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ORIGINAL ARTICLE

Assessment of Knowledge, Practices and Self-Reported Problems Related to Halitosis among the Students of Sharif Medical and Dental College and Bakhtawar Amin Medical and Dental College

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ABSTRACT

Introduction: Halitosis is the source of nuisance and can affect person's own health. This can also create social issues and may decrease self-confidence. The main cause of large number of populations effected by this condition is lack of awareness, knowledge or non-accessibility to health care facility.

Objectives: The aim of this study is to access the knowledge, practices and self-reported problems of halitosis among the students of Sharif Medical & Dental College, Sharif College of Engineering and Technology and Bakhtawar Amin Medical and Dental College Multan.

Duration of Study: This cross-sectional study was conducted among students of Sharif Medical & Dental College Sharif College of Engineering and Technology and Bakhtawar Amin Medical and Dental College Multan from 1st July 2019 to 01st January 2022.

Material and Methods: The data was collected using a questionnaire consisting of 13 questions includes three components i.e. knowledge, practices and self- reported problems. Practice and self -reported problems were assessed using special scoring system.

Results: 500 students participated in the research program. Among all students, 69.8% had knowledge about halitosis. Responses to self-reported problems showed 7.2% of the participants suffered from halitosis. 29.8% and 30.4% reported dental caries and bleeding gums respectively. 25.6% mentioned about the dryness of mouth. 49.4% were concerned about social impact of their bad breath.

Conclusion: Increasing awareness, knowledge about the cause and treatment options of this condition can improve the general health and well-being.

INTRODUCTION

Halitosis or oral malodour is the unpleasant odour emitting from a person's oral cavity[1]. Majority of the people are affected by it due to many reasons such as improper care of oral cavity or due to some medical conditions. Bad breath emanating from anyone's mouth can have a negative effect on his/her personality while interacting socially with people interfering with their self-confidence and with people's professional and social life.[2, 3]

The main causes of halitosis are liberation of volatile sulphur compounds which includes hydrogen disulphide, dimethyl sulphide and methyl mercaptan.[4] These compounds produce various sorts of offensive mouth odour and to varying degree. Volatile sulphur compounds (VSCs) are produced by gram negative proteolytic anaerobes such as Trepenomadenticola, Porphyromonas gingivalis, Porphyromonas endodontalis, Prevotella intermedia, Bacteriodes loescheii, Enterobacteriacea, Tanerella forsythensis, Centipeda periodontii, Eikenella corrodens, Fusco bacterium nucleatum inhabiting in oral cavity.[5] The mentioned bacteria, when interact with sulphur containing amino acids, lead to their degradation which results in the liberation of VSCs causing bad breath.[6] These sulphur containing amino acids are found in saliva , blood, cells and gingival crevicular fluid.[7] All these microorganisms are present in the static areas of the mouth such as periodontal pocket, tongue surface and inter-proximal areas between the teeth. Tongue is considered to be the main site for the production of mal-odour, while oral diseases such as periodontal diseases, oral infection, peri-coronitis, mucosal ulceration, peri-implant disease, impacted food or debris seen to be only a fraction of a problem.[8]

Halitosis is produced not only due to degradation of sulphur containing amino acids, but it can also be a symptom of other medical condition such as diabetes, gastrointestinal disease, renal failure, respiratory infections etc. Halitosis occurs late in the pathogenesis of such disorders, whereas, more obvious symptoms are already present.[9] Quick onset, and intensifying bad breath suggests an infective process, which is possibly secondary to carcinomas or other pathogenesis in the airway.[10]

Types of halitosis are exogenous, endogenous and psychogenic.[6] The exogenous halitosis is caused due to the intake of food which leads to the formation of oral malodour. These foods include egg, raw onion, garlic, spices, smoking, alcohol intake, dairy products containing sulphur. Morning breath is a condition in which there is decrease in production and secretion of saliva resulting in the dryness of mouth.[6] In endogenous halitosis, also referred to as true halitosis and is caused by interaction of gram negative bacteria with sulphur containing substance present in cells, saliva and gingival crevicular fluid. It can also be caused by systemic diseases of oral cavity and it can also be drug induced. In psychogenic halitosis, pseudo-halitosis is a state in which patient perceive that they have halitosis but their mouth odour is not actually offensive[11], whereas halitophobia is a condition of fear of having bad breath. Olfactory reference syndrome is a psychiatric condition in which a person is under the fear of emanating abnormal body odour which might be offensive to others.

A public investigation in 2005 in the Neitherlands showed that halitosis was one of the 100 biggest human overall exasperation.[12] A cross-sectional Brazilian study among university students and their families showed that prevalence of persistent oral malodour was 15%. Men suffered more from the problem than women, especially when they were over 20 years[13] Japanese researchers concluded that 15% of 33000 adults suffer from bad breath.[14] In Tokyo, more than 70% of the businessmen detected regularly a personal halitosis.[15]In China, about 25% of 2000 individuals seems to be suffering from halitosis.[16] Men and women seem to suffer in the same proportions, whereas women seem to explore faster for professional help than men.[17]

The aim of this study is to access the knowledge, practices and self-reported problems of halitosis among the students of Sharif Medical & Dental College,Sharif College of Engineering and Technology and Bakhtawar Amin Medical and Dental College Multan.

MATERIALS AND METHOD

This cross-sectional study was conducted among students of Sharif Medical & Dental College Sharif College of Engineering and Technology and Bakhtawar Amin Medical and Dental College Multan from 1st July 2019 to 01st January 2022. After taking approval from ethical committee of the institute, using non-probability convenient sampling, systemically healthy individuals of more than 18 years of age were included in the study. A total of 500 students were included out of which 250 were medical and 250 were non-medical students. Informed consent was obtained from all study subjects on the proforma. The data was collected using a questionnaire consisting of 13 questions includes three components i.e. knowledge, practices and self- reported problems. Practice and self -reported problems were assessed using special scoring system. Practice was assessed using scores ranging from poor to good such as <3= poor, 3-4.5=intermediate, >4.5= good. Similarly, self-reported problems were assessed using scores ranging from poor to good such as <2.5= poor, 2.5-3.75 =intermediate, >3.75=good.

Recorded data was coded and entered using SPSS statistical package version 20.0. Nominal data like gender and educational status were recorded as frequency and/or percentages. Descriptive statistics (number and percentage of responses for the questions related to the halitosis) were calculated for response items. By keeping the level of significance at 0.05%, Chi-square Test was used for the comparison of the level of knowledge, practices followed and self-reported problems among medical and non-medical students. Chi-square test was also applied in order to find out difference of knowledge, practices followed and self-reported problems among males and females. Independent-T test was applied to find out level of knowledge, practices followed and self-reported problems among different age groups. Analysis of variance were applied to find out the association of knowledge, practices and self-reported problems among dental, medical and non-medical students.

RESULTS

500 students participated in the research program. 34.0% were male whereas 66.0% were females. Among those 29% were the dental students, 21% were the medical students and the rest 50% students were non-medicals as (fig.1)

Among all students, 69.8% had knowledge about halitosis. 45.4% and 9.4% brush their teeth and use and floss, respectively. 43.6% students clean their teeth regularly. The percentage of students using mouthwash was and 17.2%. Out of all the participants, 7.4% were smokers and 14.4% had already got treatment for bad breath.

Responses to self-reported problems showed 7.2% of the participants suffered from halitosis. 29.8% and 30.4% reported dental caries and bleeding gums respectively. 25.6% mentioned about the dryness of mouth. 49.4% were concerned about social impact of their bad breath.

Keeping the level of significance at 0.05% Chi-square test was applied in order to find out the level of knowledge, practices followed and self-reported problems among medical and non-medical students which showed that knowledge about halitosis was better in medical students (79.2%) as compared to non-medical students (60.4%) with the p value of <0.0001. The practices followed to avoid halitosis showed insignificant difference between medical and non-medical students with p value of 1.00 whereas the self-reported problems were more in medical students.

Chi-square test was also applied in order to find out the difference of knowledge, practices followed and self-reported problems among males and females but statistically insignificant relationship was found. In the same way, Independent T-test showed statistically insignificant differences among different ages regarding knowledge, practices followed and self-reported problems. However, the analysis of variance showed that the knowledge and practices followed by dental students are significantly more as compared to medical and non-medical students with the p value of 0.001.

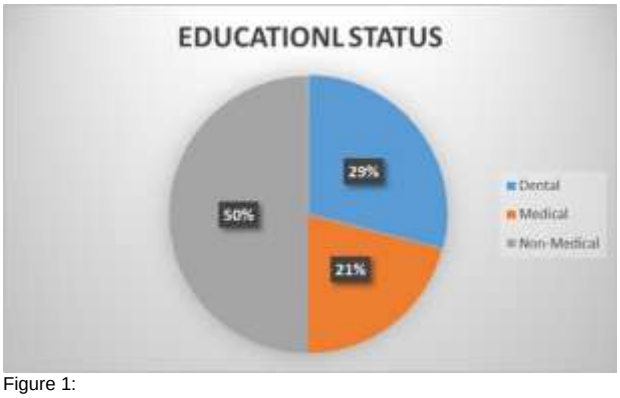

Figure 1:

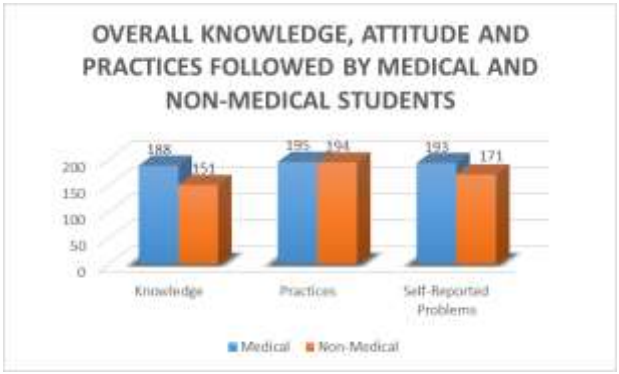

Figure 2:

The overall knowledge, attitude and practices followed by medical and non-medical student is given in **fig.2**.

DISCUSSION

One of the most common worldwide problems is halitosis which has a negative impact on social interaction and sometimes has substantial psychological effect.[18-20] People suffering from such a condition are under stress as they want to prevent social embarassment and don't want to be associated with any social stigma.[21] Most of them seek out professional help but few of them do not as they are highly embarrased by their situation. The purpose of the study was to assess the knowledege, practice and self reported problem regarding halitosis among the students (medical and non medical) .

The first and the basic component of our questionnaire was that either our participants aware what is halitosis or not. It is to assess the knowledge of the students as more the person knows about a condition he/she is going through, the better is the try to seek out professional help. According to our study 69.8% of our participants were aware what halitosis is while a similar study conducted by Raza et al, in 2018, reported comparatively lower figures (54.7%) of people have the knowledge regarding halitosis.[22]

Practices related to halitosis are important to obsereve as they signifies the compliance of the patient to get rid off of the condition. They also tell about any myth regarding the said condition the participants might follow. According to our study, only 1 student had a good scoring showing their determination to have a good oral hygiene. As according to a study conducted by Rosing et al. dorsum of the tongue is the main cause of halitosis.[23] Our study subjects were asked about whether they regularly cleaned their tongue or not. 43.6% positive answers were received while

11.8% did not practice it regularly and the rest 43.6% did it sometimes. According to Cortelli et al., mechanical (using tooth brush and tongue scrapers) removal of biofilm and plaque from the tongue surface results in disruption of bacterial habitat and less production of bad smell.[24] Study conducted by Lee et al. suggests that tongue cleaning can result in reduction of VSCs concentration by 52%.[6]

Same habitat of bacteria producing halitosis can be found on the tooth surface[6] and as the brushing of teeth is a practice followed by a large population,[24]we asked our study subjects about their frequency and habit of tooth brushing. According to the results, 53.8% of them brushed their teeth once a day where as 45.4% did it twice a day. Brushing of teeth is as important as brushing of tongue because it disrupts the biofilm and reduces the interaction between bacterias and sulphur compounds.[23] According to the study by Silveria et al. plaque control is able to reduce formation of VSC.[25]

Interdental plaque removal (by flossing) is equally important.[26] According to the results of our study, it is not a common practice. Only 9.4% students practiced flossing regularly whereas 61.6% did not do it and the remaining 29% did it occasionally. According to the study by Azodo et al. participants concerned about halitosis increaased the use of flossing. Only 21% respondants used dental floss according to Elderrat et al.[27] Whereas study of Lee et al. suggests that brushing, flossing, scaling root planning, tongue cleaning are one of the treatment modalities of halitosis.[6]

Only 17.2% of our study subjects used mouthwash and 47.4% use it on and off. With 0.12% concentration of chlorhexidine, VSCs reduction by 73.3% and mouth odour reduction by 68.6% has been seen in the study by Lee et al.[6] Study of Carvalho MD et al. showed the beneficial aspects of mouthwashes in the absence of mechanical plaque control using ingredients like 0.2-0.12% chlorhexidine, zinc, cetylpyridium chloride, triclosan and essential oils.[28] Shinada K et al. demonstrated that mouthrinses containing chlorhexidine improve morning breath by reducing VSCs.[29]

Smoking is related to halitosis as an exogenous source.[6] 83.6% of our study participants were non-smokers and only 7.4% were active smokers and 9% smoke occasionally. As the number of female in our data is more , and in our cultural and social setup, female rarely smoke, so overall non-smokers were more reported in our data. According to the study by Setia et al. 80% of individuls who smoke presented with halitosis.[30] In a study by Michael M et al. prevalence of halitosis in young male adults was assessed and two thirds of their subjects were regular smokers.[31]

Self reported problems are an imporatnt factor in understanding the eitiology of halitosis. In our study, only 7.2% of the subjects were aware that they suffer from bad breath where as 49.2% reported that they do not suffer from it and the rest 43.6% said that they had this condition at sometime in life. Results from a similar study by Settinari et al. showed self reported cases of halitosis were 19.39%.[32] The prevalance of self reported cases of halitosis in the present study is less and it may be due to the reason that either the sufferers are too embarrassed to share their conditions with the professional or prefer to settle with self treatment and home remedies.

Our study concluded that 29.8% of our subjects were either aware of dental caries/bleeding gums or were told by their professionals about it while the rest 70.2% of subjects either did not had it or were not aware of it. Similar results were found when asked about bleeding gums where 30.4% subjects were aware of their problem and the rest 69.6% didn't. Result of similar study[3] showed that 38% participants with gingival bleeding and 19.4% participants with tooth decay perceived oral malodour. According to the study by Setia et al. 43% male and 43% female who reported with halitosis were suffering from dental caries. 10% of them were suffering from bleeding gums also.[30] Tooth decay and gum disease provide an excellent nidus for the habitat of bacteria where release of VSCs will ultimately result in bad breath.[6]

Xerostomia is more of a symptom than a disease. Its presence may signify the presence of underlying disease such as Sjogren syndrome, diabetes, renal diseases etc.[6] Dryness of mouth may also be associated with less water intake or dehydration. Our study showed only 25.6% participants suffering from dryness of mouth while the report of Bhat et al. signifies the relation between dry mouth and halitosis with 14-17% of males and females suffering from it.[33]

As mentioned above it is one of the most common worldwide problems which has a negative impact on social interaction and sometimes has substantial psychological effect.[18-20] Embarrassment, anxiety disappointment and loss of self-esteem & confidence are some reasons to worry due to halitosis which can ultimately lead to social isolation and can be a cause of deleterious social communication.[34, 35] In our study, 49.4% of the participants were concerned about their social interaction, whereas the results of a similar study showed 71.13% of participants were concerned about social embarrassment due to oral malodor.[18]

The results of our study are limited to a specific population i.e the medical and non medical students of Sharif educational complex. Ideally our study should include all the residents, students and staff members of Sharif educational complex but we could not do so due to the limitation of time, access and resources. The percentage of knowledge and self reported problems by the medical student was high as compared to the non medical students implying that they know about it better and seek out to treat the problem due to readily availability of professionals. The practices however gave almost equal percentages, implying the mediocre oral health maintenance by the both group. The percentage of students seeking out treatment for halitosis is only 14.4% indicating that either they do not has access to a dental health professional or they rely on self treatment.

Recommendation: By increasing the awareness in the people regarding halitosis, more people will seek treatment for the condition and better oral health practices will be followed. Information about the used of tooth brushes, tongue cleaners, mouth washes, dental floss should be provided in every institute especially in preschool and middle school children. Educational institutes should provide availabilty to dental health professionals to its pupil by regularly arranging dental camps. Advertisement in the print and electronic media should be made compulsory by the government.

CONCLUSION

Halitosis is a major oral problem having impact on personal and social life that effects a large population. Increasing awareness, knowlege about the cause and treatment options of this condition can improve the general health and well-being.

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