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Knowledge, Attitude and Awareness about Halitosis among Dental Students

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Abstract

Background: Oral malodor is the most common and predominant symptom seen in individuals with oral diseases consequently affecting their communal interaction and lack of self-assurance.

Aim: This study was aimed to determine the knowledge, attitude and awareness about halitosis among dental students at UG and PG levels.

Methodology: A cross-sectional survey was conducted using self-administered questionnaires, through Google forms among 192 dental students from Tamil Nadu India. Statistics has been done and results are tabulated.

Results: It was observed that 88% of the study participants were aware of halitosis among which only 46% were knowledgeable about the predominant cause of halitosis and only 32% responded correctly for various etiological factors associated. The Overall chi-square statistic is 354. 667.The result is significant at $p < .05$.

Conclusion: The present study showed a lack of awareness with limited knowledge and attitude towards various causes, assessment and management of halitosis among the dental students especially at the UG level

Keywords: Awareness, Dental students, Oral Malodor, Periodontal disease, Self-perception

Introduction

Halitosis or oral malodor has been predominantly associated with poor oral hygiene due to excessive accumulation of dental plaque and calculus, periodontal diseases, xerostomia, several oral mucosal lesions, and tongue coating [1, 2]. Apart from the above-mentioned conditions/diseases, disorders of the respiratory tract, gastrointestinal tract, endocrinological disturbances and side effects of certain medications might also contribute to halitosis [3, 4, 5]. Oral malodor can be broadly classified into numerous classes as genuine halitosis which can be physiological or pathological; pseudohalitosis in which patients believe they have bad breath though they actually do not perceive and finally halitophobia in which people continue to fear that they have bad breath even after treatment phase [6]. The prevalence of halitosis was indicated by various studies as 50% in the USA, 23% in China, 35.3% in India and 57.2% in Nepal respectively [7].

Oral malodor is often considered the most common and predominant symptom seen in individuals with oral diseases consequently affecting their communal interaction and lack of self-assurance [8]. A bidirectional relationship has been associated with systemic diseases and the oral health of an individual [9]. Several factors such as nutritional status, tobacco smoking, alcohol, hygiene, and stress are linked to a wide range of oral diseases, among which oral hygiene is the most significant factor in terms of the prevention of oral diseases [10]. A significant amount of emphasis is now being given to the prevention of

oral diseases, and thereby knowledge of preventive oral health and proper oral hygiene practice forms an important aspect of maintaining good oral health. Oral health care professionals play a crucial role in managing this state and are believed to have sound knowledge, attitude and awareness towards halitosis and treating the same [11].

To the best of our knowledge, there are very few studies initiated with a key emphasis on self-perceived halitosis. Hence the present cross-sectional study was performed to determine the knowledge, attitude and awareness towards halitosis among the dental students at both undergraduate and postgraduate levels.

Methodology:

This survey was done to assess the knowledge, attitude and awareness of undergraduate and postgraduate dental students about oral halitosis. It was randomly done among the dental students residing in Chennai through Google forms. The links of the Google forms were circulated via social media to reach 192 dental students within a time of 4 weeks. The majority of undergraduate and post-graduate dental students participated in this study. This study was based on a self-applied questionnaire based on student's perception composed of 15 questions hence it helps to assess the actual scenario about the knowledge and behaviour of students. The actual purpose behind the study was well-explained to the participants. The questionnaire covered all the main aspects of oral and periodontal health with special emphasis on halitosis.

Results:

Non-probability, convenient sampling technique was employed that yielded information from 192 dental students who were taken into this observational study having a cross-sectional design. The study comprises 118 male and 74 female participants. A relevant questionnaire was prepared; responses were noted among the selected population group under the study and evaluated for statistical analysis by SPSS software Version 24.0. The level of statistical significance was set at a *P* value less than 0.05. On statistical evaluation, it was observed all 192 samples were valid for the study with Cronbach's alpha reliability score being **0.884** (Significant score).

On analysis of the given data the mean age of the study population was observed to be 22.04 years of age with the minimum being 18yrs and maximum being 26yrs of age showing S.D of 1.80700 with 0.2572 at 95% confidence interval. On evaluation, 192 participants were distributed category wise comprising of 183 undergraduates as 22 First years, 27 second years, 12 third years, 31 final years and 84 Interns followed by 16 postgraduates respectively. The questions were individually subjected to a chi-square test. **The Overall chi-square statistic is 354. 667. The p-value is .0001. The result is significant at p < .05.** On evaluating the distribution of responses about knowledge and awareness about Halitosis among the undergraduate and postgraduate dental students it was observed 88.02% (169 out of 192) of the study participants were aware of the term "halitosis" among which 49.7% were Interns followed by other categories. 46.8% (90 out of 192) of the study population were knowledgeable about the predominant cause of halitosis being both periodontal disease and tongue coating followed by tongue coating alone (20%) and other metabolic disorders (5%), among which 87.5% (14 out of 16) were postgraduates followed by interns (77.5%) and least being the first-year student (4.44%) respondents. The p-value was found to be statistically significant (p=0.0024)* at p<0.05.

On assessing the distribution of responses about knowledge on etiological factors causing halitosis it was observed 56.6% (68 out of 192) responded to food intake as a physiological cause followed by drugs, smoking and a combination of all (31.72%), among which most respondents were interns (47.53%) followed postgraduates (26.22%) and by other participants with the least being the third-year students (3.25%) The p-value was found to be statistically significant (p=0.0024)* at p<0.05. Whereas only 32.8% (63 out of 192) responded food impaction, acute gingivitis, Systemic disease all together might contribute to halitosis among which 46.02% were interns followed by postgraduates (43.75%) with the least respondents being the first-year students (7.93%)(5 out of 22) respectively.

On evaluating the distribution of responses about attitude and awareness on assessment and management of Halitosis among the undergraduate and postgraduate dental students it was observed that (Q10) 48.9% (94 out of 192) were aware of electric

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detection device halimeter to measure the level of volatile sulfur compounds (VSCs) among this 87.5% (14 out of 16) were postgraduates followed by interns (73.225%) and least being the first-year student (3.14%) respondents. No significant responses were obtained among the study groups when asked about the treatment or management techniques of halitosis (Q12) however 23.4% (45 out of 192), 33.84% (65 out of 192) and 31.25% (60 out of 192) responded to mechanical reduction, chemical reduction and masking the odour techniques respectively. The Chi^2 value is 23.292. The p-value is .00004. The result is significant at $p < .05$.

Discussion:

Halitosis often referred to as Bad breath, fetid halitus, mouth odour, oral bad breath, bad mouth odour is an altered unpleasant breath condition associated with several oral and systemic diseases. . Hence, Oral health care professionals particularly, the dentist play a crucial role in assessing and treating this common phenomenon [12, 13].

In the present study, it was observed that awareness regarding halitosis was adequate (88.02%) with a positive attitude (49.7%) while knowledge was unsatisfactory among the respondents (46.8%) similar to previous studies by Saru et al [14] who showed 55.2% (knowledge), attitude (50%) and practice (54.3%) respectively. Mubayrik A et al [15], Penmetsa et al [16] in a similar cross-sectional survey among university students showed a very low self-perception level of halitosis (21.4%) with only 50% (medical), 54% (pharmacy), and 60% (engineering) awareness among students, respectively in contrast to our study where 88.02% (dental students) and Ali et al (81%) [17] Showed a higher self-perception. In the present study, the difference in the levels of overall periodontal health awareness was statistically significant among the different study populations.

Rizkianto et al [18] in a cross-sectional study revealed knowledge of first and second-year pre-clinical students was 43% and 46% respectively in compared to final and third-year Clinical

Students who show that level of halitosis knowledge was 57% and 54% in contrast to the present study (46.8%). With the results of this study, it was found that the level of knowledge of pre-clinical students is slightly lower than the clinical students. This was by the hypothesis that clinical students should have more and better knowledge about halitosis.

In the present study, only 32.8% responded correctly to various etiological factors associated. Among these 87.5% (14 out of 16) were postgraduates followed by interns (77.5%) and least being the first-year student (4.44%) respondents in contrast to other studies by Rajasekaran et al [19], Saru et al [14], Bader et al [20] where more than 50% of respondents were aware of the causative agents. This inconsistency in results might be because most of the undergraduate students misunderstood extra-oral and intra-oral causes since the majority of the first year and second-year students did not receive enough education on halitosis or they had never received any training for the same. Moreover, this could be elucidated by the poor students' extent of attitude and knowledge, as they did not receive educational material on the current subject. An insight understanding of all the extra and intra-oral causes of halitosis is necessary so that a thorough diagnosis and a comprehensive treatment can be provided efficiently to the patients.

Rajasekaran et al [19] showed 20% of the respondents claimed that self-perception is the only way to detect halitosis, while 60% of them regarded the use of halimeter to be ideal which is slightly in an argument with the present study where 48.9% (94 out of 192) were aware of electric detection device halimeter as a tool for detection. Similarly, Bornstein et al [21] and Hammad et al [22] also reported a weak association between self-reported halitosis and organoleptic or Volatile sulphur compound measurements like halimeter indicating that self-perceived oral malodor is significantly associated with oral hygiene measures, tooth brushing, anxiety, lack of confidence in talking with others, social avoidance, and uncomfortable feelings around people.

On assessing the attitude towards the treatment options available currently, similar results were obtained with the previous studies by Mubayrik A et al [15], Hammad et al [22] and Eldarrat et al [23] where most respondents preferred managing halitosis problems by using mouthwash, chewing gum, and sources like essential oil thus reflecting the lack of awareness of etiology and treatment strategies among the study groups.

Conclusion:

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The present study showed a lack of awareness with limited knowledge and attitude towards various causes, assessment and management of halitosis among the dental students, especially at the undergraduate level. Most of the study participants indicated that they would prefer masking the oral malodor rather than treating the cause by understanding the etiological causes.

Dentists' role in enlightening and educating their patients and peers concerning oral malodor should be highlighted, and dental students especially at the undergraduate level need to be emphasized about this condition in their curriculum so that they can address this issue effectively and efficiently.

Figure 1:

Table showing the distribution of responses about knowledge and awareness about Halitosis among the undergraduate and postgraduate dental students

Q	Response	I (%)	II (%)	III (%)	IV (%)	INTERNS (%)	PG (%)	TOTAL	P-value
Q1	A	12 (7%)	22 (13.01%)	6 (3.5%)	29 (17.15%)	84 (49.7%)	16 (9.46%)	169	0.348
	B	4 (25%)	4 (25%)	6 (37.5%)	2 (12.5%)	0	0	16	
	C	3 (75%)	1 (25%)	0	0	0	0	4	
	D	3 (100%)	0	0	0	0	0	3	
	TOTAL	22	27	12	31	84	16	192	
Q4	A	10 (25.6%)	12 (30.7)	6 (15.3%)	7 (17.9%)	4(10.25%)	0	39	0.0024*
	B	8 (15.38%)	12 (23.07%)	1 (1.92%)	7(13.46%)	24(1.92%)	0	52	
	C	4 (4.44%)	3 (3.33%)	5 (5.55%)	17 (18.88%)	47 (52.2%)	14 (15.2%)	90	
	D	0	0	0	0	9 (81.8%)	2 (18.1%)	11	
	TOTAL	22	27	12	31	84	16	192	
Q5	A	8 (21.05%)	3 (7.89%)	3 (7.89%)	7 (18.42%)	17 (44.72%)	0	38	0.00116*
	B	6 (8.82%)	11 (16.17%)	5 (7.35%)	17 (25%)	29 (42.64%)	0	68	

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	C	5 (20%)	6 (24%)	2 (8%)	3 (12%)	9 (36%)	0	25	
	D	3 (4.91%)	7 (11.4%)	2 (3.25%)	4 (6.55)	29 (47.53%)	16 (26.22%)	61	
	TOTAL	22	27	12	31	84	16	192	
Q9	A	6 (14.25%)	3 (7.14%)	1 (2.38%)	7 (16.66%)	22 (52.38%)	3 (7.14%)	42	0.00396*
	B	7 (14%)	12 (24%)	7 (14%)	9 (18%)	11 (22%)	4 (8%)	50	
	C	4 (10.81%)	5 (13.51%)	3 (8.18%)	11 (29.72%)	12 (32.43%)	2 (5.4%)	37	
	D	5 (7.93%)	7 (11.11%)	1 (1.58%)	14 (22.22%)	29 (46.03%)	7 (11.11%)	63	
	TOTAL	22	27	12	31	84	16	192	

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