

ORIGINAL ARTICLE

The Prevalence of Self-Perceived Halitosis Among A Sample of Young Saudi Females Residing In Abha - Kingdom of Saudi Arabia

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Abstract

Objectives: To determine the prevalence of self-perceived halitosis among a group of young Saudi female patients residing in Abha- Kingdom of Saudi Arabia. **Materials and Methods:** This is a cross sectional observational study, an electronic questionnaire was formulated using Google Forms Application, which included 30 questions enquiring factors under investigation. 373 young females residing in Abha responded to the questionnaire. Age range of subjects was (18-45 years). **Results:** 51.3% of study participants reported self-perceived halitosis, 82.2% of those felt it the most after waking up. 71.9% of those who reported self-perceived halitosis discovered the problem by themselves, 19.6% were told by family or friends, 87% of them never visited a dentist to be diagnosed, 80.9% reported trying to solve the issue without referring to a dentist and 19.1% received a dentist prescribed treatment for halitosis. **Conclusions:** The prevalence of self-perceived halitosis in our study population is higher than other populations in the Kingdom of Saudi Arabia. Dental health care seeking behavior needs to be focused upon, as less than a quarter of the study participants consulted a dentist regarding their halitosis complaint. Further studies are needed to correlate the factors investigated in this study with self-perceived halitosis. **Key words:** Halitosis, Perception, Prevalence, Saudi female, Questionnaire

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INTRODUCTION

Halitosis is a state of having altered oral breath; it could affect the individual's interaction with others, social life, psychological status as well as overall human potential capabilities.¹ Halitosis is a world-wide health problem that affects different ages² and not restricted to certain gender or ethnic group, its

prevalence in kingdom of Saudi Arabia is still under investigation but it has a prevalence rate of 8–50% in general population.³

Halitosis is classified according to the source of the malodor into primary Halitosis which is emanating from the lungs¹, and secondary Halitosis which is emanating from mouth and upper airways.¹⁻³

Clinically, halitosis is classified into True, Pseudo halitosis and Halitophobia.⁴

Altered oral breath results from production of volatile sulphur compounds (VSCs) like Methylmercaptan, hydrogen sulphide and dimethyl sulphide diamines as a result of breakdown of amino acids by proteolytic microorganisms in the oral cavity.⁵

True halitosis can have oral causes including poor oral hygiene, periodontal diseases, tongue coating, decreased salivary flow and oral related factors like smoking and gat chewing⁶. Extra oral causes of halitosis include systemic causes, tonsillitis, sinusitis, gastrointestinal disorders and stress.⁷

Stress is a halitosis associated factor that has been evaluated by many studies.⁸ One of the stressful conditions that was shown to increase production of VSC's is the menstrual cycle.⁸⁻⁹ Salivary flow was also found to be lower in the menstrual and premenstrual phases. The decrease in salivary flow rate shifting oral homeostasis could stimulate the accumulation of microorganisms and thus enable the production of VSC leading to halitosis.¹⁰⁻¹¹

The impact of Halitosis is worth investigating, as individuals genuinely suffering from it or those having fear of it face major social and psychological problems¹².

Data on self-perceived halitosis and its impact has been reported from all over the world. A 2012 Chinese study has shown that 62.8% of their participants' self-reported halitosis,¹³ The prevalence of self-reported halitosis was found to be 23.3% in Kuwaiti adults.¹⁴ In Switzerland self-perceived halitosis was found to be 32% in Bern residents¹⁵ and in a sample of Jordanians the prevalence of self-perceived halitosis was 78%.¹⁶

In Kingdom of Saudi Arabia, a 2016 study that was conducted in Riyadh found that the prevalence of self-reported halitosis among adults residing in Riyadh was 22.8%.¹⁷ Another study stated that 68.5% of Saudi individuals self-report halitosis.¹⁸ Saudi dental students were also study subject as their self perception of halitosis was reported to be 44% and a 32% self-perception of halitosis among males and females dental students respectively.¹⁹

Data on the prevalence of self-perceived halitosis in the region of Abha-KSA is still not available, hence this study aimed at determining the prevalence of

self-perception of halitosis among a sample of young females living in Abha. The impact of this socially agonizing condition is huge and reaching the core of its cause and treating it will need multidisciplinary approach starting from the causes passing till the treatment modalities. This will directly and enormously affect its social and psychological impact on Saudi females.

MATERIALS AND METHODS

This cross sectional observational study was conducted over a period of three months between October 2015 till December 2015 in Abha- KSA; it involved a total of 373 young Saudi females between 18-45 years, who completed the structured electronic questionnaire sent via Google Forms application.

The questionnaire was based on the questionnaire of Breath Testing Clinic of British Colombia,²⁰ conducted in Arabic and English languages and included 30 questions. The questions evaluated the oral hygiene practices of subjects as well as details of how the subject evaluated self-perception of halitosis and factors associated with it.

The first section of the questionnaire investigated the tooth brushing and flossing rate of the respondents. The second part inquired the symptoms of gum bleeding, mobile teeth, dryness in the mouth or eyes, oral ulcers, undesired taste and tongue coating. The third part of the questionnaire focused on general medical conditions, nutritional status, drug intake, menstrual cycle manifestations of each subject. The Genuine perception of halitosis noticed by the subject herself, the frequency, the means she used for detection of bad oral breath, whether she visited a dentist in the past and the social impact of halitosis, and whether it has strained the participant from social interaction. Descriptive statistics was done via Google forms.

Ethical clearance was obtained from the Scientific Research Committee at College of Dentistry, King Khalid University. Participation was voluntary, verbal and written consents were obtained prior to participation.

RESULTS

373 young Saudi females responded to the questionnaire, age range between 18-45 years, females aged between 18-25 years constituted 165 subjects equivalent to 43.9%, 26-35 years accounted for 127 corresponding to 34.2% and samples aging 36-45 years were 81 subjects equal to 21.9%.

62.1% (233 out of 373) subjects reported that they brush their teeth daily, 7.2% (27 out of 373) stated they never brush their teeth, 29.9% (112 out of 373) of the samples do not brush their teeth regularly.

81.1% brush their teeth once a day, 11.6% brush twice, while 7.3% brush three times a day. 15.8% (58 out of 373) reported using dental floss to maintain oral hygiene, 50% of the study sample (187 out of 373) never used dental floss while 33.2% (124 out of 373) use dental floss occasionally. 86.7% floss once a day, 7.8% use it twice and 2.4% use it three times a day. 29.5% (111 out of 373) use mouth wash once daily, 5.1% (19 out of 373) use it twice, 0.8% (3 out of 373) use it three times a day while 63.8% (240 out of 373) do not use mouth wash at all.

Table 1: Oral Hygiene Practices of the study samples

Age Group	No. (%)
18-25	165 (43.9%)
26-35	127(34.2%)
36-45	81(21.9%)
Do you brush your teeth every day? (Yes)	233 (62.1%)
If yes how many times per day?	
Once	189 (81.1%)
Twice	27 (11.6%)
Three times	17 (7.3%)
Do you floss your teeth daily? (Yes)	59 (15.8%)
Do you use mouth wash daily? (Yes)	111 (29.5%)

Table 2: Oral Symptoms of the surveyed sample

Symptom	Yes No. (%)	No No. (%)
Do your gums bleed daily while tooth brushing	115 (30.6%)	258 (69.4%)
Do you have a loose tooth or teeth	97 (25.8%)	276 (74.2%)
Do you have a dry mouth?	78 (20.2%)	295 (79.8%)
Do you experience dryness in your eyes	57 (15.2%)	316 (84.8%)
Do you feel a bad taste in your mouth?	157 (41.8%)	216 (58.2%)
Is your tongue frequently coated with white or yellowish deposits?	139 (37.6%)	234 (62.4%)

The highest percentage of medical conditions reported in the study samples were stomach dysfunction 36.8% and sinusitis 35.3%, majority of subjects (88%) were not on diet, 49.5% were not using any regular medications, 33.1% take vitamins supplements regularly.

72.1% (271 out of 373) have regular menstrual cycle, 90% of which experience physical symptoms three to five days prior to their menstrual cycle, 83.2% experience behavioral changes and 91% face

psychological changes preceding their menstruation. 32.7% feel their mouth breath changes prior to their menstrual cycle.

Regarding self-perception of halitosis, 193 females (51.3%) stated they have bad oral breath, especially when waking up in the morning, and from those who believe in having bad oral breath, 70% discovered the issue by themselves, 19% were told by their family or friends. 70% of them use chewing gum to eradicate the problem and 20% use mouth wash.

13.9% of got checked by a dentist, 67.1% from them received an examination for their tooth decay, 27.8% received gingival examination, while only 5.1% received instrumental assessment of intensity of bad breath. 80.9% reported they never had a prescribed treatment for this condition, 19.1% reported going through a prescribed treatment such as extraction of a tooth, gingival treatment or medications.

Regarding the social impact of self-perceived halitosis, 50% of the respondents feel very concerned about other people's reaction to bad breath, 8% reported that it is socially affecting their lives, 20% hesitate to talk to others, and 47% feel very concerned when people are nearby.

Table 3: General medical condition of the participants

General Medical Condition	No. (%)
Stomach Dysfunction	138 (36.8%)
Sinusitis/ Nasal Condition	132 (35.3%)
Anemia	31 (8.1%)
Lung/ Bronchial Diseases	20 (5.4%)
Diabetes	15 (3.9%)
Others	37 (10.5%)
Do you take regular medication	Yes (49.5%)
Do you take vitamins	Yes (33.1%)
Do you experience physical symptoms three to five days prior to their menstrual cycle	Yes (90%)
Do you experience behavioral symptoms three to five days prior to their menstrual cycle	Yes (83.2%)
Do you experience psychological symptoms three to five days prior to their menstrual cycle	Yes (91%)
Before or during your menstruation, do you experience change your mouth breath	Yes 123 (32.7%) No 251 (56.8%)

Table 4: Self-perception of halitosis among surveyed sample

Self-Perception	No. (%)
Do you suffer from bad breath?	
Yes	193 (51.3%)
No	180 (48.4%)
What time during the day do you find your breath worst	
In the morning	69.2%
When I am hungry	10.8%
When I am thirsty	8.8%
After waking up from sleeping anytime during the day	11.2%
In the past month did your breath interfere with your ability to function at your workplace or with your social life	
Yes	8%
No	71.8%
Sometimes	20.1%
Are you concerned about other people's behavior toward yourself on account of your breath?	
Yes	189 (50.7%)
No	184 (49.3%)
How did you find out you had bad breath?	

By myself	135 out of 193 (70.1%)
Someone told me	37 out of 193 (19%)
Other	21 Out of 193 (10.9%)
Do you have any of the problems listed below because of your bad breath?	
I hesitate to talk to other people.	29.4%
I am uneasy whenever someone is nearby	47.3%
I do not like to meet other people	3%
I cannot be close to people socially.	12.7%
Other people avoid me	7.6%
What measures do you take to reduce the condition?	
Mouth wash	39 out of 193 (20.2%)
Chewing gum	135 out of 193 (70%)
Other	19 out of 193 (9.8%)
Have you ever had an examination for bad breath by your dentist?	
Yes	46 (13.9%)
No	289 (87%)
What kind of examination did you receive?	
Examination of tooth decay	67.1%
Gingival examination	27.8%
Instrumental assessment of intensity of bad breath	5.1%
Have you had any treatments for bad breath by either a physician or a dentist	
Yes	19.1%
No	80.9%
If so, describe below:	
Mouth wash	42.6%
Dental treatment (gingival treatment/tooth extraction)	46.5%
Medications	10.9%

DISCUSSION

Halitosis is an agonizing medical condition that needs to be tackled from a multidisciplinary point of view.^{5,7} Recognition of the factors associated with oral malodor is crucial for reaching the accurate diagnosis and treatment plan.¹² Currently there is inadequate data on self-perception of halitosis in the southern region of the Kingdom of Saudi Arabia. This study was conducted to determine the prevalence of self-perceived oral malodor within a sample of young female Saudi females residing in Abha to reflect an image and not for generalization purpose.

The prevalence of self-perceived halitosis in this study was found to be 51.3%, this result was found to be not only in accordance with other studies but even higher than most studies that tackled the same objective, in Kingdom of Saudi Arabia. Self-perception of halitosis among a sample of individuals residing in Riyadh was found to be

22.8%, 42.1% among a sample of diabetic patients in Riyadh, and 36.8% among a sample of dental patients multiple cities in KSA.^{17,21,22}

The results of self-perception of halitosis obtained from this study was higher than studies done worldwide, in a sample of Kuwaiti population, it was found to be 23.3%, Italy registered a 19.4% of self-perceived halitosis, a sample of Chinese dental patients recorded a high percentage of 62.8%, Thai patients recorded a lower percentage of 61.1%.^{14,23,13,24}

71.9% of the study participants discovered they have bad breath by themselves, 19.6% reported they were told by family or friends about the problem, so in this study results did not reflect a significant role of people around in diagnosing the issue, this could be attributed to social stigma related to oral malodor. 69.2% stated they experience the worst oral breath in the morning and this is in total accordance with studies tackling the same issue,^{17,25} this could be

explained by the low salivary flow during sleeping and this stimulates the activity of anaerobic bacteria.²⁶

Almost half of the study samples reported feeling uncomfortable when someone is nearby. Nearly one quarter hesitate to talk to others thus creating a social restriction and sense of embarrassment that affects their interaction with others.^{17,25} Hence, affected individuals try to mask the offensive odor by using mouth washes and chewing gums. Studies found that such products mask bad breath for a relatively short period of time,²⁷ chewing gums acts via stimulation of salivary flow.⁶

Only 13.9% of the participants consulted a dentist regarding self-perceived halitosis, and among these, 80% received an intraoral examination related to dental decay and periodontal examination, this result confirms the definite need for awareness campaigns to increase patients' dental care seeking behavior. This was in accordance with a 2017 study indicated a 21.4% self-perceived halitosis among female university students in Saudi Arabia, this study has indicated a genuine need about the causes of and methods for managing halitosis.²⁸ Within the limitations of this study, further studies are needed to correlate factors investigated in this study to the self-perceived halitosis as only descriptive analysis was done in this study, and including male patients would strengthen the outcome of the study as well.

CONCLUSIONS

The prevalence of self-perceived halitosis among a sample of young Saudi females in Abha is higher than results detected in other studies in the Kingdom of Saudi Arabia. Dental health care seeking behavior needs to be promoted, as less than a quarter of the study participants consulted a dentist regarding their halitosis. Further studies are needed to correlate the factors investigated in this study with the self-perceived halitosis.

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