Oral halitosis and oral hygiene practices among dental students

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ABSTRACT
Background: Oral halitosis is a very important problem, because it leads to a lot of social and psychological discomfort to a high percentage of the population. The aims of the present study were to determine the prevalence of oral hygiene practices, and halitosis among the undergraduate students in the (College Of Dentistry University Of Baghdad), The students were in the (3rd, 4th, and 5th stages), the study was done in a one month period.

Materials and Methods: A self administrated questionnaire was distributed among all the (481) students (263) male, and (218) female undergraduate students at the College of Dentistry. A questionnaire was designed to assess the self reported perception of: oral breath, awareness of bad breath, timing of bad breath, oral hygiene practices, dryness of mouth, tea drinking habits.

Result: The response rate was 77%. 44% of males and, 32% of females reported the self perception of bad breath odor and halitosis. The self treatment was sought by 12% of males and 22% of females. 6% of males and 4% of females experienced halitosis interference with their daily work. 78% of males and 99% of females experienced halitosis after waking up from sleep in the morning. The brushing was prevalent among 81% of males and 99% of females. Bleeding gingival was recorded in 26% of males and 14% of females. Dry mouth was common among 14% of males and 17% of females. Tea drinking was common among 44% of males and 37% of females, while tongue coating was equally common among both males and females approximately (21%) and (20%).

Conclusion: This study indicates that female students had better oral hygiene practices, much less reported oral halitosis as compared to male students. There was no difference in the tongue coating between male and female students. The students should be motivated to be a health symbol, and keeping their mouth free from halitosis.

Key words: halitosis, oral hygiene practices, brushing frequency, tongue coating. (J Bagh Coll Dentistry 2007; 19(1)72-76)

INTRODUCTION
Oral halitosis is a general term used to describe unpleasant or offensive odor emanating from the oral cavity. Halitosis may be an important factor in social commutation; therefore, it may be the origin of concern not only for a possible health condition, but also for frequent psychological alteration leading to social, and personal isolation.

The importance of halitosis goes beyond the knowledge of it is causes, diagnosis and therapy, it interacts with other sociological issues such as: culture, religion, race and gender. The knowledge of this condition goes back to ancient times. (1)

Although several non-oral sites have been related to halitosis includes the upper and lower respiratory tract, the GIT and some diseases involving the kidneys or the liver. It is thought that about 90% of halitosis originates from the mouth it self. (1,2)

Oral halitosis is a very common problem in dental patients; in fact most of adult subjects have socially unacceptable breath when they wake up in the morning.

This problem is transitory, and attributed to physiological causes such as: reduced salivary flow during sleeping, but persistent salivary flow may be indicative of oral diseases such as: (caries, periodontal disease, gingivitis), or it could be indicative of systemic disease such as: (hiatus hernia, hepatic cirrhosis, and diabetes mellitus).

The populations in the developing and western countries are paying more attention to this problem; this has been found in the results of a telephone survey carried out in (U.S); were about 60% of American women and 50% of American men, showed that they are using breath freshening product. (3)

A large study performed in Japan involving 2672 individuals indicated that about 6-23% of the subjects had oral malodor as measured by (Volatite Sulphur Compounds); (VSC) was higher than 75 parts per billion (ppb) in the expired air, at some period during the day. If these Japanese results reflect the oral malodor in other populations, then the oral malodor would represent a major oral health concern of the public. (4) In another study conducted in the U.S.A; involving individuals older than 60 years of age; they found that 24% of the subjects reported to have oral halitosis. (5)
Another source of indirect information is related to the American Dental Association's 1995 Annual Session, where 92% of the dentists surveyed reported that they had patients with chronic bad breath based on patients' self-report. Almost half of the dentists reported that they are seeing 6 or more patients weekly with halitosis. (6)

Some authors estimate that about 50% or more of the middle-aged individuals had bad breath, due to physiological causes when they wake up in the morning. (7)

It seems that women seek treatment more than men. (4,8) This could be explained by the fact that women are more concerned about their health status than men.

A significant age-related increase in mean values of halitosis caused by VSCs; have been reported when different age groups have been assayed. (4)

In spite of the above reported high prevalence of halitosis, only a few patients visit dental clinics seeking treatment. This fact has been termed “The Bad Breath Paradox”, since people suffering from bad breath, often remain completely unaware of this fact. (3)

When dealing with the problem of halitosis or bad breath patients it is very important to distinguish between two terms which are: (Genuine Halitosis) and (Pseudo Halitosis).

(Genuine Halitosis): is a condition in which the bad breath is a real problem, this can be diagnosed by either (organo-leptic) or (physico-chemical) means.

(Pseudo Halitosis): is another condition in which the malodor does not exist, but the patient believes that he or she has it.

If after successful treatment for either genuine or pseudo halitosis, the patient still believes that he or she still has it then the condition is called Halitophobia.

Halitosis is due to the presence of odorous gases in the air expelled from the oral cavity. VSCs such as hydrogen sulphide, methyl mercaptan, and dimethyl sulphide are the gases that have demonstrated a high correlation with halitosis.

These VSCs are mainly produced through the putrefactive activities of the bacteria that are present in the saliva, the gingival crevicular fluid, the dorsal surface of the tongue, and other areas. Also halitosis depends on the salivary flow rate: so the bad breath is more in the morning or after a period of sleep called “Morning Breath”.

During the sleep the salivary flow from the major salivary glands is minimal, favoring the stagnation of food, and the formation of halitosis. (9,10)

MATERIALS AND METHODS

Subjects and Methods

The study sample consisted of 481 undergraduate dental students: 263 males and 218 females. In the 3rd, 4th, and the 5th stages of the college of Dentistry, University of Baghdad.

A self-administered questionnaire was developed to assess the self-perception of oral health, awareness of halitosis, treatment received for halitosis, prevalence of oral hygiene, bleeding gingival, and tongue coating.

The questionnaire was made by reviewing the literature, and making modifications according to local culture.

The questionnaire was tested on a pilot study and adjusted in the light of the pilot response.

The questionnaire included the following items:
1. Self reported perception of oral breath.
2. Awareness of bad breath.
3. Timing of bad breath.
4. Dry mouth.
5. Tea drinking habits.

The gingival bleeding was measured by the practitioner using the (gingival index by Loe and Silness 1963). The presence or absence of tongue coating was recorded by the practitioner using the visual examination after opening the mouth and examining with the help of mouth mirror.

RESULTS

Out of a total of 481 students: 263 males and 218 females, the participation rate was 77%, the number of valid cases for data analysis was 346. The number of students who did not participate or refuse to do so was 135. The valid cases were those who answered the questionnaire completely 346 about 77% of the whole sample. Eighty seven (44%) of male students, and forty seven: (32%) of female students reported the self perception of halitosis (Table 1). About 8% of males and 4% of female students were diagnosed by the practitioner to have halitosis (Table 2). About 6% of male and 4% of female students experienced bad breath at their work, during last month (Table 3).
The majority of students (78%) of male, and 62% of female had halitosis after waking up in the morning. The brushing habits were prevalent among 81% of male students, and almost 99% of female students. About 22% of male students and about 44% of female students used mouth washes, about 47% of male and 70% of female students used (stem-u-dent), or what is called (tooth picks).

More female students reported regular tooth brushing and less halitosis as compared to male students (Table 4). The bleeding gingival was experienced by about 26% of males, and 14% of females students (Table 5). Almost 14% of males and 17% of females experienced dry mouth during their daily work. About 44% of males and 37% of female students reported drinking tea (ordinary market tea) and tongue coating was recorded in 21% of males, and 20% of female students.

<p>| Table 1: The frequency of self perception of oral bad breath (Halitosis) |
|-----------------------------|-----------------------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th>Gender</th>
<th>Yes</th>
<th>No</th>
<th>Do not know</th>
<th>Total</th>
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<tr>
<td>Male</td>
<td>87</td>
<td>79</td>
<td>32</td>
<td>198</td>
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<tr>
<td>Female</td>
<td>47</td>
<td>78</td>
<td>23</td>
<td>148</td>
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<td></td>
<td>31.8</td>
<td>52.7</td>
<td>15.5</td>
<td>346</td>
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<td></td>
<td>X^2=6.326</td>
<td>P=0.042</td>
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<th>Table 2: The frequency of halitosis diagnosis by practitioners</th>
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<td>Gender</td>
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<tr>
<td>Male</td>
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<td>Female</td>
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<th>Table 3: The experience of bad breath (Halitosis) at work during last month</th>
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<td>Gender</td>
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<tr>
<td>Male</td>
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<th>Table 4: The prevalence of oral hygiene habits among students</th>
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<tr>
<td>Male</td>
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<tr>
<td>Brushing</td>
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<tr>
<td>(81.2)</td>
</tr>
<tr>
<td>Mouth</td>
</tr>
<tr>
<td>Wash</td>
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<tr>
<td>Stem-u-Dent</td>
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<th>Table 5: The Prevalence of bleeding gingiva among dental students</th>
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<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
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<td>Female</td>
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DISCUSSION

As far as self-perception of halitosis is concerned, more males (about 44%) could experience halitosis as compared to females (about 32%) (Table 1). This may reflect that males have more prevalence or perception of halitosis. If we look into the treatment received for bad breath: only 2% of females and about 7% of males received it. Most of them used mouth rinses or sugar free chewing gums. About 26% of females and about 12% of males, usually use mouth rinses and other products to remove halitosis. It has been reported that halitosis could be a social handicap. The self-perception is a very important matter in the diagnosis and controlling of halitosis.

A very few percentage of females and males (4-6%) experienced bad breath at daily work during one month period (Table 3). More males
had morning halitosis (78%) as compared to females (62%). It has been reported that an estimated 10-30% of the USA population suffer from bad breath on regular bases. (6)

An epidemiological study of the general population of Japan showed that 24% of the examined individuals had oral halitosis (4). Compared to about (70%) in our study. A Swedish study reported that only 2.4% of the subjects had oral malodor. (11) In a questionnaire given to 4.815 individuals aged 15 years and older, as a presentation of the French population: 22% of the population reported to have halitosis. (12) A recent study of the US dentists reported that about 41% of the dentists saw six or more patients a week with chronic halitosis. (10)

The above mentioned studies showed that halitosis is universal problem, and that is perceived in different cultures and societies. The prevalence of oral hygiene habits of dental students was very encouraging as reported by the dental students. A large percentage of female students had a daily tooth brushing regimen as compared to males (Table 4).

A recent study on secondary student school male students reported that about 72% of the students had a daily brushing habit (13), which is very similar to the results of our study. In that study, about 24% of male students reported to have bleeding gingiva (13), while in our study 26% of male students reported to have bleeding gingiva, so our study indicates that by increasing age from secondary to college the prevalence of bleeding gingiva may increase. This is supported by other studies (11, 13,14).

The prevalence of bleeding gingival was almost as twice as high among males as compared to females (Table 5). It has been reported in a study that oral hygiene and periodontal disease are significantly correlated. (13) This is also coincide with the results of our study.

Dry mouth is also related to halitosis, in our study almost 14%-17% of males and females reported to suffer from dry mouth, a reduced salivary flow sleep, will favor anaerobic bacterial putrefaction, giving rise to what is called “Morning Breath”. (14,15)

Most of the students in our study suffer from halitosis when waking up from sleep in the morning, but some of them about 20 %, suffer from halitosis later in the morning due to the fermentation of the food debris.

In an estimated 10-30% of the population in the USA, dry mouth remains more persistent and halitosis present throughout the day. (6) These findings are also observed in our study on the dental students who reported that whenever they had dry mouth they suffer from halitosis throughout the day.

Many people try to overcome halitosis, this halitosis may be present in the strong smokers' breath, and a history of smoking has been implicated in decreasing olfactory sensitivity. (14) Usually halitosis patients are advised to stop smoking to decrease halitosis. (7)

Tea drinking is almost equally practiced by female and male students (37- 44 %). Almost all the students that reported to drink tea used the ordinary market tea (black).

The presence of tongue coating was almost equally recorded between male and female students (20-21%). Another study suggested that oral halitosis in younger generations could be due to tongue coating deposition (4). Furthermore, a positive correlation between the levels of VSCs on the dorsal surface of the tongue, and the oral malodor has been demonstrated. (10) In our study also we found that whenever there is large amount of coating on the dorsal surface of the tongue, the student most likely have halitosis. Another study in 2002 indicated that several VSCs producing bacteria have the ability to colonize on the tongue surface on periodontaly healthy subjects. (11) It was also been suggested that oral malodor could be related not only to the amount of tongue coating, but also to the colonization of B. gingivalis in the coating. (17) These findings coincide with the results of our study.

In a recent study on self- perception of the halitosis conducted in 2001, it was concluded that the self- perception of the breath odor is a multifactorial, psycho-physiological issue related closely the subjects own body image and psycho-pathological profile. (18) Another recent study had emphasized that if oral health is to be actively influenced, subjective perspectives are need to be added to the objective clinical assessment, so subjective self-reported information are need to be evaluated by objective clinical diagnostic methods. (19)

In an attempt to decrease the recurrence of halitosis some students in our study tried to use mouth rinses, some types of sugar free chewing gums, or even rinsing with ordinary water. We advised the students to treat the causative factors of halitosis like carious teeth, gingivitis (localized or generalized), or any kind of periodontal disease, or GIT disorder, to decrease the intake of onion, garlic in the night, or the early morning, and also to decrease or stop smoking, because these will lead to the formation of halitosis.

In the present study, the subjective self-reported information should be carefully
evaluated, due to the limitation of the reliability of the questionnaire surveys. It highly recommended that both male and female students should put more emphasis on oral hygiene, as they have to be healthy models for their patients.

REFERENCES
