

# Association of Perceived Stress with Halitosis among Undergraduate Dental Students

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## ABSTRACT

**Objective:** The present study aimed to evaluate the level of perceived stress is associated with self-reported halitosis among undergraduate dental students in Pakistan

**Method:** The cross-sectional study based on survey design was directed to evaluate the association of level of perceived stress and halitosis among undergraduate dental students. Sample size of the study was 278 undergraduate dental students from private dental colleges of Lahore. Independent sample t test was used.

**Results:** The results of independent sample t test revealed a significant difference of level of perceived stress between the undergraduate dental students with halitosis and without halitosis ( $t=-21.784$ ,  $P=.000$ ). Undergraduate dental students who don't have reported halitosis have lower level of perceived stress (Mean±SD, 11.76±3.01) as compared to those students who reported halitosis (Mean±SD, 22.13±4.32)

**Conclusion:** Higher prevalence of halitosis was found among dental students with moderate perceived stress

**Keywords:** Halitosis, Dental students, Perceived stress

## INTRODUCTION

Genuine halitosis is an oral malodor caused mainly due to volatile sulfur compounds produced by microorganisms present in the mouth affecting about 22% to 50% of individuals' worldwide.<sup>1</sup> A recent systematic review investigating the global prevalence observed that above 32% of individuals are affected by bad breath.<sup>1</sup> The etiology of malodor can be originated from systemic or local factors.<sup>1</sup> In most cases, inadequate oral hygiene practices are strongly associated with self-reported bad breath.<sup>2</sup> In this way, poor oral hygiene causes oral health problems as carious lesions and periodontal disease, which in turn have also been attributed as the main reasons for malodor. Moreover, unhealthy habits such as alcohol use, smoking, and an unbalanced diet can be predisposing factors to its development.<sup>2,3</sup> On the other hand, systemic diseases including gastrointestinal tract disorders, diabetes, renal and hepatic insufficiencies even as chronic sinusitis are some of the systemic factors correlated to self-report of halitosis.<sup>2</sup> The literature has also shown that psychological factors can play an important role in the prevalence of bad breath.<sup>4</sup> Two different explanations have been addressed for this association. The use of medication for these disorders could alter the flow and composition of saliva leading to increased bacterial colonization and degradation of proteins present in the mouth, resulting in an elevation of the volatile sulfur-containing responsible for bad breath.<sup>3,4</sup> Besides, individuals with mood disorders, such as depressive, stressed, and anxious people could present a decrease in self-care.<sup>5</sup> These individuals are less motivated to maintain oral health, culminating in poor hygiene. Although different forms of measurement and classification of halitosis are used, self-perception is perhaps the most relevant

measure, since it can reflect how an individual feel about his bad breath, which strongly affects not only the social life of the individual but also interpersonal contact, which could compromise the relationships, mainly when perceived by other individuals, impacting the quality of life.<sup>9</sup> Systemic disorders such as diabetes and renal/hepatic problems are less presented in young adults, so the development of halitosis in this population is more related to local and psychological factors.<sup>3</sup> In this way, individuals in academic activities are more vulnerable to develop mood disorders.<sup>10</sup> Few studies have evaluated factors associated with halitosis in young individuals, in representative samples. Thus, the present study aimed to evaluate the level of perceived stress is associated with self-reported halitosis among undergraduate dental students in Pakistan.

## METHODOLOGY

The cross-sectional study based on survey design was directed to evaluate the association of level of perceived stress and halitosis among undergraduate dental students. Sample size of the study was 278 undergraduate dental students from private dental colleges of Lahore. After the study approval from the institutional ethical review committee and the principal of respective dental colleges, data was collected after lecture while requesting the mentor to spare the students 5minutes prior for participating in study. For data collection, perceived stress scale was used along with the question of halitosis presence or absence. Perceived stress scale comprised of 10 questions with a rating scale of 4point Likert scale from 0 to 4 where 0 means never, and 4 means very often. Demographic variables was gender. Independent sample t test was used to evaluate the difference of level of perceived stress

among undergraduate dental students and its association with halitosis.

**RESULTS**

Sample of 278 comprised of 53.60% females and 46.40% males.

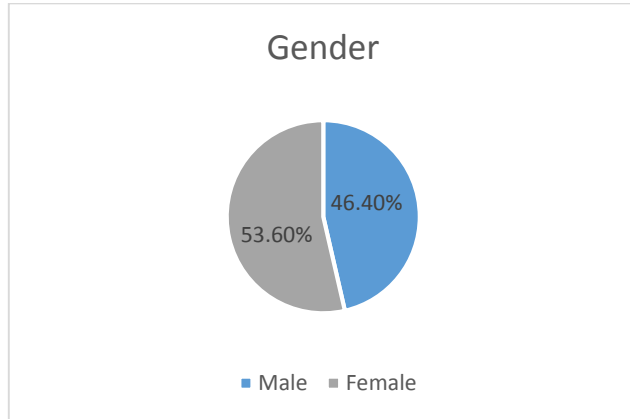
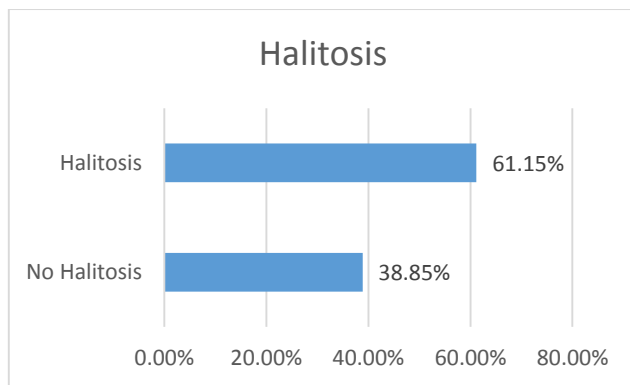


Figure 1: Gender wise segregation of data

Among 278 undergraduate dental students, 61.15% reported halitosis whereas 38.85% reported no halitosis.



Graph 1: Halitosis

The results of independent sample t test revealed a significant difference of level of perceived stress between the undergraduate dental students with halitosis and without halitosis (t=-21.784, P=.000). Undergraduate dental students who don't have reported halitosis have lower level of perceived stress (Mean±SD, 11.76±3.01) as compared to those students who reported halitosis (Mean±SD, 22.13±4.32)

Table 1: Perceived stress among undergraduate dental students

		Mean	Std. Deviation	t	Sig.
Perceived Stress	No odor (N=108)	11.76	3.01	-21.784	.000
	Halitosis (N=170)	22.13	4.32		

The results of Chi-Square test revealed a significant difference of perceived stress among undergraduate dental students with and without reported halitosis (X<sup>2</sup>=180.684, P= .000). Students who reported bad breathing were 1.79%

falls under low perceived stress level whereas 28.06% students who reported low level of perceived stress with no odour in breathing. 9.7% students falls under moderate stress level who don't have halitosis whereas 52.16% were those who have moderate perceived stress and halitosis. High level of perceived stress was reported by 1.08% students who don't have halitosis whereas 7.2% students reported halitosis and high perceived stress.

Table 2: Level of Perceived stress among undergraduate dental students

	Perceived Stress			X <sup>2</sup>	Sig.
	Low Perceived Stress	Moderate Perceived Stress	High Perceived Stress		
No Odour in Breathing	78(28.06%)	27(9.7%)	3(1.08%)	180.684	.000
Halitosis	5(1.79%)	145(52.16%)	20(7.2%)		

**DISCUSSION**

The findings of current study reported a higher percentage of halitosis among undergraduate dental students (61.15%) as compared to another study in which 52.7% students reported halitosis. This was significantly greater as compared to the results reported in a study conducted in Saudi Arabia among students of dentistry, which was only 10% of the participants were diagnosed with halitosis.<sup>13</sup> A similar study reported halitosis among 75% of the participants.<sup>14</sup> The results of current study reported that halitosis can happen to dental students as well about which it is believed that they have better knowledge and awareness of oral health maintenance as compared to general population. The halitosis prevalence was reported higher among dental students as compared to general population. The halitosis prevalence explored in large-scale studies reported in numerous countries in the general population to be 6% to 23% in Japan<sup>7</sup>, 31.5% in Switzerland<sup>20</sup> and 27.5% in China.<sup>8</sup> Some research associated oral malodor with stress,<sup>21, 22</sup> and a number of studies reported that stress was very common among dental students.<sup>23-25</sup> It may be necessary to conduct a study to explore the possibility of associations between a high prevalence of oral malodor and the level of stress among dental students.

The findings of the study revealed a significant difference of level of perceived stress between the undergraduate dental students with halitosis and without halitosis. Undergraduate dental students who don't have reported halitosis have lower level of perceived stress as compared to those students who reported halitosis. A significant difference of perceived stress among undergraduate dental students with and without reported halitosis was also found. Students who reported bad breathing were 1.79% falls under low perceived stress level whereas 28.06% students who reported low level of perceived stress with no odour in breathing. 9.7% students falls under moderate stress level who don't have halitosis whereas 52.16% were those who have moderate perceived stress and halitosis which were in not in line with findings of Malaysian study.<sup>11</sup> High level of perceived stress was reported by 1.08% students who don't have halitosis whereas 7.2% students reported halitosis and high perceived stress.

To conclude, higher prevalence of halitosis was found among dental students with moderate perceived stress.

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