

## Assessment of Smoking Habits, Oral Hygiene Practices and Self Perceived Malodour among the College Students in Ahmedabad

Shishir Shah\*, Shilpi S. Shah\*\*

---

### Abstract

*Background and Aim:* Halitosis or oral malodor affects a large proportion of the population and is often associated with poor oral hygiene practices, smoking habits, oral and systemic diseases. present study was carried out to assess the effect of smoking habits, oral hygiene practices on halitosis and even to evaluate self perceived malodour among college community in Ahmedabad. *Materials and Methods:* A survey was carried out in a college community of Arts and Science students in Ahmedabad in order to assess smoking habits, oral hygiene practices and self perceived malodour. All the 1200 students were invited to participate in the study but only 650 volunteers participated and a self administered close ended questionnaire was distributed. Descriptive statistics were used to describe the data. *Results:* Out of 650 students, only 31 (4.8%) had a habit of smoking and 619 (95.2%) were aware of the ill effects of smoking. 464 (71.3%) brushed once daily, 456 (70.1%) rinsed their mouth after eating anything and self perceived malodour was expressed by 59(9%). *Conclusion:* The habit of smoking was seen in a very small percentage of study subjects and majority of them were aware of its ill effects. There is a need to educate them on brushing techniques and encourage them to visit a physician/dentist whenever they perceive a malodour.

**Keywords:** Smoking; Oral Hygiene; Oral Malodour; College Community.

---

### Introduction

Smoking has health implications for young people and is associated with other high-risk behaviors among young people including abuse of other drugs, fighting and high-risk sexual behavior [1]. Young adults smoke fewer cigarettes daily and are less likely to smoke every day than the general population of adults [2]. Various factors affect tooth loss including cigarette smoking; however, evidence regarding the association between smoking and tooth loss during young adulthood is limited.<sup>3</sup> Many studies tell that cigarette smoking leads to excess mortality risk [4-7].

---

**Author's Affiliation:** \*Associate Professor, Department of Dentistry, GMERS Medical College and Hospital, Sola, Ahmedabad, Gujarat. \*\*Reader, Dept of Periodontology and Implantology, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat.

**Reprints Requests:** Shilpi S. Shah, J3, Birju Appts, Opp. Azad Society, Polytechnic, Satellite Area, Ahmedabad 380015  
E-mail: [drpiyushpujara@gmail.com](mailto:drpiyushpujara@gmail.com),  
[smilecostsnothing@gmail.com](mailto:smilecostsnothing@gmail.com)

Received on 13.04.2017, Accepted on 18.04.2017

Many methods are available for maintaining optimal oral hygiene, among which tooth brushing is the most widely accepted method for the prevention and control of periodontal diseases. Most researchers recommend tooth brushing twice a day and agree that when performed with fluoride toothpaste, it could also reduce dental caries. However; a recent systematic review of the available evidence has shown that tooth brushing plays a limited role in caries prevention because brushing alone is not sufficient in cleaning the proximal surfaces of teeth. As such, using dental floss is therefore also recommended to further help in preventing both dental caries and periodontal disease [8]. Other oral hygiene tools include woodsticks, rubber tips and interdental brushes, these also aid in interdental cleansing [9]. Mouthwashes are adjuvants to brushing and flossing, it has been observed that they add advantages to mechanical control [10].

Oral malodour affects a large proportion of the population and is often associated with poor oral hygiene practices, smoking habits, oral and systemic diseases. Halitosis is a general term used to describe an unpleasant or offensive odor

emanating from the oral cavity. Although several non-oral sites have been related to oral malodour, including the upper and lower respiratory tracts, the gastrointestinal tract, and some diseases involving the kidneys or the liver, it is thought that around 90% of all bad breath odors emanate from the mouth itself. Oral halitosis is the specific term used to define halitosis with an origin within the oral cavity [11].

Oral halitosis is a very common problem in dental patients [12]. In fact; most adult subjects have socially unacceptable bad breath when waking up in the morning. This problem is transitory and attributed to physiologic causes such as reduced saliva flow during sleep. Although these transitory problems are easily controlled, persistent bad breath may be indicative either of oral diseases (i.e., periodontal diseases, oral ulceration, pericoronitis, gingivitis, acute ulcerative gingivitis, oral carcinoma, the presence of bacterial reservoirs in the mouth) or indicative of systemic diseases (i.e., hiatus hernia, hepatic cirrhosis, or diabetes mellitus). Along with these food impaction, dry socket, dentures and prosthesis are other etiologic factors behind halitosis [13].

In healthy subjects, tongue coating is by far the most important source of malodour, most of the odor coming from the dorso-posterior surface of the tongue where the crypts are the favored sites for growth of the anaerobic bacteria responsible for halitosis. Some investigators believe that besides VSC (Volatile Sulphur Compounds), other volatiles produced by oral putrefaction processes such as organic acids, ammonia, and amines may also cause oral malodour [14].

As the young adults of today are indulging in unhealthy habits like smoking, drug abuse, poor oral hygiene practices, consumption of fast foods, a study was carried out to know the smoking habits, oral hygiene practices, and self perceived malodour among arts and science students of Ahmedabad.

The aim of the current study was to evaluate the Smoking habits, Oral hygiene practices and perceived Malodour among the college community of Arts and Science students in Ahmedabad. It has been observed that self-reporting questionnaire are a valid tool to gather information on the level of discomfort and personal habits of the patient because it provides not only an objective measure of the influence of oral hygiene habits followed by the patient but basically a view on patient's perception of health [15,16].

## Materials and Methods

An epidemiological survey was carried out to assess the Smoking Habits, Oral Hygiene Practices, and Self Perceived Malodour among the College community of Arts and Science Students, Ahmedabad. Ethical clearance was obtained from the institute.

### *Sample Size*

All the 1200 students were invited for the study but only 650 students participated. The students belonged to Ahmedabad, and from educated and wealthy background. The inclusion criteria included male and female students in the age group of 17-25 years, having no previous medical history, under no medication. The exclusion male and female students having age more than 25 years and less than 17 years, having previous medical history and under some medication.

### *Study Design*

A specially designed closed ended questionnaire in Gujarati which consisted of 15 questions was used to assess the smoking habits, oral hygiene practices and self perceived malodour Arts and Science College students in Manimangalam, Chennai. Study questionnaire was tested and validated before the study, through a pilot study. It was tested on a small group of (50) students who were requested to complete it and to indicate any questions that they found unclear to answer. The pilot study proved that moving ahead with the study was beneficial and the survey outcome would be positive. The students were approached class wise and the purpose of the study was explained to them and informed consent was obtained. The questionnaire was distributed to them and was assured of the confidentiality. The filled questionnaire was collected on the same day immediately after completion. The resulting data was coded and statistical analysis was done using SPSS (Statistical Package for Social Sciences) version 17.0 software, Chi-square test was applied to compare the percentages and the level of significance was set at 0.05.

## Results

The subjects consisted of 63.8% (415) males and 36.2% (235) females which totally comprises of 650 participants.

• *Responses of College Students on Smoking Habits*

Among the study subjects 4.8% (i.e. 31) were smokers in which 2.6% (i.e. 17) were smoking daily, 2.1% (i.e.13) were smoking weekly, 0.1% were smoking occasionally which is represented in Table 1. Among smokers 64.5% (i.e. 20) were smoking less than 5 cigarettes, 22.5% (i.e 7) were smoking 5-10 cigarettes, and 13% (i.e. 4) were smoking more than 10 cigarettes per day. Among smokers 25.8% (i.e. 8) were smoking for 1-3 years, 29% (i.e. 9) were smoking for 1-2 years, and 19.4% (i.e. 6) were smoking more than 3 years. 65.5% (i.e. 212) of males and 78.8% (i.e. 185) of females responded that all the ill effects of smoking. These difference noted between the sexes were statistically significant (P=0.001) which is represented in Table 2. 70.9% (i.e. 22) of smokers had attempted to stop smoking and 29.1% (i.e. 9) smokers had not attempted to stop smoking.

• *Responses of College Students on Oral Hygiene Practices*

20% (i.e. 83) of males and 46% (i.e. 108) of females brushes their teeth twice a day. These difference noted between the sexes were statistically significant (P=.000). 41% (i.e. 170) of males and 63.4% (i.e. 149) females brush their teeth circularly. These difference noted between the sexes were statistically significant (P=.000). 38.5% (i.e. 160) of males and 51.9% (i.e. 122) of females change their toothbrush once in a month. These difference noted between the sexes were statistically significant (P=.002) which is represented in Table 3. 53.7% (i.e. 223) of males and 61.7% (i.e. 145) of females snack once in between meals in a day. These difference noted between the

sexes were statistically significant (P=.001) which is represented in Table 4. 67.7% (i.e. 280) of males and 74.9% (i.e. 176) of females rinse their mouth after eating. 32.4% (i.e 134) of males and 25.1% (i.e. 59) of females do not rinse their mouth after eating. These difference noted between the sexes were statistically significant (P=0.54).

• *Responses of College Students on Self Perceived Malodour*

9.8% (i.e. 40) of males and 0.5% (i.e. 11) of females responded they have bad breath. These difference noted between the sexes were statistically significant (P=.000).3.07% (i.e. 12) of males and 0.4% (i.e. 9) of females had visited dentist or physician for bad breath. 95.2% (i.e. 395) of males and 99.6% (i.e. 234) of females had not visited dentist or physician for bad breath. These differences noted between the sexes were statistically significant (P=.002). 10.6% (i.e. 44) of males and 0.5% (i.e. 1) of females had received treatment from dentist or physician for bad breath. 89.4% (i.e. 371) of males and 99.5% (i.e. 233) females had not received any treatment from dentist or physician for bad breath. These difference noted between the sexes were statistically significant (P=.000). 9.8% (i.e. 40) of males and 0.05% of females responded that their bad breath interfere with their social life. These difference noted between the sexes were statistically significant (P=.000). 8% (i.e. 33) of males and 0.4% (i.e. 1) of females had self medicated themselves for bad breath. 92% (i.e. 381) of males and 99% (i.e. 232) of females had not self medicated themselves for bad breath. These difference noted between the sexes were statistically significant (P=.000).

**Table 1:** Frequency of smoking among study subjects

	Smokers 31(4.8)			Non smokers	Total
Daily	Weekly	Occasionally			
17 (2.6%)	13 (2.1%)	1 (0.1%)	619 (95.2%)	650 (100%)	

**Table 2:** Knowledge on ill effects of smoking among study subjects

Gender	Oral cancer	Bad breath and staining of teeth	Respiratory problems	Total
Male	120 (29%)	3 (0.7%)	272 (65.5%)	415 (100%)
Female	47 (20%)	2 (0.8%)	185 (78.8%)	235 (100%)

P=0.01

**Table 3:** Frequency of changing tooth brush among study subjects

Gender	Once in one month	Once in three month	Once in 6 month	Whenever I feel like changing	Total
Male	160(38.5%)	116(28%)	15 (3.6%)	124 (29.9%)	415 (100%)
Female	122 (51.9%)	63 (26.8%)	3 (1.3%)	47 (20%)	235 (100%)

P=0.02

**Table 4:** Frequency of snacking in between meals in a day among study subjects

Gender	Once	Twice	Thrice	More than Thrice	Total
Male	223 (53.7%)	82 (19.7%)	53 (12.8%)	57 (13.8%)	415 (100%)
Female	145 (61.7%)	59 (25.2%)	11 (4.6%)	20 (8.5%)	235 (100%)

P=0.01

## Discussion

This was a cross sectional study conducted among College community of Arts and Science Students, Ahmedabad. It was a questionnaire survey in which 415 (63.8%) males and 235 (36.2%) females participated and responded to questions on smoking habits, oral hygiene practices and self perceived malodour.

Only 4.8% were smokers in the study, which are very low when compared with a study conducted by, Eldarrat A et al in 2008 [17] among Libyan students (schools and universities) and employees in which 17% of them were smokers. The smoking attitudes, behaviors of family members and close friends would have influenced the increased frequency of smoking among them.

According to above findings, 64.5% smoke less than 5 cigarettes, 22.5% smokes 5-10 cigarettes, 13% smokes more than 10 cigarettes per day which is similar to a study conducted by William Kasapila in 2010 [18], among students specializing in Nursing and Agriculture in which 61.8% smokes less than 5 cigarettes and 26.5% smokes less than 10 cigarettes. In the present study 65.5% of males and 78.8% of females were aware of ill effects of smoking which is similar to a study conducted by Talal J. Hashim in 2000 [19] among students of Applied Medical Sciences in which 73% of the respondents were aware of ill effects of smoking.

Around 71% have attempted to stop smoking in the current research, which is similar to that of study conducted by Talal J. Hashim in 2000 [19], Saudi Arabia in which 70% have attempted to stop smoking. In the present study 80% of the males and 54% of the females brushes their teeth once daily, 20% of the males and 46% of the Females brushes their teeth twice daily. In a study conducted by R. Al-Hussaini et al in 2003 [8], among students of Kuwait University Health Sciences Centre, 94% of the students brushes their teeth once a day and 79% of the girls brushes their teeth twice a day which is comparatively higher than our study.

In the present study 28% of the males and 26.8% of the females changed their tooth brush once in three months, 3.6% of the males and 1.3% of the

females changed their tooth brush once in six months. In a study conducted by Hossain Neamatollahi et al in 2009 [20] in Iran and noticed 33% of them changed their tooth brush once in three months, 43% of them changed their tooth brush once in three to six months which is less than our study. In the present study 9.8% of the males and 0.5% of the females responded for self perception on malodour which is comparatively low to a study conducted by Khalid Almas et al in 2000<sup>21</sup>, among dental students in which 44% of the males and 32% of the females responded for the self perception of malodour. This difference would be because the subjects of the above mentioned study were dental students who could have perceived malodour better because of their awareness about it.

Results from above findings suggested that 10.6% of the males and 0.5% of the females had received treatment for malodour from the dentist or physician which is comparatively low to a study conducted by Aziza H. Eldarrat(2011) [22] in Libya among University students in which 27% of students received treatment for malodour from the dentist (24%) or physician (3%). The positive attitudes among Libyan college students as mentioned by the authors in the study would have encouraged them to take treatment for malodour. In the present study 9.8% of the males and 0.5% of the females responded that their bad breath interfere with their social life. Khalid Almas et al in 2000 [21] conducted a study among dental students in Saudi Arabia. 5.8% of the males and 44% of the females responded that their bad breath interfere with their social life.

In the current findings it was observed that 8% of the males and 0.4% of the females had self medicated themselves for malodour which is comparatively low to the study conducted by Khalid Almas et al in 2000 [21], among dental students in which 12% of the males and 26% of the females have self medicated themselves probably due to the awareness from their educational training.

## Conclusion

The present study indicates that the habit of smoking was seen in a very small percentage of

study subjects and majority of them were aware of its ill effects. A good proportion of smokers had attempted to stop smoking. Majority of them brushes their teeth once daily using circular motion and rinse their mouth after eating. Majority of them had no self perception on their bad breath and who responded for malodour also accepted that it interfere with their social life.

## References

1. Symptoms of substance dependence associated with use of cigarettes, alcohol, and illicit drugs—United States, 1991–1992. Morbidity and mortality weekly report, 1995; 44(44):830–831, 837–839.
2. Susan Moran, Henry Wechsler, Nancy A. Rigotti Social Smoking Among US College Students. Journal of American Academy of Pediatrics 2004; 114(4): 1028–34.
3. Smoking and tooth loss experience among young adults: a national record linkage study. Journal of BMC Public Health 2007; 7(313):1-7.
4. Robert M. Showelle et al. Smoking and mortality: a Meta analysis. Journal of Insurance Medicine 2008; 40:170-178.
5. CDC and Prevention, Cigarette Smoking among adults – United States, 2007. MMWR Morb Mortal weekly rep. 2008; 57:1221-26.
6. CDC and Prevention, Cigarette Smoking among adults – United States, 2005. MMWR Morb Mortal weekly rep 2006; 55:1145 –48.
7. Jha P, Jacob B, Gajalakshmi V, et al. A nationally representative case – control study of smoking and death in India. N Engl J Med. 2008; 358:1137-47.
8. R. Al-Hussaini, M. Al-Kandari, T. Hamadi, A. Al-Mutawa, S. Honkala A. Memon. Dental Health Knowledge, Attitudes and Behaviour among Students at the Kuwait University Health Sciences Centre. Med Price Pract 2003; 12:260-65.
9. Warren PR, Chater BV. An overview of established interdental cleaning methods. J Clin Dent. 1996; 7(3 Spec No):65-9.
10. Haas AN, Pannuti CM, Andrade AK, Escobar EC, Almeida ER, Costa FO, Cortelli JR, Cortelli SC, Rode SD, Pedrazzi V, Oppermann RV. Mouthwashes for the control of supragingival biofilm and gingivitis in orthodontic patients: evidence-based recommendations for clinicians. Braz Oral Res. 2014; 28(spe):1-8.
11. Mariano Sanz, Silvia Roldan, David Herrera Fundamentals of Breath Malodour. J Contemp Dent Pract 2001; 2:4:1-13.
12. Ierardi E, Amoruso A, La Notte T, Francavilla R, Castellaneta S, Marrazza E, Monno RA, Francavilla A. Halitosis and Helicobacter pylori: a possible relationship. Dig Dis Sci. 1998; 43(12):2733-7.
13. Aylykcý BU, Colak H. Halitosis: From diagnosis to management. J Nat Sci Biol Med. 2013; 4(1):14-23.
14. Association Report Oral Malodor. JADA 2003; 134:209-14.
15. Cirillo M, Venturini M, Ciccarelli L, Coati F, Bortolami O, Verlato G. Clinician versus nurse symptom reporting using the National Cancer Institute-Common Terminology Criteria for Adverse Events during chemotherapy: results of a comparison based on patient’s self-reported questionnaire. Ann Oncol. 2009; 20(12):1929-35.
16. Ashwath B, Vijayalakshmi R, Malini S. Self-perceived halitosis and oral hygiene habits among undergraduate dental students. J Indian Soc Periodontol. 2014; 18(3):357-60.
17. 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 2008; 3(4):170-6.
18. William Kasapila, Tapiwa Susan Mkandawire Drinking and Smoking Habits Among College Students in Malawi. Eur Jour Soc Sci 2010; 15(3): 441-48.
19. Talal J. Hashim. Smoking habits of students in College Of Applied Medical Science, Saudi Arabia . Saudi Med J 2000; 21(1):76-80.
20. Hossain Neamatollahi, Masoumeh Ebrahimi. Oral health behavior and its determinants in a group of Iranian students. Indian J Dent Res 2010; 21(1):84-88.
21. Khalid Almas, Abdullah Al-Hawish, Waheed Al-Khamis Oral Hygiene.Practices, Smoking Habits, and Self-Perceived Oral Malodour Among Dental Students. J Contemp Dent Pract 2000; 4(4):1-13.
22. Aziza H. Eldarrat. Influence of oral health and lifestyle on oral malodour Int Dent J 2011; 61:1: 47-51.