PREVALENCE OF GINGIVITIS IN 6-7 YEARS OLD JORDANIAN CHILDREN

1SHAMIKH HEMADNEH, BDS, JB 
2DWEIRI AYESH, DDM, MSc

ABSTRACT

The purpose of this study was to assess the prevalence of gingivitis in 6-7 years old children in Jordan. Nine hundred and twenty one 6-7 years old children were examined to assess the prevalence of gingivitis, using gingival bleeding index at 6 indexed teeth on 2 point mesiobuccal and buccal surfaces. Total 12 teeth surfaces. Sixty nine percent (69%) of the examined children had mild gingivitis. There were no statistical significant differences between gender of participants and (bleeding proportion, number of bleeding surfaces). Bleeding was not influenced by the location of the teeth whether anterior or posterior. Gingivitis was present, but in most of the cases it was mild. Children were instructed to practice adequate oral hygiene to keep the gums healthy.

Key words: Gingivitis in 6 years old children, gingival bleeding index, Jordan

INTRODUCTION

Different forms of periodontal disease affects the children and adolescents, ranging from reversible conditions limited to the gingival tissue to those characterized by destruction of the periodontal connective tissue attachment and alveolar bone which may jeopardize the longevity of the deciduous or permanent dentition.1

Gingival diseases are non-destructive infection that includes a diverse family of pathological entities caused by various etiological factors.2 Dental plaque induced gingivitis are the most prevalent form of periodontal disease and this is typically non-specific bacterial infection, while non-plaque induced gingival lesions are much less prevalent and include lesions caused by certain bacteria, viruses, and various types of trauma.4

It has been reported that marginal gingivitis begins early in childhood, increase in prevalence and severity at puberty and then subsides slightly to the remainder of the second decade of life.5

The gingival inflammatory response to dental plaque in children is different from that of an adult. Adult inflammatory response is characterized by rapid increase in gingival fluid, the number of transmigratory neutrophils and the inflammatory infiltrate into the connective tissue. The picture in young children is completely different, as plaque accumulate, the clinical sign of inflammation either doesn’t appear or it’s appearance is delayed relatively to adult response there is very small amount of the inflammatory exudates, and few neutrophils are seen in the connective tissue.6

Although periodontal disease is plaque-induced infection and although most are benign and reversible some indicate more serious underlying systemic disease.7 There is a lack of data regarding the periodontal disease in this community (Jordan) although there have been some trials during the last few years, but still there is no real inside information about the severity and the frequency of periodontal disease in general population as well as in specific age group of the population such as children. The last epidemiological information was published in a number of articles.8,9,10,11 Children at the age of 6-7 years were never surveyed as an isolated group so there is a need to assess the gingival and periodontal tissue conditions in Jordanian children and that was the aim of the present study.

METHODOLOGY

Total number of nine hundreds and twenty one children of 6-7 year age were examined. 465 were females (50.5%) and 456 were male (49.5%) who attended the paedodontic clinic of three Jordanian military hospitals namely Prince Ali-Bin Alhussain Hospital, Prince Hashem-Bin Alhussain Hospital, and Prince Rashed-Bin Alhassan (Hospital) from July 2001 to October 2006. The purpose and the method of examination were explained to the participant’s parents and a written consent was obtained.

Researchers suggest that bleeding upon gentle probing of the gingival sulcus may occur before change in the color, texture, or form12 so GBI was used to asses the bleeding in the present study. The children were examined by the same periodontist to avoid any
interexaminer variability. Patients with systemic problems were excluded. Gingival bleeding index (GBI) (according to Alnamo and BAY 1975) was used to examine the gingiva at 2 points, mesiobuccal and buccal surfaces of six selected teeth with their substitute as follow (55/54, 52/53, 64/65, 84/85, 72/73, 75/74) 11002 surfaces were investigated. The selection of these teeth was based on previous studies investigating the prevalence of gingivitis in children13,14 (Arnalaugsson and Magnusson 1996, Spencer et al 1983). Periodontal probe (Michigan) was used in the examination.

The substitute teeth were used if the indexed one was missing or loose. The area of the mouth was omitted if the substitute tooth was not usable or had been lost. The substitute teeth were used in 52 cases, while the area was omitted in 25 cases. The periodontal probe was inserted with gentle pressure into the sulcus of the indexed teeth and bleeding was noticed within 10-12 seconds and if this occurred the result was recorded as a positive response.

Data were collected, tabulated, and analyzed using t-test and Chi-square test. The level of significance was set at 0.05. Results were discussed, and conclusions were drawn.

RESULTS

Healthy gingiva was seen in 30.6% of the participants which mean that there were no bleeding after 10 seconds of the probing. More females 147 (31.6%) than males 135 (29.6%) had surface-free bleeding.

Binomial statistical test revealed statistical significant difference in the proportion of bleeding surfaces compared to proportion of non-bleeding surfaces (p = 0.000*), in another words, the proportion of bleeding differ significantly from hypothesized value of 50%.

Out of 11002 investigated surfaces, 2040 (18.54%) were bleeding surfaces. The independent sample test (Levene’s test) was used to compare the mean of dependent variable (bleeding proportion) to independent variable (Gender: male and female). The results indicated that there was no statistical significance in bleeding for both genders (t = .306, P = .541).

Although the boys showed more bleeding surfaces, there was no statistical significant difference in both boy’s 1083 (19%) bleeding surfaces and girl’s 1002 (18.54%) bleeding surfaces (t = .102, p = .239). More girls 78 (16.8%) than boys 45 (9.9%) had one bleeding surface, and more boys 99 (21.7%) than girls 69 (14.8%) had two bleeding surfaces, while only small number of both sexes had 7-8 bleeding surfaces, in other respect of the distribution of the bleeding surfaces were almost the same among girls and boys, as shown in Table 1.

The GBI for 6 indexed/substitute teeth was in the range of 33%-40%, as shown in Table 2. The main GBI for the whole group was 18.5%. Posterior teeth showed more bleeding surfaces 1380 with the mean of 345 than the anterior teeth 340. Chi square Fissure exact test was used to see if there is any relationship between bleeding and the location of teeth, but the differences also was not significant (Chi-square with one degree of freedom = .546, p = .466).

<table>
<thead>
<tr>
<th>No. of bleeding surface</th>
<th>Male</th>
<th>%</th>
<th>Female</th>
<th>%</th>
<th>Total</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero 0</td>
<td>135</td>
<td>29.6</td>
<td>147</td>
<td>31.6</td>
<td>282</td>
<td>30.6</td>
</tr>
<tr>
<td>One 1</td>
<td>45</td>
<td>9.9</td>
<td>78</td>
<td>16.8</td>
<td>123</td>
<td>13.3</td>
</tr>
<tr>
<td>Two 2</td>
<td>99</td>
<td>21.7</td>
<td>69</td>
<td>14.8</td>
<td>168</td>
<td>18.2</td>
</tr>
<tr>
<td>Three 3</td>
<td>57</td>
<td>12.5</td>
<td>51</td>
<td>11</td>
<td>108</td>
<td>11.8</td>
</tr>
<tr>
<td>Four 4</td>
<td>42</td>
<td>9.2</td>
<td>39</td>
<td>8.4</td>
<td>81</td>
<td>8.8</td>
</tr>
<tr>
<td>Five 5</td>
<td>36</td>
<td>7.9</td>
<td>33</td>
<td>7</td>
<td>69</td>
<td>7.5</td>
</tr>
<tr>
<td>Six 6</td>
<td>27</td>
<td>5.9</td>
<td>27</td>
<td>5.8</td>
<td>54</td>
<td>5.9</td>
</tr>
<tr>
<td>Seven 7</td>
<td>6</td>
<td>1.3</td>
<td>18</td>
<td>3.9</td>
<td>24</td>
<td>2.6</td>
</tr>
<tr>
<td>Eight 8</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>0.7</td>
<td>12</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>456</td>
<td>100%</td>
<td>465</td>
<td>100%</td>
<td>921</td>
<td>100%</td>
</tr>
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<table>
<thead>
<tr>
<th>Tooth</th>
<th>Gingival Bleeding Index (GBI)</th>
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<tbody>
<tr>
<td>75/74</td>
<td>40%</td>
</tr>
<tr>
<td>55/54</td>
<td>38%</td>
</tr>
<tr>
<td>84/85</td>
<td>37%</td>
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</table>
DISCUSSION

There is a lack of epidemic logical studies concerning periodontal disease particularly about the prevalence of gingival disease at the age of 6-7 years in Jordan. In order to include all the parts of the country in the present study, the participants were included from the north, middle, and the south of Jordan.

The result of this study show that gingivitis in 6-7 year old Jordanian children was common (69%) but in most of the cases it was mild. This is almost similar to the results of previous studies done in some countries\textsuperscript{12,14,15} and it is higher than in some other countries.\textsuperscript{16,17} This result also coincides with the results of those studies that show low oral hygiene standards prevalent among those Jordanian children who have low socioeconomic status and poor preventive programs.\textsuperscript{10}

Studies discussing the prevalence of gingivitis in 5-7 year old children provide different results (9%-85%). A study done by Moller\textsuperscript{18} using the chereaskin and Langley system to asses gingivitis in Icelandic children show that 23% of 6 year old children had gingivitis. While another study performed by Dunbar et al\textsuperscript{19} using Russell index\textsuperscript{20} found that 75% of 5-9 years old children with mild gingivitis the relatively wide variation in prevalence’s in the results might be real variation between a different samples or related to different methods used to asses gingivitis.

It has been thought that the prevalence of gingivitis increased from the age of 3-5 years until puberty,\textsuperscript{21,22} and this increase is due to the change in the population of the oral microorganism. Also there are significant indicators that other factors might be involved such as hormonal change that occur during puberty which increase the permeability of the blood vessels.\textsuperscript{23} The relation between plaque and gingivitis in children is not as strong as among adults.\textsuperscript{24} Although gingivitis in children is common, periodontitis is very rare and it is not clear whether childhood gingivitis has any relation with periodontitis later in the life.

Even though there was no statistical significant differences between genders (p > 0.05) regarding the bleeding surfaces, boys (1083) had more bleeding surfaces than girls (1002). Boys seem to be busier playing and less motivated for oral hygiene. This can explain the previous result.

Bleeding from the posterior teeth were more than in anterior teeth but the difference was not significant (p > 0.05). It was shown that there is a strong relation between teeth irregularity and plaque accumulation in children.\textsuperscript{25,26} Moreover certain malocclusion during adolescent such as (crowding, increased over jet and overbite) may interfere with proper oral hygiene.\textsuperscript{27}

REFERENCES