *Journal of Indian Association of Public Health Dentistry*. 2015; 12(1): 43-47. PubMed | Google Scholar
23. Doshi D, Baldava P. A comparative evaluation of self-reported oral hygiene practices among medical and engineering university students with access to health promotive dental care. *Journal of Contemporary Dental Practice*. 2007; 8(1): 068-75. PubMed | Google Scholar
24. Roth B, Oppliger N, Filippi A. Knowledge of different medical and dental professional groups in Switzerland about halitosis. *Swiss Dental Journal* SSO 2014;124: 1302–1307
25. Bashiru B, Anthony I. Oral self-care practices among university students in Port Harcourt, Rivers State. *Niger Med J*. 2014; 55(6): 486-489. PubMed | Google Scholar
26. Oyetola EO,&, Oyewole T, Adedigba M, Aregbesola ST, Umezudike K, Adewale A. Knowledge and awareness of medical doctors, medical students and nurses about dentistry in Nigeria. *Pan Afr Med J*. 2016; 23: 172.
27. Sharda A, Sharda S. Factors influencing choice of oral hygiene products among the population of Udaipur, India. *Int J Dent Clinics*. 2010;2(2):7-12
28. Almas K, Maroof F. Prevalence of smoking and oral hygiene habits among secondary school boys in Riyadh. *J Dent Res* 2001; 80: Special issue; 636 (Abstr # 0789).
29. Eldarrat, A, Alkhabuli, J, Malik, A. The prevalence of self-reported halitosis and oral hygiene practices among Libyan students and office workers. *Libyan J Med, AOP*: 080527
30. Almas K, Al-Hawish A, Al-Khamis W. Oral hygiene practices, smoking habit, and self perceived oral malodor among dental students. *J Contemp Dent Pract*. 2003; 15: 77-90.
31. Al-Ansari JM, Boodai H, Al-Sumait N, Al-Khabbaz AK, Al-Shammari KF, Salako N. Factors associated with self-reported halitosis in Kuwaiti patients. *J Dent*. 2006; 34: 444-449.

