

HALITOSIS - ETIOLOGICAL FACTORS

¹WASEEM AHMAD SHAH, ENT SPECIALIST, JLNH HOSPITAL, SRINAGAR, J&K .

²FOUZIA NAZIR, ASSISTANT PROFESSOR, DEPT. OF COMMUNITY MEDICINE, GOVT. MEDICAL COLLEGE, ANANTNAG, J&K.

Abstract: Halitosis, bad breath or oral malodour are all synonyms for the same pathology. Halitosis has a large social and economic impact. It is very common in general population and nearly more than 50% of the general population have halitosis. However, only a few patients visit clinicians to seek help for halitosis. Halitosis is formed by volatile molecules which are caused because of pathological or nonpathological reasons, and it originates from an oral or a non-oral source. This is a prospective clinical study done in governorate in the period between August 2015 to July 2018. One hundred fifty six patients complaining of halitosis which smelled and analyzed by the clinician (objective and subjective). In all the patients history, examination and if needed, investigation were performed for establishing the diagnosis. Out of total, 88 were male and 68 were female and it is found that the majority of causes of halitosis are extra oral (108 patients – equal to 64%), the remaining patients (48) had oral causes (36%).

Keywords: halitosis, diagnosis, therapy, psychophysiological disorders, management.

INTRODUCTION

Halitosis, bad breath or oral malodour are all synonyms for the same pathology. Halitosis has a large social and economic impact. For the majority of patients suffering from bad breath, and can have consequences for private or professional life, reasons can imply many specialties: dentistry, otorhinolaryngology, hepatology, genetics and psychiatry^{1, 2}. Moreover, halitosis can be indicative of underlying diseases. Halitosis is formed by volatile molecules which are caused because of pathological or nonpathological reasons and it originates from an oral or a non-oral source. It is very common in general population and nearly more than 50% of the general population have halitosis. However, only a few patients visit clinicians to seek help for halitosis. This fact suggests that the patients who do visit clinicians may have different psychological characteristics or values concerning their own breath than other individuals.

Halitosis is formed by volatile molecules which are caused because of pathological or nonpathological reasons, and it originates from an oral or a non-oral source. These volatile compounds are sulfur compounds, aromatic compounds, nitrogen-containing compounds, amines, short-chain fatty acids, alcohols or phenyl compounds, aliphatic compounds, and ketones .[3,4,5]

The first classification of halitosis done by Prinz (1930) ⁶, as follow:

- Odours arising from dental defect allowing food stagnation, from denture and excessive caries.
- Odours arising from the soft structures of oral cavity such as gingivitis, periodontal disease, Vincent's infection, ulcers and malignant disease.
- Odours arising from pharyngeal region and the nose especially pharyngitis, tonsillar infection, and adenoid, from- the nose like ozena and nasal tumours.
- Odours arising from digestive tract due to diseases of oesophagus, stricture and cancer causing ulceration.
- Odours arising from bronchopulmonary disease especially gangrene of the lung putrid bronchitis.
- Odours arising from metabolic disorders like DM, cirrhosis of the liver and uraemia.
- Odours arising from absorbed drugs and poisons especially the so called "lead breath".
- Odours from food, condiments and stimulant such as cooked eggs and cheese. Onion, garlic and leeks are well known for their effects. Alcohol and tobacco smoking odours may be recognized several hours after use.

The three main methods of analyzing oral malodour are organoleptic measurement, gas chromatography (GC) and sulphide monitoring. Organoleptic measurement is a sensory test scored on the basis of the examiner's perception of a subject's oral malodour. GC, performed with apparatus equipped with a flame photometric detector, is specific for detecting sulphur in mouth air. GC is considered the gold standard for measuring oral malodour because it is specific for volatile sulphur compounds (VSC), the main cause of oral malodour.⁷ However, the GC equipment is not compact, and the procedure requires a skillful operator; therefore, it is impractical for practitioners to equip their offices for GC.

Sulphide monitors analyze for total sulphur content of the subject's mouth air. Although compact sulphide monitors are portable and easy to use, most are not specific for VSC.^{8,9} For example, the Halimeter (Interscan Co., Chatsworth, CA) has high sensitivity for hydrogen sulphide, but low sensitivity for methyl mercaptan, which is a significant contributor to halitosis caused by periodontal disease. Thus, the most reliable and practical procedure for evaluating a patient's level of oral malodour is organoleptic measurement.⁹

Table 1 Organoleptic scoring scale

Category	Description
0	Absence of odour Odour cannot be detected
1	Questionable odour Odour is detectable, although the examiner could not recognize it as malodour
2	Slight malodour Odour is deemed to exceed the threshold of malodour recognition
3	Moderate malodour Malodour is definitely detected
4	Strong malodour Strong malodour is detected, but can be tolerated by examiner
5	Severe malodour Overwhelming malodour is detected and cannot be tolerated by examiner (examiner instinctively averts the nose)

AIM OT THE STUDY

The aim of this study is to identify the various etiological factors associated with halitosis.

MATERIAL AND METHOD

This is a prospective clinical study done SKIMS- MCH and OHC- GMC srinagar in the period between August 2015 to July 2018. One hundred fifty six patients complaining of halitosis which smelled and analyzed by the clinician (objective and subjective). All the cases of halitosis caused by foods, smoking and alcohol drinking were excluded from this study, and this is applicable for those cases which were not smelled by the examiner or bad odour smelled by the examiner but not experienced by the patients. In all the patients history, examination and if needed, investigation were performed for establishing the diagnosis.

Severity of halitosis was graded on a given severity scale with the minimum score of grade I and maximum score of grade V. Out of total subjects with halitosis, 52 subjects (33%) presented with grade-I, 34 subjects (22%) with grade-II, 38 subjects (24%) with grade-III, 22 subjects (14%) with grade- IV and 10 subjects (6%) with grade-V. TABLE 2

TABLE 2

GRADE OF HALITOSIS	NUMBER OF PATIENTS
GRADE 1	52
GRADE 2	34
GRADE 3	38
GRADE 4	22
GRADE 5	10

RESULTS AND DISCUSSION

A total of 156 patients were enrolled in the study. Out of total, 88 were male and 68 were female. In the present study prevalence of halitosis in male subjects (40%) are higher as compared to the female subjects (22.6%). The possible explanation for this finding could be prevalence of smoking and tobacco chewing habits in male subjects which is negligible in female subjects. Various published studies revealed that men had more halitosis than women; and also suggested that men and women seem to suffer in the same proportions; however, women seek for professional help faster than men for the treatment of any related dental problems.[11]

Severity of halitosis was graded on a given severity scale with the minimum score of grade I and maximum score of grade V. Out of total subjects with halitosis, 52 subjects (33%) presented with grade-I, 34 subjects (22%) with grade-II, 38 subjects (24%) with grade-III, 22 subjects (14%) with grade- IV and 10 subjects (10%) with grade-V. TABLE 3

TABLE 3

GRADE OF HALITOSIS	NUMBER OF PATIENTS
GRADE 1	52
GRADE 2	34
GRADE 3	38
GRADE 4	22
GRADE 5	10

In present study the severity of halitosis was measured with the subjective halitosis detection test known as organoleptic scoring system. The highest number of individuals were recorded with the Grade- I halitosis (33%) and the least number recorded with the Grade-V halitosis(10%). The finding suggests that maximum population affects with less severe grades of halitosis and little portion of population suffers from more severe grades of halitosis.

Table (4) shows the causes of halitosis, it is found that the majority of causes of halitosis are extra oral (108 patients -equal to 64%), the remaining patients (48) had oral causes (36%). This results is different from many studies done in this field, all of these stated that 80-90% of the bad breath originate locally in the oral cavity(12,13,14), but Hanker(15) et al stated that up to 90% of cases of halitosis results from gastrointestinal or otolaryngological problems.

Table 4

ORAL (48 PATIENTS)		EXTRA ORAL (108 PATIENTS)				
		E N T		MEDICAL		
	NO			NO	NO	
PERIDONTAL	16	TONSILLITIS		14	Acute febrile illness	10
DENTURE	14	PHARYGITIS		12	GERD	9
DENTAL CARIES		SINUSITIS		15	Bronchitis	3
POST OPERATIVE	10	DNS		8	Renal failure	3
ORAL CARCINOMA	4	SINONASAL POLYPOSIS		4	D.M	3
XEROSTOMIA	4	EPISTAXIS			Metabolic diorder	1
		NASAL FOREIGN BODY		4	Pneumonia	3
		QUINCY		3	Broncheactasis	2
		LARYNGEAL,OROPHARYNGEAL AND NASAL-CARCINOMA		2	Bronchogenic carcinoma	1
				4	Immunocompromised	2
					Hormone fluctuation: menstruation	2
					Neoplasm of GIT	1
					Chronic liver diseases	1
					Lung abscess	1

CONCLUSION:

Halitosis, also commonly known as “bad breath,” is a concern of many patients seeking help from health-care professionals. The thorough understanding of the etiology of halitosis can be helpful to prevent misdiagnosis or unnecessary treatment. The proper diagnosis, identification of the etiology, and timely referrals are must for the better management of the halitosis.

REFERENCES:

- 1 - Morita M, Wang HL. Association between malodour and adult periodontitis. *J Clin-Periodontol*. 2002; 28(4): 813-819.
- 2- Meningaud JP, Bado F, Faure E, Bertrand JC, Guilbert F. Halitosis in 1999. *Rev-Stomatol-Chir-Maxillofac*. 1999; 100(5): 240-244.
3. Goldberg S, Kozlovsky A, Gordon D, Gelernter I, Sintov A, Rosenberg M. Cadaverine as a putative component of oral malodor. *Journal of dental research*. 1994;73:1168–72. [PubMed] [Google Scholar]
4. Loesche WJ, Kazor C. Microbiology and treatment of halitosis. *Periodontology* 2000. 2002;28:256–79. [PubMed] [Google Scholar]
5. Campisi G, Musciotto A, Di Fede O, Di Marco V, Craxi A. Halitosis: Could it be more than mere bad breath? *Internal and emergency medicine*. 2011;6:315–9. [PubMed] [Google Scholar]
- 6- Thomas I, Goldman I. *Oral pathology*, 5th ed., CV Mosby Company, St. Louis. 1960: 931-944.
7. Tonzetich J. Direct gas chromatographic analysis of sulphur compounds in mouth air in man. *Arch Oral Biol* 1971; 16:587-97.
8. Richter JT. Diagnosis and treatment of halitosis. *Compendium Cont Dent Edu* 1996; 17:370-88.
9. Yaegaki K, Coil JM. Diagnosis of halitosis by utilizing questionnaire and organoleptic measurement. *Quintessence* 1999; 18:745-53.
10. Miyazaki H, Arao M, Okamura K, Kawaguchi Y, Toyofuku A, Hoshi K, Yaegaki K. Tentative classification of halitosis and its treatment needs. *Niigata Dent J* 1999; 32:7-11. Japanese.
11. Murata T, Rahardjo A, Fujiyama Y, Yamaga T, Hanada M, Yaegaki K. Development of a compact and simple gas chromatography for halitosis measurement. *J Periodontol*. 2006;77:1142-7.
- 12- Tonzetich J. Production and origin of oral malodour; a review of mechanisms and methods of analysis. *J Periodontol*. 1977; 48: 13-20.
- 13- Scully C, El-Maaytah M, Porter SR, Greenman J. Breath odour etiopathogenesis, assessment and management. *Euro-J-Oral-Sci*. 1997; 105: 287-293.
- 14- Carmona T, Limeres Posse, Diz DP, Fernandez FJ, Garcia V. Extra oral aetiology of halitosis. *Med-Oral*. 2001; 6(1): 40-47.
- 15- Hanker J, Schuster F, Nessler K. Successful treatment of gut-caused halitosis with suspension of living non pathogenic E-coli: a case report. *Euro-J-Pediatr*. 2001; 160(10): 592-594.