Selfperception, Knowledge and Attitude about Halitosis Among Young Adults: A Cross Sectional Questionnaire Study


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ABSTRACT
Background: Halitosis is a very common condition that affects the quality of the life of an individual and has important social and psychological implications. Our survey was to evaluate the self-acknowledgement and understanding of halitosis among the young adults in the age group of 18 to 30 years.

Materials and methods: This is a cross sectional survey conducted using a questionnaire that was shared with the participants using Google forms. (https://forms.gle/ED3uMpXJ2pa4iAJT7)

Results: Most of the young adults who participated in the study claimed they do not have bad breath (54%). More females than males answered that they suffer from halitosis. Most of the participants experienced halitosis right after waking up in the morning.

Conclusion: Those with good oral hygiene practices like tooth brushing and using back of toothbrush to scrape tongue was found to have less intense bad breath.

Keywords: halitosis, oral hygiene, young adults, tooth brushing

I. INTRODUCTION
Halitosis is a common and not usually serious unpleasant odor in exhaled breath, also known as bad breath in layman terms. Halitosis is defined as breath that is offensive to others, which is caused by number of reasons including bacterial coating of tongue, periodontal disease, systemic disorders and different types of food. [1] The term halitosis was derived from Latin halitus which means breath and Greek osis which means pathological process and together the term means bad breath [2].

II. MATERIALS AND METHODS
This cross sectional study was conducted among the students of Sri Sankara Dental College, Akathumuri, for duration of two months (April 2022-May 2022). Convenience sampling was used. Accordingly, young adults who are aged between 18 to 30 years and who gave consent to participate were enrolled instudy.

The study was conducted using a questionnaire and was distributed among the participants through Google forms (https://forms.gle/ED3uMpXJ2pa4iAJT7). It consists of 30 questions based on age, gender, knowledge, attitude and self-perception on halitosis.

It is an important problem that can disrupt life in small ways for most people. The sufferers of halitosis are so many and reasons so varied that it requires a more thorough understanding in order to combat the issue [3]. Halitosis can cause major social problems and can make the person feel extremely unattractive. Social implications of halitosis seem it a very important subject for oral health professionals [4].

An alteration in normal bacterial population and an increase in volatile sulfur compounds can be found in the oral cavity of most people who suffer from halitosis. Bacterial load present on tongue is the major source for creating bad odour of mouth. Effective treatment of combating halitosis includes brushing teeth twice daily with a good fluoridated toothpaste and everyday use of mouthwash. [5] So this study was conducted to assess self-perception, knowledge and attitude about halitosis among young adults.
Statistical analysis was done using SPSS software version 25.0. Frequency and percentage distribution of the data was done using descriptive statistics. Chi square test was used to assess the association between variables.

III. RESULTS

The questionnaire was distributed among 168 participants out of whom 150 of them were enrolled according to the inclusion criteria.

Table 1 shows the frequency and percentage of age, gender, self-perception, knowledge and attitude about halitosis. 48.7% of them are from the age group of 24-26 years. Among the participants 81.3% were females and 18.7% were males. 86% participants knew what halitosis is and 14% did not know what halitosis is. 54.4% don’t have bad breath, 60% people most often experience bad breath after waking up in the morning. 36% don’t have intense bad breath and 40.7% have weakly intense bad breath. Most of the people among these participants don’t have a habit of smoking (97.3%) and drinking (96.7%). 47.3% participants told they suffer from stress sometimes and 34% suffer from stress often. 74% don’t have gum bleeding, 84% don’t have coating on their tongue. 78.7% suffer from dry mouth. 94.7% don’t have any effect on their social life due to bad breath. 75.3% don’t have anxiety issues due to bad breath and 69.3% haven’t encountered any problems due to bad breath. Among these participants 38.7% changed their tooth brush at a frequency of three months, 32% participants use roll stroke brushing technique, 72.7% don’t use mouth wash and 74.7% do not use tooth pick or dental floss. 49.3% clean their tongue with back side of tooth brush and 85.3% rinse their mouth after eating. 56.7% are not sure if they have any coating on their tongue. 86.1% of females and 89.3% of males don’t suffer from dry mouth. 76.6% of age group 21-23 years, 83.6% of age group 24-26 years and 37.5% of age group 27-30 years. Most of the participants don’t have coating on their tongue (100% of age group 18-20 years, 85.9% of age group 21-23 years, 87.7% of age group 24-26 years). 50 % of people of age group 27-30 years don’t have any idea about coating on their tongue. Most of the participants don’t suffer from dry mouth (100% of age group 18-20 years, 76.6% of age group 21-23 years, 83.6% of age group 24-26 years and 37.5% of age group 27-30 years). Most of the participants don’t have anxiety about bad breath when talking to other people (80% of age group 18-20 years, 71.9% of age group 21-23 years, 78.1% of age group 24-26 years, 75% of age group 27-30 years). Majority of participants have never encountered any problems due to bad breath (60% of age group of 18-20 years, 68.8% of age group 21-23 years and 76.7% of age group 24-26 years).

Table 3 shows the comparison of gender with self-perception on halitosis. 59% of female participants and 32.1% of male participants don’t have bad breath. 63.9% of female and 42.9% of male participants experience bad breath most often after waking up in the morning. 42.9% of males and 40.2% of females have weak intense bad breath. 99.2% of females and 89.3% of males don’t have a habit of smoking. 97.5% of females and 92.9% of males don’t have a habit of consumption of alcohol. 71.4% of males and 41.8% of females stated that they suffer from stress. 78.7% of females and 53.6% of males don’t have any experience of bleeding gums. 93.4% of females and 42.9% of males don’t have any coating on tongue. 86.1% females and 46.4% males don’t suffer from dry mouth. 73.8% of females and 82.2% of males don’t have anxiety about bad breath when talking to others. 75.4% of females and 42.9% of males haven’t encountered any problems due to bad breath.

Table 4 explains about comparison of self-testing halitosis with their attitude towards oral health. 37.6% don’t have any odor and they change the tooth brush with a frequency of 3 months. 50% have slight and noticeable odour and changes tooth brush with a frequency of 3 months. 60% have moderate odour and changes tooth brush with a
frequency of 6 months. 50% experience strong odor and changes tooth brush with a frequency of one year. 54.5% don’t have any odour and informed to have been using horizontal stroke method of brushing technique. 36.6% experience moderate odor and uses vertical stroke brushing technique. 40.7% experience strong odor and uses roll stroke brushing technique. 72.9% do not have any odor and doesn’t use mouth wash. 75% do not use mouth wash and experience strong odor. 80% don’t use tooth pick or dental floss and have moderate odor. 53.3% of participants use back side of the toothbrush to clean their tongue and have moderate odor. 92.9% of participants rinse their mouth after eating and don’t have any odor.

The study conducted by Oliviero-Neto JM et al which showed that most of the participants experienced halitosis right after waking up in the morning and was due to the coating of the tongue. [14]

The percentage of female participants who reported to suffer from halitosis was more than that of the male participants. Oral environment is sensitive to changes in the endocrine system. The fluctuations in hormonal levels may be the reason for change in the normal oral environment in turn leading to halitosis. Also, the female sex hormones such as estrogen and progesterone are known to cause changes in periodontal tissue which could also be a contributing factor for this trend. The supporting evidence can be found in the article published by S.M.MahamaduHasan et al. in which he conducted a study in the females of Dhaka district in Bangladesh. [15]

While comparing the participants attitude towards oral health and self-testing halitosis, most of the patients with no odor changed their tooth brush once in 3 months (37.6%), cleaned their tongue using back side of the toothbrush (50.6%) and rinsed their mouth after eating (92.9%). Whereas the ones with strong odor, changes their toothbrush once in a year (50%), do not clean their tongue (57%) and don’t rinse their mouth after eating (50%). The study conducted by Luciana AssiratiCasemiro on effectiveness of brushing tongue with back of toothbrush gives supporting evidence for this observation. [16] [18]

While comparing the intensity of halitosis with attitude towards oral hygiene practice, those with very intense odor used a horizontal stroke for brushing (54.5%) whereas those with no odor used a roll stroke (40.7%). Those with intense odor don’t use a mouthwash (63.6%) and did not clean their tongue (54.5%). The supporting evidence for reduction in halitosis with such improved oral hygiene practices can be found in the article by C. M. Kayombo and E. G. Mumghamba. [17]

### Tables

**Table 1: Frequency and percentage of age, gender, self-perception, knowledge and attitude about halitosis**

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>21-23</td>
<td>64</td>
<td>42.7</td>
</tr>
<tr>
<td>24-26</td>
<td>73</td>
<td>48.7</td>
</tr>
<tr>
<td>27-30</td>
<td>8</td>
<td>5.3</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>28</td>
</tr>
<tr>
<td>----------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>122</td>
</tr>
<tr>
<td>Do you know what Halitosis is?</td>
<td>No</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>129</td>
</tr>
<tr>
<td>How do you know you have bad breath (Halitosis)?</td>
<td>Behavioral signs from other people</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Someone told me</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>I just know</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>I don’t have bad breath</td>
<td>81</td>
</tr>
<tr>
<td>When do you experience bad breath most often?</td>
<td>After waking up in the morning</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>When I’m hungry or thirsty</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>When I’m tired</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Constantly over the whole day</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>At work</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>When I talk with other people</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>33</td>
</tr>
<tr>
<td>How intense is your bad breath?</td>
<td>Very intense</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Weak</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>54</td>
</tr>
<tr>
<td>Do you smoke?</td>
<td>No</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>4</td>
</tr>
<tr>
<td>Do you drink alcohol?</td>
<td>No</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td>Do you suffer from stress?</td>
<td>No</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>51</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
<td>Count</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td>Do your gums bleed?</td>
<td>No</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>May be</td>
<td>17</td>
</tr>
<tr>
<td>Is there any coating on your tongue?</td>
<td>No</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Don’t know</td>
<td>16</td>
</tr>
<tr>
<td>Do you suffer from dry mouth?</td>
<td>No</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Don’t know</td>
<td>17</td>
</tr>
<tr>
<td>Has bad breath disturbed your social life?</td>
<td>No</td>
<td>142</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>8</td>
</tr>
<tr>
<td>Do you have anxiety about bad breath when talking to people?</td>
<td>No</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>37</td>
</tr>
<tr>
<td>Have you encountered any of the following problems because of bad breath</td>
<td>I avoid talking with other people</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>I am shy whenever someone approaches me</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>I don’t like meeting other people</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>I cannot start a relationship</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Other people avoid me</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>I haven’t encountered any problems</td>
<td>104</td>
</tr>
<tr>
<td>How often do you change your toothbrush?</td>
<td>3 months</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>6 months</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>1 year</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Till bristles get frayed</td>
<td>19</td>
</tr>
<tr>
<td>Which type of brushing technique do you use</td>
<td>Horizontal stroke</td>
<td>Vertical stroke</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>26.0</td>
<td>30.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you use mouthwash</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>109</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>72.7</td>
<td>27.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you use toothpick or dental floss</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>112</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>74.7</td>
<td>25.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How do you clean your tongue</th>
<th>Tongue scraper</th>
<th>Back side of my toothbrush</th>
<th>I don’t clean my tongue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>59</td>
<td>74</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>39.3</td>
<td>49.3</td>
<td>11.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you rinse your mouth after eating</th>
<th>No</th>
<th>Yes</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>128</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>85.3</td>
<td>10.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-testing by smelling your breath in your cupped health</th>
<th>No odor/not sure</th>
<th>Slight, but noticeable odor</th>
<th>Moderate odor</th>
<th>Strong odor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>85</td>
<td>46</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>56.7</td>
<td>30.7</td>
<td>10.0</td>
<td>2.7</td>
</tr>
</tbody>
</table>

### Table 2: Comparison of age with self-perception on halitosis

<table>
<thead>
<tr>
<th>Age</th>
<th>18-20</th>
<th>21-23</th>
<th>24-26</th>
<th>27-30</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do you know you have bad breath</td>
<td>Behavioral signs from other people</td>
<td>20.0%</td>
<td>1.6%</td>
<td>9.6%</td>
<td>25.0%</td>
</tr>
<tr>
<td></td>
<td>Someone told me</td>
<td>20.0%</td>
<td>7.8%</td>
<td>8.2%</td>
<td>25.0%</td>
</tr>
<tr>
<td></td>
<td>I just know</td>
<td>20.0%</td>
<td>34.4%</td>
<td>27.4%</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>I don’t have bad breath</td>
<td>40.0%</td>
<td>56.3%</td>
<td>54.8%</td>
<td>37.5%</td>
</tr>
<tr>
<td>When do you experience bad breath most often</td>
<td>After waking up in the morning</td>
<td>When I’m hungry or thirsty</td>
<td>When I’m tired</td>
<td>Constantly over the whole day</td>
<td>At work</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-------------------------------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>-------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td>80.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td></td>
<td>54.7%</td>
<td>12.5%</td>
<td>1.6%</td>
<td>1.6%</td>
<td>1.6%</td>
</tr>
<tr>
<td></td>
<td>64.4%</td>
<td>6.8%</td>
<td>2.7%</td>
<td>2.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
<td>0.0%</td>
<td>25.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>How intense is your bad breath</td>
<td>Very intense</td>
<td>0.502 (NS)</td>
<td>Average</td>
<td>40.0%</td>
<td>26.6%</td>
</tr>
<tr>
<td></td>
<td>Weak</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>42.2%</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>60.0%</td>
<td>31.3%</td>
<td>37.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Do you smoke</td>
<td>No</td>
<td>80.0%</td>
<td>98.4%</td>
<td>100%</td>
<td>75.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>20.0%</td>
<td>1.6%</td>
<td>0.0%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Do you drink alcohol</td>
<td>No</td>
<td>100%</td>
<td>96.9%</td>
<td>97.3%</td>
<td>87.5%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>0.0%</td>
<td>3.1%</td>
<td>2.7%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Do you suffer from stress</td>
<td>No</td>
<td>0.0%</td>
<td>17.2%</td>
<td>20.5%</td>
<td>25.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>20.0%</td>
<td>39.1%</td>
<td>32.9%</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>May be</td>
<td>80.0%</td>
<td>43.8%</td>
<td>46.6%</td>
<td>62.5%</td>
</tr>
<tr>
<td>Do your gums bleed</td>
<td>No</td>
<td>100%</td>
<td>79.7%</td>
<td>69.9%</td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>0.0%</td>
<td>10.9%</td>
<td>19.2%</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>May be</td>
<td>0.0%</td>
<td>9.4%</td>
<td>11.0%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Is there any coating on your tongue</td>
<td>No</td>
<td>100%</td>
<td>85.9%</td>
<td>87.7%</td>
<td>25.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>0.0%</td>
<td>3.1%</td>
<td>5.5%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.0%</td>
<td>10.9%</td>
<td>6.8%</td>
<td>50.0%</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td><strong>Do you suffer from dry mouth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>100%</td>
<td>76.6%</td>
<td>83.6%</td>
<td>37.5%</td>
<td>0.068(NS)</td>
</tr>
<tr>
<td>Yes</td>
<td>0.0%</td>
<td>9.4%</td>
<td>9.6%</td>
<td>25.0%</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.0%</td>
<td>14.1%</td>
<td>6.8%</td>
<td>37.5%</td>
<td></td>
</tr>
<tr>
<td><strong>Do you have anxiety about bad breath when talking to people</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>80.0%</td>
<td>71.9%</td>
<td>78.1%</td>
<td>75.0%</td>
<td>0.857(NS)</td>
</tr>
<tr>
<td>Yes</td>
<td>20.0%</td>
<td>28.1%</td>
<td>21.9%</td>
<td>25.0%</td>
<td></td>
</tr>
<tr>
<td><strong>Have you encountered any of the following problems because of bad breath</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I avoid talking with other people</td>
<td>0.0%</td>
<td>17.2%</td>
<td>12.3%</td>
<td>12.5%</td>
<td>0.001*</td>
</tr>
<tr>
<td>I am shy whenever someone approaches me</td>
<td>20.0%</td>
<td>9.4%</td>
<td>1.4%</td>
<td>25.0%</td>
<td></td>
</tr>
<tr>
<td>I don’t like meeting other people</td>
<td>20.0%</td>
<td>0.0%</td>
<td>4.1%</td>
<td>25.0%</td>
<td></td>
</tr>
<tr>
<td>I cannot start a relationship</td>
<td>0.0%</td>
<td>3.1%</td>
<td>5.5%</td>
<td>12.5%</td>
<td></td>
</tr>
<tr>
<td>Other people avoid me</td>
<td>0.0%</td>
<td>1.6%</td>
<td>0.0%</td>
<td>12.5%</td>
<td></td>
</tr>
<tr>
<td>I haven’t encountered any problems</td>
<td>60.0%</td>
<td>68.8%</td>
<td>76.7%</td>
<td>12.5%</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3: Comparison of gender with self-perception on halitosis**

<table>
<thead>
<tr>
<th>How do you know you have bad breath</th>
<th>Male</th>
<th>Female</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral signs from other people</td>
<td>14.3%</td>
<td>5.7%</td>
<td>0.013</td>
</tr>
<tr>
<td>Someone told me</td>
<td>21.4%</td>
<td>6.6%</td>
<td></td>
</tr>
<tr>
<td>I just know</td>
<td>32.1%</td>
<td>28.7%</td>
<td></td>
</tr>
<tr>
<td>I don’t have bad breath</td>
<td>32.1%</td>
<td>59.0%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>When do you experience bad breath most often</th>
<th>Male</th>
<th>Female</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>After waking up in the morning</td>
<td>42.9%</td>
<td>63.9%</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>When I’m hungry or thirsty</td>
<td>3.6%</td>
<td>9.8%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>When I’m tired</th>
<th>Constantly over the whole day</th>
<th>At work</th>
<th>When I talk with other people</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.3%</td>
<td>0.8%</td>
<td>7.1%</td>
<td>0.8%</td>
<td>10.7%</td>
</tr>
<tr>
<td><strong>How intense is your bad breath</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25.0%</td>
<td>23.0%</td>
</tr>
<tr>
<td><strong>Do you smoke</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>89.3%</td>
<td>99.2%</td>
<td></td>
<td></td>
<td>0.003*</td>
</tr>
<tr>
<td>No</td>
<td>10.7%</td>
<td>0.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do you drink alcohol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>92.9%</td>
<td>97.5%</td>
<td></td>
<td></td>
<td>0.213(NS)</td>
</tr>
<tr>
<td>No</td>
<td>7.1%</td>
<td>2.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do you suffer from stress</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>17.9%</td>
<td>18.9%</td>
<td></td>
<td></td>
<td>0.008*</td>
</tr>
<tr>
<td>No</td>
<td>10.7%</td>
<td>39.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May be</td>
<td>71.4%</td>
<td>41.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do your gums bleed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>53.6%</td>
<td>78.7%</td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>No</td>
<td>7.1%</td>
<td>16.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May be</td>
<td>39.3%</td>
<td>4.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Is there any coating on your tongue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>42.9%</td>
<td>93.4%</td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>No</td>
<td>14.3%</td>
<td>3.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>42.9%</td>
<td>3.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do you suffer from dry mouth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46.4%</td>
<td>86.1%</td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>No</td>
<td>17.9%</td>
<td>8.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>35.7%</td>
<td>5.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do you have anxiety about bad breath when talking to people</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>82.1%</td>
<td>73.8%</td>
<td></td>
<td></td>
<td>0.354*</td>
</tr>
<tr>
<td>No</td>
<td>17.9%</td>
<td>26.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you encountered any of the following problems because of bad breath</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I avoid talking with other people</td>
<td>10.7%</td>
<td>14.8%</td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>I am shy whenever someone approaches me</td>
<td>10.7%</td>
<td>5.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don’t like meeting other people</td>
<td>10.7%</td>
<td>2.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I cannot start a relationship</td>
<td>21.4%</td>
<td>0.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other people avoid me</td>
<td>3.6%</td>
<td>0.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I haven’t encountered any</td>
<td>42.9%</td>
<td>75.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4: Comparison of self-testing halitosis with their attitude towards oral health

<table>
<thead>
<tr>
<th></th>
<th>Self-testing by smelling your breath in your cupped health</th>
<th></th>
<th></th>
<th></th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you change your toothbrush</td>
<td></td>
<td>No odor/not sure</td>
<td>Slight ,but noticeable odor</td>
<td>Moderate odor</td>
<td>Strong odor</td>
</tr>
<tr>
<td>3 months</td>
<td>37.6%</td>
<td>50.0%</td>
<td>13.3%</td>
<td>25.0%</td>
<td>0.040</td>
</tr>
<tr>
<td>6 months</td>
<td>36.5%</td>
<td>34.8%</td>
<td>60.0%</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>1 year</td>
<td>10.6%</td>
<td>10.9%</td>
<td>6.7%</td>
<td>50.0%</td>
<td></td>
</tr>
<tr>
<td>Till bristles get frayed</td>
<td>15.3%</td>
<td>4.3%</td>
<td>20.0%</td>
<td>25.0%</td>
<td></td>
</tr>
<tr>
<td>Which type of brushing technique do you use</td>
<td></td>
<td>Horizontal stroke</td>
<td>Vertical stroke</td>
<td>Roll stroke</td>
<td>I am not aware</td>
</tr>
<tr>
<td>Horizontal stroke</td>
<td>54.5%</td>
<td>28.6%</td>
<td>25.0%</td>
<td>22.2%</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Vertical stroke</td>
<td>0.0%</td>
<td>28.6%</td>
<td>38.6%</td>
<td>30.9%</td>
<td></td>
</tr>
<tr>
<td>Roll stroke</td>
<td>9.1%</td>
<td>28.6%</td>
<td>22.7%</td>
<td>40.7%</td>
<td></td>
</tr>
<tr>
<td>I am not aware</td>
<td>36.4%</td>
<td>14.3%</td>
<td>13.6%</td>
<td>6.2%</td>
<td></td>
</tr>
<tr>
<td>Do you use mouthwash</td>
<td>No</td>
<td>72.9%</td>
<td>69.6%</td>
<td>80.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>27.1%</td>
<td>30.4%</td>
<td>20.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Do you use tooth pick or dental floss</td>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>76.5%</td>
<td>69.6%</td>
<td>80.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>23.5%</td>
<td>30.4%</td>
<td>20.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>How do you clean your tongue</td>
<td>Tongue scraper</td>
<td>44.7%</td>
<td>39.1%</td>
<td>20.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Back side of my toothbrush</td>
<td>50.6%</td>
<td>45.7%</td>
<td>53.3%</td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td>I don’t clean my tongue</td>
<td>4.7%</td>
<td>15.2%</td>
<td>26.7%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Do you rinse your mouth after eating</td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Sometimes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>0.0%</td>
<td>2.2%</td>
<td>20.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>92.9%</td>
<td>89.1%</td>
<td>53.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>7.1%</td>
<td>8.7%</td>
<td>26.7%</td>
<td>50.0%</td>
</tr>
</tbody>
</table>

Table 5: Comparison of intensity of halitosis and the attitude towards oral hygiene practice

| How intense is your halitosis |                      |                      |                      |                      |         |

<table>
<thead>
<tr>
<th></th>
<th>Very intense</th>
<th>Average</th>
<th>Weak</th>
<th>None</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you change your toothbrush</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 months</td>
<td>36.4%</td>
<td>21.4%</td>
<td>34.1%</td>
<td>44.4%</td>
<td>0.752(NS)</td>
</tr>
<tr>
<td>6 months</td>
<td>36.4%</td>
<td>50.0%</td>
<td>40.9%</td>
<td>33.3%</td>
<td></td>
</tr>
<tr>
<td>1 year</td>
<td>9.1%</td>
<td>21.4%</td>
<td>13.6%</td>
<td>8.6%</td>
<td></td>
</tr>
<tr>
<td>Till bristles get frayed</td>
<td>18.2%</td>
<td>7.1%</td>
<td>11.4%</td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>Which type of brushing technique do you use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal stroke</td>
<td>54.5%</td>
<td>28.6%</td>
<td>25.0%</td>
<td>22.2%</td>
<td>0.011*</td>
</tr>
<tr>
<td>Vertical stroke</td>
<td>0.0%</td>
<td>28.6%</td>
<td>38.6%</td>
<td>30.9%</td>
<td></td>
</tr>
<tr>
<td>Roll stroke</td>
<td>9.1%</td>
<td>28.6%</td>
<td>22.7%</td>
<td>40.7%</td>
<td></td>
</tr>
<tr>
<td>I am not aware</td>
<td>36.4%</td>
<td>14.3%</td>
<td>13.6%</td>
<td>6.2%</td>
<td></td>
</tr>
<tr>
<td>Do you use mouthwash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>63.6%</td>
<td>85.7%</td>
<td>63.6%</td>
<td>76.5%</td>
<td>0.254(NS)</td>
</tr>
<tr>
<td>Yes</td>
<td>36.4%</td>
<td>14.3%</td>
<td>36.4%</td>
<td>23.5%</td>
<td></td>
</tr>
<tr>
<td>Do you use toothpick or dental floss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>72.7%</td>
<td>85.7%</td>
<td>77.3%</td>
<td>71.6%</td>
<td>0.686(NS)</td>
</tr>
<tr>
<td>Yes</td>
<td>27.3%</td>
<td>14.3%</td>
<td>22.7%</td>
<td>28.4%</td>
<td></td>
</tr>
<tr>
<td>How do you clean your tongue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tongue scraper</td>
<td>36.4%</td>
<td>21.4%</td>
<td>38.6%</td>
<td>43.2%</td>
<td>0.036*</td>
</tr>
<tr>
<td>Back side of my toothbrush</td>
<td>9.1%</td>
<td>50.0%</td>
<td>40.9%</td>
<td>53.1%</td>
<td></td>
</tr>
<tr>
<td>I don’t clean my tongue</td>
<td>54.5%</td>
<td>28.6%</td>
<td>20.5%</td>
<td>3.7%</td>
<td></td>
</tr>
<tr>
<td>Do you rinse your mouth after eating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Yes</td>
<td>27.3%</td>
<td>14.3%</td>
<td>2.3%</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>63.6%</td>
<td>64.3%</td>
<td>86.4%</td>
<td>91.4%</td>
<td></td>
</tr>
</tbody>
</table>
V. CONCLUSION
Only less than half of the young adults who participated in the survey suffer from halitosis. Good oral hygiene practices such as using good tooth brushing techniques, tongue scraping, rinsing mouth after eating, using dental floss, mouthwash were the factors that had significant association with mild halitosis. Female participants suffered more from the problem than male participants.

REFERENCES
[2]. Sujatha Tunagure, Nowara Zafar. Halitosis