THE EFFECT OF SMOKING ON PERIODONTAL CONDITIONS ASSESSED BY CPITN

FATIN AWARTANI*, NASSER AL-JASSER**

INTRODUCTION

The paper is the second part of series to assess the oral health status of population from Riyadh City. The purpose of the first paper was to assess the dental caries, periodontal disease and tooth brushing frequency among a population having access to dental care facilities (1). The association between smoking and periodontal disease has been studied extensively, and results have varied. However, recent studies seemed to support that smoking causes direct localised effect on periodontal tissue. Smokers have more periodontitis, i.e. alveolar bone loss, increased pocket depth and tooth loss than non-smokers (6, 2). Other studies have concluded that smoking per se has no effect and that differences are due to higher plaque levels in smokers than non-smokers (14, 12).

Smoking is a bad habit that causes health hazards. There is a close link between this habit and many diseases such as respiratory infections, coronary heart disease and peptic ulcer and may affect the outcome of pregnancy (17). It is believed that many Saudi subjects are practising different types of smoking (8). However, few studies were done in Saudi Arabia to see the effect of smoking on periodontal tissue. Therefore, the aim of this study is to compare the effect of smoking versus non-smoking on periodontal tissue among Saudi subjects, assessed by Community Periodontal Index for treatment needs (CPITN).

MATERIALS AND METHODS

Part 1 (Almas & Al Jasser) described the study population, research design and clinical measurements (1). In the present study, one hundred and eighty subjects were selected from the waiting area of King Saud University (KSU), College of Dentistry, in Riyadh City, with equal number of 90 female and male subjects examined. The age range was 25-55 years with a mean of 38.34 ± 9.45. All subjects were Saudi with different socio-economic level and in a good general health and were accompanying their relatives to get treatment. Data collection were according to WHO oral health form (1986) and following the criteria of WHO oral health survey methods (1987).

The subjects were divided into two groups of smokers and non-smokers. All subjects were interviewed regarding their oral hygiene habits and the use of miswak or toothbrush. Clinical examination included scoring or periodontal status measured by Community Periodontal Index for treatment needs (CPITN). Pocket was measured using WHO probe, the mouth was divided into six sextants and maximum scores were recorded as follows:

- Periodontal Status (CPITN)
  - 0 = healthy
  - 1 = bleeding
  - 2 = calculus
  - 3 = pocket 4-5mm (black band of probe partially visible)
  - 4 = pocket 6 mm or more (black band of probe not visible)
  - X = excluded sextant.

STATISTICAL METHODS

Statistical analysis system (SAS) was utilised for all statistical analysis. Frequency of periodontal conditions as measured by CPITN and oral hygiene habits and tooth brushing frequency by gender and for smokers and non-smokers were calculated. Cohort's maximum scores of CPITN were used to find periodontal status. Percent differences between groups were analyzed with the chi-square test (X2). The significance level of 5% is used for statistical significance.

RESULTS

Of the 180 subjects, 6 of them did not respond to the questions for smoking/non-smoking and were therefore excluded from the study. An analysis showed that the frequency of smokers among the 174 patients is 31%.
(25.9% of this were males and only 5.2% were females). This difference in percentage of smoking between female and male were highly statistically different (Table 1).

### Table 1: Number and percentage of smokers and non-smokers

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokers</td>
<td>45 (25.9%)</td>
<td>9 (5.2%)</td>
<td>54 (31%)</td>
</tr>
<tr>
<td>Non-smokers</td>
<td>45 (25.9%)</td>
<td>75 (43.1%)</td>
<td>120 (69%)</td>
</tr>
<tr>
<td>Total</td>
<td>90 (51.8%)</td>
<td>84 (48.3%)</td>
<td>174 (100%)</td>
</tr>
</tbody>
</table>

$X^2 = 31.33 \quad df = 1 \quad P < 0.0001$

Oral hygiene habits in smokers showed that 54.9% of them brush their teeth once or more per day. However, non-smokers showed that 37.6% of them brush once or more per day. This difference was not statistically significant (Table 2).

### Table 2: Oral hygiene habits of smokers and non-smokers

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Once or more (n %)</th>
<th>Less than once (n %)</th>
<th>Total (n %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokers</td>
<td>28 (54.9%)</td>
<td>23 (45.1%)</td>
<td>51 (100%)</td>
</tr>
<tr>
<td>Non-smokers</td>
<td>44 (37.6%)</td>
<td>73 (62.4%)</td>
<td>117 (100%)</td>
</tr>
</tbody>
</table>

$X^2 = 5.235 \quad df = 3 \quad p = 0.155$

Results of this study showed that smokers brush more frequently than non-smokers. Smoker uses one manual toothbrush in performing their oral hygiene while non-smokers use miswak more often than tooth brush. However, this difference was not statistically significant (Table 3).

### Table 3: Oral hygiene habits of smokers and non-smokers (using brush/miswak)

<table>
<thead>
<tr>
<th>Use of brush/miswak</th>
<th>Brush (n %)</th>
<th>Miswak (n %)</th>
<th>Total (n %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokers</td>
<td>29 (55.8%)</td>
<td>23 (44.2 %)</td>
<td>52 (100%)</td>
</tr>
<tr>
<td>Non-smokers</td>
<td>47 (39.8%)</td>
<td>71 (60.2%)</td>
<td>180 (100%)</td>
</tr>
</tbody>
</table>

$X^2 = 3.709 \quad df = 1 \quad p = 0.054$

Periodontal condition as measured by CPITN (Table 4) showed that there was no significant difference between smokers and non-smokers. Number and percentage of maximum scores of healthy, bleeding, calculus shallow and deep pockets did not differ significantly between the two groups.

### Table 4: Periodontal condition as measured by CPITN n (%)

<table>
<thead>
<tr>
<th></th>
<th>Healthy</th>
<th>Bleeding</th>
<th>Calculus</th>
<th>Shallow pockets</th>
<th>Deep pockets</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoker %</td>
<td>3</td>
<td>5</td>
<td>11</td>
<td>15</td>
<td>19</td>
<td>53</td>
</tr>
<tr>
<td>Non-smoker %</td>
<td>7</td>
<td>5.9</td>
<td>9.2</td>
<td>22</td>
<td>37</td>
<td>42</td>
</tr>
</tbody>
</table>

$X^2 = 0.200 \quad df = 4 \quad p = 0.115$

**DISCUSSION**

Tobacco smoking is a habit that is easily acquired and difficult to give up. More than 6000 billion of cigarettes are smoked annually. There is around 1100 million smokers all over the world, about 800 million are mostly male in the developing countries (WHO, 1995) (20). This is in agreement with the results of this study as most of the smokers were male. The results of the present paper suggests that the periodontal condition as measured by CPITN of smokers and non smokers do not differ with respect to the percentage of healthy, bleeding calculus, shallow and deep pockets. This is in agreement with some studies (14, 7, 12) but is in disagreement with several other studies (15, 4). They reported that smoker groups have higher calculus deposition, deeper pocket depth and greater alveolar bone loss more than non-smoker groups.

HEDIR and al (9) stated that smoking per se is detrimental to periodontal health as it worsens the oral hygiene status and depresses the host's defence mechanism. The result of the present study shows that the oral hygiene habits of smokers differ slightly than non-smokers (Table 2 & 3). Smoker subjects in this target group brush more frequently than the non-smoker group and use tooth brushes more frequently than miswak. The habitual oral hygiene of the non-smoker group in this target population shows that they use miswak more than tooth brush and that they clean their teeth 62.4% less than once per day vs. 45.1% in the smoker group(13). VAN PALENSTEIN H ELD ERMAN et al (18) found that toothbrush has the ability to control plaque more than the miswak. This difference in habitual oral hygiene although statistically not
significant is important clinically and it may relate to the results of insignificant difference in the periodontal status between smoker and non-smoker group. PREBER and KENT (14), BERGSTROM (3) found out that when subjects with the same level of oral cleanliness were compared for severity of periodontal disease, significant difference between smokers and non smokers were not found. However, poor oral hygiene in smokers may act as co-factor in gingivitis and periodontitis (10). Within the limitations of this study more compliance of oral hygiene was found in smoker groups than non-smokers. Although this was surprising, it leads to the finding of equal status of periodontal condition as measured by CPITN. A controlled study with controlled oral hygiene habits is recommended in the future to assess the difference in the periodontal status between smokers and non-smoker's subjects with more sensitive periodontal indices.

CONCLUSION

In the study, no significant difference in periodontal condition as measured by CPITN was found between smokers and non-smoker's subjects.

ABSTRACT

One hundred eighty subjects were examined to assess the effect of smoking on periodontal conditions by community periodontal index for treatment needs (CPITN). All subjects were interviewed regarding their oral hygiene habits. Data were entered to the computer and statistical analysis system (SAS) was utilised. Results showed that the frequency of smokers is 31% where 25.9% of this were male. Smokers use toothbrush in performing their oral hygiene more than non-smokers. Results also showed that periodontal conditions as measured by CPITN were not significantly different between smokers and non-smokers. However, further studies with more sensitive periodontal indices are recommended in the future to assess the differences between both groups.

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