Association between Halitosis and Periodontal Status

Bondada Venkata Mani Anirudh, Jayanth Kumar Vadivel*

Department of Oral Medicine, Saveetha University, Chennai, India

ABSTRACT

INTRODUCTION
Bad breath or halitosis is an unpleasant odor which is emitted from the oral cavity. Volatile sulphur may be one of the reasons for halitosis.

AIM
The aim of this study is to evaluate the association between halitosis and periodontal status.

MATERIALS AND METHODS
A total of 24 patients are recorded with halitosis from June 2019 to February 2020. Out of which 20 patients were associated with periodontal disease. The data was tabulated and analyzed through SPSS.

RESULTS
A prevalence rate of 83 % was seen where halitosis was associated with periodontal disease. $P < 0.05$ between age and periodontal status.

CONCLUSION
Within the limits of the study, there was strong association between halitosis and periodontal status.

KEYWORDS
Halitosis, Periodontitis, VSC, Sulphur

Corresponding Author:

Jayanth Kumar Vadivel, Department of Oral Medicine, Saveetha University, Chennai, India;
Email: jdoctorjayanth@gmail.com

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INTRODUCTION

Periodontitis is a multifactorial disease of the periodontium which are the tissues surrounding and supporting the tooth structure, potentially resulting in chronic and/or acute progressive destruction of the periodontium.[1] It's a highly prevalent oral health disease.[2] Periodontitis can cause oral health conditions such as mobility / drifting teeth and toothache, which therefore impacts the oral health.[3] One of the symptoms which is closely relevant to psychosocial factors of periodontal patients is oral malodor or otherwise called as halitosis.[4]

Halitosis generally referred to as bad breath is an unpleasant odor which is emitted from the mouth. Bacterial accumulation in deep pockets, tongue coating, and food stagnating are one among the various reasons to cause halitosis.[5] Halitosis is assessed into 3 types – Genuine, pseudo and halitophobia. Genuine halitosis- where halitosis is past acceptable levels and is further divided into physiological halitosis and pathological halitosis. Physiological halitosis occurs within the alimentary canal thanks to intake of any spicy food, or food which irritates thegastrointestinal system.[6] Pathological Halitosis which may be because of periodontitis, pathology of mucous membranes, respiratory tract infection, systemic disease etc.[7] Pseudo Halitosis- Patient believes that they have halitosis, but on assessment there's no evidence of bad odor. Halitophobia – Patients assume that they halitosis, in spite of doing treatment and counseling. These patients need to seek psychiatrists for further counseling.[8]

Halitosis are often caused by numerous factors like periodontitis, dry sockets, ulcers within the mouth, necrotizing ulcerative gingivitis etc. Volatile Sulphur Compounds (VSC) like hydrogen sulphide, methyl mercaptan etc. are Sulphur gases which helps in causing halitosis. Volatile sulphur compounds are formed mainly due to putrefactive activities of bacteria in the mouth in saliva, gingival sulcus, tongue and other sites within the mouth.[8,9] Tongue can act as a chief source for gathering of VSC Microorganisms like Prophyromonas gingivalis, Treponema denticola and Prophyromonas endodontalis etc. which also can aid in causing halitosis.[8,10] Diagnosing halitosis are often done using 3 different techniques-organoleptic measurement / Snifftest, gas chromatography and sulphide monitoring.[10]

Organoleptic measurement-Organoleptic measurement is often done by just sniffing the patient's breath and scoring the extent of oral malodor. By inserting a clear tube (2.5 x 10 cm) into the patient's mouth and having the individual breathe out slowly, the breath which is undiluted by room air, can be assessed and assigned an organoleptic score. However, to stop the patient from seeing the examiner sniffing from the tube, a privacy screen is usually used. The tube is inserted through a privacy screen (50 cm – 70 cm) that isolates the examiner and therefore the patient. The utilization of a privacy screen allows the patient to accept that they havegone through a selected malodour examination instead of the direct-sniffing procedure.[11,12]

Gas Chromatography-Using gas chromatography we will quantify VSCs. It isolates and analyses compounds which will be vaporized without decomposition; samples are collected from saliva, tongue coating, or expired breath. In this method, the patient should close the mouth and hold the air for 30 seconds, and then the mouth air (10 ml) is suctioned utilizing a gas-tight syringe. After collecting the samples, it's infused into the gas chromatograph column at 70 °C. The outcomes are precise and dependable, yet this method is expensive, time consuming and is typically not utilized in the chair side and also requires a talented operator because it may be a big apparatus. Mostly, the outcomes of the gas chromatography method show high correlation to organoleptic measurements but gas chromatography has high sensitivity and it can distinguish low concentration molecules.[11,13]

Sulphide monitoring-In this technique before taking the samples, patients should close the mouth and should avoid having food for five min before sample collection, and then a disposable tube of the sulfide monitor is inserted into the patient's mouth to gather mouth air. The patient is breathing through the nose and therefore the disposable tube is connected to the monitor. Sulfur-containingcompounds within the breath can produce an electro-chemical reaction. This response is related directly with levels of volatile sulfur-containing compounds.[10,14,15]

Our team has extensive knowledge and research experience that has translated into high quality publications.[16-35] The aim of this research is to assess the association of halitosis and periodontal status.

MATERIALS AND METHODS

It's a single centered retrospective study in a private dental institution, Chennai. The samples were taken from the patients who checked in From June 2019 to February 2021, reported to

the private dental hospital with bad breath. Ethical clearance for this study was obtained from the institutional review board. The disadvantage of this study was small sample size, trends and geographic location.

Two reviewers were involved in this study. The samples were taken from patients who checked in from June'19 to February' 21. Only 25 patients were treated for halitosis. Out of which 20 patients were associated with periodontal disease. Internal validity includes samples with halitosis and periodontal diseases. External validity is replication of results in different time periods.

The data was collected, verified, tabulated and analyzed. The data was imposed on SPSS and the technique used to quantify the data was Chi square. The statistical significance value is set at 0.5.

RESULTS AND DISCUSSION

A total of 24 patients were recorded with halitosis in which 20 patients had halitosis along with periodontal disease. The prevalence rate of halitosis caused due to periodontal disease was 83 %,in which 65 % were males and 35 % were females (Figure 1). 50 % were affected with periodontitis and 50 % were affected with gingivitis (Figure 2).

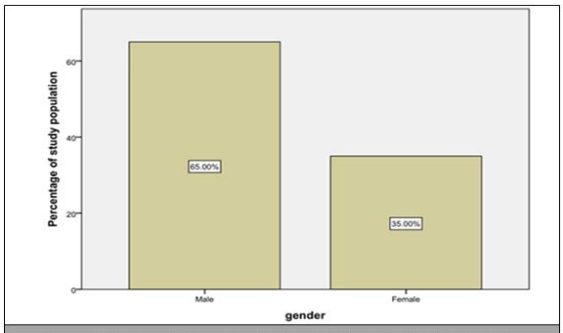

Figure 1. This Graph Shows the Number of Patients With Halitosis with Periodontal Disease Among Different Genders. X Axis Represents the Gender, Male (65 %), and Female (35 %) And Y Axis Represents The Percentage of The Study Population.

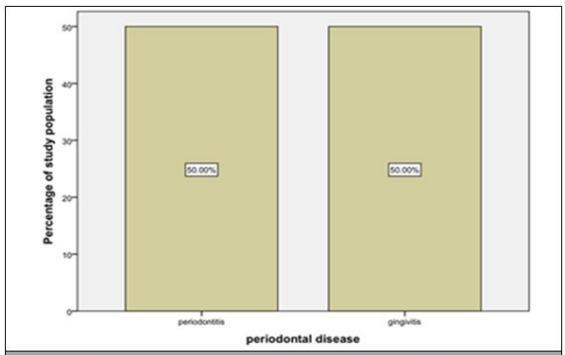

Figure 2.This Graph Shows The Number of Patients With Halitosis With Different Types of Periodontal Disease. X Axis Represents the Type of Periodontal Disease, Periodontitis (50 %), and Gingivitis (50 %) and The Y Axis Represents The Percentage of The Study Population.

Chi square test was done between age and periodontal status and gender and periodontal status (Figure 4). The chi square between age and periodontal status was found to be significant (p = 0.009) where it was less than p < 0.05. The most affected age group was 41 - 50 years (30 %)followed by 18 - 30 years (25 %) and 51 and above years (25 %) (Figure 3).

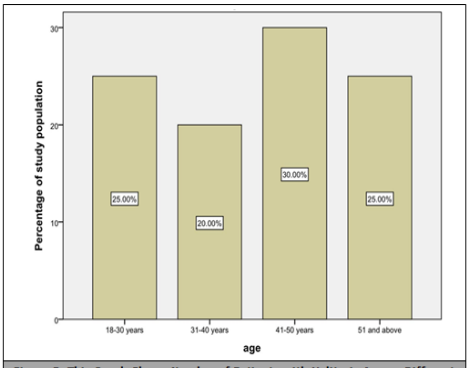

Figure 3. This Graph Shows Number of Patients with Halitosis Among Different Age Group X Axis Represents Different Age Groups, 18 - 30 Years(25 %), 31 - 40 Years (20 %), 41 - 50 Years (30 %) and 51 and Above Years (25 %) and Y Axis Represents Percentage of Study Population.

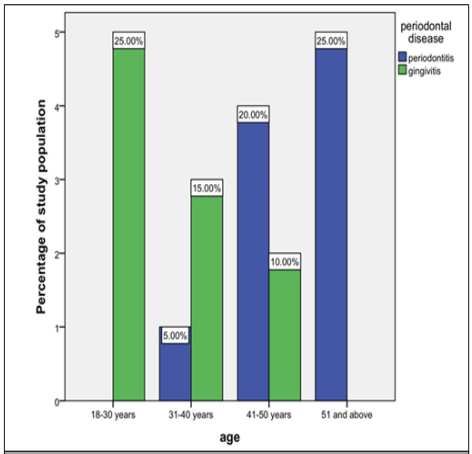

Figure 4. This Graph Shows The Correlation Between Age and Types of Periodontal Disease. X Axis represents the Age Groups and The Y Axis Represents the Percentage of The Study Population. Blue Represents Periodontitis And Green Represents Gingivitis. 25 % In The Age Group of 18 - 30 Years Have Gingivitis and 25 % In The Age Group of 51 Years and Above Have Periodontitis. Chi-Square Analysis was done Between Age and Periodontal Disease and It Was Statistically Significant (P < 0.05, P Value = 0.009).

One study showed that males have a higher prevalence rate of halitosis due to the smoking habit.This result is in consensus with our study.[36]

Vladimir M study showed that people above 51 years were associated with halitosis.[37] Studiesalso show that higher the age group the more they become susceptible to periodontal problems and thus causes halitosis.[38,39] The result is in consensus with our study.

Madhushankari, et al. states that the higher the age groups the more the chance of halitosis due

to the susceptibility of periodontal diseases.[40] In one study it was found that $p < 0.05$ between ageand periodontal disease shows significant. The result was in consensus with our study.

The limitations of our study included, single centered short sample size. Further studies can be done with large sample size, multi centered study. Different ethnic group can be included in further studies.

CONCLUSION

Within the limitation of study it's suggested that there is a strong association between halitosis and periodontal status. Awareness has to be created about the potential causes of halitosis and its treatment. Smokers should cease the habit. Proper brushing technique should be taught to the public.

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