Caries activity of mixed dentition in terms of dental neglect syndrome in Bacau, Romania
Laura - Maria Gavrila, Adam Maxim, Adriana Balan*, Carmen Savin, Eugeniu Mihalas and Dana Cristiana Maxim
*Department of Paediatric Dentistry, Faculty of Dental Medicine, University of Medicine and Pharmacy “Gr.T.Popa”, Iasi, Romania.
Email : laura_maria_g06@yahoo.com

Abstract
Dental neglect is a predictor of oral health deficit in both children and adults, manifested in behavior and / or attitudes of oral health understatement. The aim of the study was to optimize the child's behavioral and educational quality through his oro-dental health. The objective was to assess the caries activity of mixed dentition in correlation with dental neglect syndrome. The study consists of 636 patients, both male and female (336, respectively 300), aged between 6 and 12 years old, from both urban and rural areas of Bacau county, Romania. The dental neglect syndrome was assessed using a questionnaire that was included Dental Neglect Score (DNS). In the studied group we found that 39.62% of patients are 6 years old, 20.75% are 7 years old, 11.32% are 8 years old, and the rest were aged between 9 and 12 years. The number of patients originating from urban areas is just over the number of patients originating from rural areas (58.5% and 41.5%), and the appurtenance to the same gender of the subjects in the study group is also balanced (47.2% females and 52.8% males). Regarding dental neglect we observe that DNS has values between 15 and 22, over 50% of the subjects having a high score (21 and 22), indicating a high degree of dental neglect; values being higher between the ages of 6 and 10 years old.

Keywords : Mixed dentition, dental neglect, child, caries and D1MFT

Introduction
The complexity of carious pathology during the mixed dentition is an intricate issue, that has presented, and presents a major interest to pediatric dentists. The assessment of odonto-periodontal health and caries risk are prerequisites for a successful treatment in restoring and maintaining oral health by early detection of odonto-periodontal lesions and individual susceptibility to these types of conditions, and the establishment of preventive and interceptive minimally invasive treatments (Bratu and Schiller, 1995; Andrian 2002).

In the current conception, oral health means more than just healthy teeth, the emphasis being focused increasingly on the social implications and the quality of life (Maxim et al., 1998; Danila, 2005; Raducan 2008).

Unhealthy behaviors adopted early in life, which can be modeled by dental experience, are likely to be maintained throughout the individuals life and, along with the cumulative effects of exposure to risk factors in sensitive periods of development, may lead to a precarious odonto-periodontal status over time (Luca 2003). In other words, the improvement of the body
of knowledge and that of healthy attitudes (food hygiene, dental care, lifestyle) will ensure a state of optimal health existence, first in the adult and later to the elder, with positive effects on the quality of life, in terms of oral health (Mesaros and Muntean, 2012).

Dental Neglect is a predictor of oral health deficit in both children and adults, manifested in behavior and/or attitudes of oral health understatement.

The aim of the study was to optimize the child's behavioral and educational quality through his orodental health.

The objective was to assess the caries activity of mixed dentition in correlation with dental neglect syndrome.

Materials and methods

The study was conducted, basically, by direct examination and registration of 636 patients, both male and female (336, respectively 300), aged between 6 and 12 years old, from both urban and rural areas of the Bacau county, Romania. Direct clinical examination and the registration of the patients was performed in the medical offices of the schools where the examined children were registered. For the clinical examination we used: front light (artificial light), natural light, air pump, disposable gloves, sterile kits consisting of consultation dental mirror and dental probe.

We observed the tooth surfaces visually (with direct and indirect inspection) and the imperfect surfaces have been explored with a probe to determine the contour of the surface defects. Natural and/or artificial light was used depending on the examination conditions. In our study, we registered the teeth we evaluated without drying, then drying, but without pre-cleaning.

The DMFt and DMFT system were used for marking caries, and Dental Neglect Score (DNS) for quantifying the dental neglect. Also, in order to facilitate the realization of the database, we used these encodings: -1= caries free temporary tooth, -2= temporary tooth pigmentation, -3= temporary tooth simple caries, -4= temporary tooth complicated caries, 1= caries free permanent tooth, 2= permanent tooth pigmentation, 3= permanent tooth simple caries, 4= permanent tooth complicated caries, 5= permanent tooth non-erupted; D1MFT= the number of first permanent molars affected by decay, missing and filled.

A questionnaire containing various questions, including the 6 questions from DNS, was used in this study. Each question had an answer based on a scale of 1 to 5, ranging from "Absolutely not" and "Definitely yes". Possible scores can fall between the values of 6 and 30, higher values indicating a higher degree of dental neglect.

The collected data was entered into a database type similar to Microsoft Office Excel 2007 (a software compatible with SPSS regarding the import data). For the applied statistical analysis of the obtained data, SPSS 20 (Statistical Package for Social Sciences) was used.

Ethical approval for this study, which is a part of a broader study, was obtained from the Research Ethics Committee of the UMF "Grigore T. Popa" Iasi, and there were also informed consent obtained and signed from the caregivers of children, teachers involved in conducting clinical and epidemiological research, and deliberate consent of the children evaluated and monitored.

Results and Discussion

In the studied group we found that 39.62% of patients are 6 years old, 20.75% are 7 years old, 11.32% are 8 years old, and the rest were aged between 9 and 12 years (Table -1). The provenance of urban patients does not exceed by much the provenance of patients from rural areas (58.5% and 41.5%) (Table -1).
### Table 1. Variables examined in this study

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>336 (52.38)</td>
</tr>
<tr>
<td>Female</td>
<td>300 (47.62)</td>
</tr>
<tr>
<td>Age (yr)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>252 (39.62)</td>
</tr>
<tr>
<td>7</td>
<td>132 (20.75)</td>
</tr>
<tr>
<td>8</td>
<td>84 (13.21)</td>
</tr>
<tr>
<td>9</td>
<td>24 (3.77)</td>
</tr>
<tr>
<td>10</td>
<td>72 (11.32)</td>
</tr>
<tr>
<td>11</td>
<td>24 (3.77)</td>
</tr>
<tr>
<td>12</td>
<td>48 (7.55)</td>
</tr>
<tr>
<td>Area</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>264 (41.5)</td>
</tr>
<tr>
<td>Urban</td>
<td>372 (58.5)</td>
</tr>
<tr>
<td>Total</td>
<td>636 (100)</td>
</tr>
</tbody>
</table>

### Table 2. Medium of origin vs. Health of the first permanent molar

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Origin/ Health of tooth</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>R</td>
<td>18,18%</td>
<td>4,54%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td>16,12%</td>
<td>12,9%</td>
<td>-</td>
</tr>
<tr>
<td>2.6</td>
<td>R</td>
<td>18,18%</td>
<td>4,54%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td>6,54%</td>
<td>12,9%</td>
<td>-</td>
</tr>
<tr>
<td>3.6</td>
<td>R</td>
<td>22,72%</td>
<td>9,09%</td>
<td>4,54%</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td>12,9%</td>
<td>22,58%</td>
<td>-</td>
</tr>
<tr>
<td>4.6</td>
<td>R</td>
<td>18,18%</td>
<td>13,63%</td>
<td>4,54%</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td>19,35%</td>
<td>9,67%</td>
<td>3,22%</td>
</tr>
</tbody>
</table>

### Table 3. DNS vs. Age

<table>
<thead>
<tr>
<th>SND/ Age</th>
<th>15</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>12</td>
<td>24</td>
<td>24</td>
<td>48</td>
<td>36</td>
<td>72</td>
<td>36</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>12</td>
<td>12</td>
<td>24</td>
<td>24</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>-</td>
<td>-</td>
<td>24</td>
<td>12</td>
<td>-</td>
<td>36</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>12</td>
<td>-</td>
<td>24</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 4. D₁MFT >0 vs Age

<table>
<thead>
<tr>
<th>Age/D₁MFT &gt;0</th>
<th>6 yr</th>
<th>7 yr</th>
<th>8 yr</th>
<th>9 yr</th>
<th>10 yr</th>
<th>11 yr</th>
<th>12 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>mx-2</td>
<td>48</td>
<td>36</td>
<td>12</td>
<td>-</td>
<td>36</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>md-2</td>
<td>24</td>
<td>84</td>
<td>36</td>
<td>24</td>
<td>24</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>mx-3</td>
<td>-</td>
<td>24</td>
<td>12</td>
<td>12</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>md-3</td>
<td>36</td>
<td>48</td>
<td>-</td>
<td>-</td>
<td>48</td>
<td>36</td>
<td>12</td>
</tr>
<tr>
<td>md-4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>24</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>D₁MFT &gt;0</td>
<td>48/252</td>
<td>60/132</td>
<td>24/84</td>
<td>12/24</td>
<td>60/72</td>
<td>24/24</td>
<td>48/48</td>
</tr>
<tr>
<td>total mx</td>
<td>60/252</td>
<td>132/132</td>
<td>36/84</td>
<td>24/24</td>
<td>72/72</td>
<td>24/24</td>
<td>36/48</td>
</tr>
</tbody>
</table>

### Table 5. Total maxillary vs. Mandibular

<table>
<thead>
<tr>
<th>PM1/m1t/ %</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10,37%</td>
<td>31,59%</td>
<td>2,355%</td>
<td>35,845%</td>
<td>17,445%</td>
<td>0,47%</td>
<td>1,41%</td>
<td>0,47%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PM2/m2t/ %</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10,845%</td>
<td>33,485%</td>
<td>2,355%</td>
<td>46,69%</td>
<td>6,6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table - 6. M1 permanent maxillary vs. Mandibular

<table>
<thead>
<tr>
<th>M1 maxillary/</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>44.33%</td>
<td>14.15%</td>
<td>9.43%</td>
<td>-</td>
<td>32.07%</td>
</tr>
<tr>
<td>M1 mandibular/</td>
<td>39.62%</td>
<td>17.15%</td>
<td>13.2%</td>
<td>3.77%</td>
<td>25.46%</td>
</tr>
</tbody>
</table>

The appurtenance to the same gender of the subjects in the study group is about equally divided: 47.2% female and 52.8% male (Table - 1).

Regarding dental neglect we observe that DNS has values between 15 and 22, over 50% of the subjects having a high score (21 and 22), indicating a high degree of oral negligence (Fig - 1).

In this study we ascertained that there is a correlation between the origin and the age of a patient, and dental neglect score (DNS) along with carious lesions. Thus it was observed that in rural areas complicated caries appear both in 3.6 and 4.6 (in 4.54% of the cases), and in urban areas only on 4.6 (in 3.22% of the cases). Simple caries occur more often in urban areas and pigmentation occurs more often in rural areas on first permanent molars, except 4.6 (Table - 2). Also, it’s distinguishable that higher DNS values occur between the ages from 6 to 10 years old (Table - 3). In other words, it is indicated that SDN can be useful in the predictability and the understanding of dental health variety, as in other studies of specialised literature (Thomson et al., 1996; Jamieson and Thomson, 2002). Simple caries are present in the first permanent molars from the age of 7 years, except the maxillary, that shows these lesions at the age of 6 years. Complicated carious lesions make their presence known from the age of 10 - 11 years in the mandibular first molar (Table - 4).

Subjects in the study group were between the ages of 6 and 12 years old, presenting mixed dentition. It was found that the temporary first molar was affected by complicated caries in proportion of 10.37%, by simple caries in proportion of 31.59, while the temporary two molar was affected by simple caries in 10.84% of the cases and by complicated caries in 33 48% of the cases, plus damaged first premolar in 1.41% of cases by simple caries and complicated caries in 0.47% of the cases (Table - 5). These cavities influence by early affecting the first permanent molars in the maxillary with pigmentation, in a percentage of 14.15% of the cases and simple caries in a percentage of 9.43%, while the mandible is affected by pigmentation in a percentage of 17.92%, by simple caries in a percentage of 13.2% and by complicated caries in a percentage of 3.77% (Table - 6). Also, in speciality literature it’s shown that the presence of carious lesions on the approximal face of the temporary molars, during the clinical eruption of permanent molars, leads to an increased rate of caries affecting the fissures and grooves in the permanent M1 (Helm and Helm, 1990; Raadal and Espelid, 1992).
Conclusions

Children need proper dental care for good psychosomatic and mental development, and for that dentists may refer and treat dental neglect using DNS, and the impaired temporary molars that may cause early damage to permanent molars. The results obtained in this study indicate that DNS can be useful in oral health by creating predictability and strategies to promote information and education on oral health.

References


Corresponding Author : Adriana Balan, Department of Paediatric Dentistry, Faculty of Dental Medicine, University of Medicine and Pharmacy “Gr.T.Popă”, Iasi, Romania, Email : laura_maria_g06@yahoo.com © 2014, IJALS. All Rights Reserved.