The Frequency of Different Types of Primary Teeth Discoloration in Children in Paediatric Department of Faculty of Dentistry, Tehran University of Medical Sciences, In 1999-2001

J. Mahmoodian, 1 S. Hashemi 2

1 Associate Professor, Department of Paediatric Dentistry, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran
2 Resident Department of Prostodontics, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

Statement of Problem: Primary teeth discoloration can cause mentally and socially unpleasant effects in children. This can also be a sign of systemic disease. Despite the importance of this subject, a comprehensive study has not been performed yet.

Purpose: The aim of this study was determining the frequency of different types of primary teeth discoloration.

Materials and Methods: In this cross-sectional study 260 cases whom were referred to department of paediatric, faculty of dentistry, Tehran University of Medical Science, 1999-2001 were examined. All of these children were examined for any discoloration before starting any treatment then the type of discoloration was determined after polishing. Then the relationship between gender and these changes were evaluated by chi-square test.

Results: In 59 cases (22.7%) abnormal color was detected. 10 patients (3.9%) had intrinsic stain and in 15 children (5.8%) extrinsic color was discovered. 34 children (13%) had both types.

Conclusion: In this survey the correlation between tooth discoloration (and its types) and gender was not statistically significant.

Key Words: Primary teeth; Discoloration; Extrinsic stain; Intrinsic stain

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Discoloration is a change in the normal color of the tooth, which can have significant effect on the personality and self confidence of the child, and even can cause the stress within the family. Also, in some cases discoloration may be a sign of a systemic disease. In addition, teeth with hypoplastic defects, have higher tendency for developing caries with a rapid formation pattern compare to normal teeth, so there will be an early loss of deciduous teeth and this can cause space deficiencies and need for orthodontic treatments. The normal color of the deciduous teeth is blue to white. 1 A wide range of discolorations has been diagnosed and a variety of classifications have been presented. 1-6 The extrinsic type of discoloration, which is usually black, green and orange are superficial and can be removed by abrasive materials from the tooth surface. 7 The intrinsic type of discolorations are caused by structural disturbances which can happen by absorbing some coloring agents during...
formation of the tooth (like the discoloration caused by using tetracycline) or after eruption (like the discoloration caused by trauma) or by the structural disturbances of the tooth (like amelogenesis imperfecta).\(^{(8,9)}\) Unfortunately until now, most of the statistical studies about prevalence of discoloration were about permanent teeth. The available studies have only evaluated some specific discolorations, for example, black discoloration was reported in 10-14% of the children and orange discoloration in 3% of them.\(^{(10,11)}\)

The aim of this investigation was to determine the frequency of discoloration in deciduous teeth by considering the extrinsic and intrinsic type of discoloration; this study tries to encourage the dentists for preventing and treatment of this problem.

Materials and Methods:
In this cross sectional descriptive study, 260 patients whom were referred to paediatric department, Faculty of Dentistry, Tehran University of Medical Sciences were examined under dental unit light to discover any color alterations in their deciduous teeth. All of children were in the stage of deciduous dentition with no severe caries on the upper anterior teeth because the presence of carries might lead to misdiagnose in tooth discoloration. After polishing the teeth, the type of the discoloration (extrinsic, intrinsic) was determined, then the recorded data were analysed by chi-square test to investigate the relation between types of tooth coloration and sex.

Results
In this study, 59 children (22.7%) with tooth discoloration in deciduous teeth were diagnosed. Among them, 10 children (3.9%) had only intrinsic discoloration, 34 children (13%) had both intrinsic and extrinsic discoloration and 15 children (5.8%) had just extrinsic discoloration (Table I).

Also, there were no correlation between discoloration and sex (Table II).

Discussion and Conclusion:
As mentioned before, there has not been a reliable study about the discoloration of deciduous teeth, however, in another study, which was about intrinsic teeth discoloration due to systemic disease in the first grade school children, the prevalence of intrinsic tooth discoloration was reported 30%.\(^{(12)}\)

Statistical analysis showed significant difference between two studies. The different results obtained from these two studies might be due to the differences in the population they were evaluated. In the present study all cases were in deciduous dentition while in the previous study the study group were not in deciduous stage and some had permanent teeth.\(^{(12)}\)

<table>
<thead>
<tr>
<th>Type of discoloration</th>
<th>Absolute frequency</th>
<th>Percentile frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic discoloration</td>
<td>10</td>
<td>3.9%</td>
</tr>
<tr>
<td>Extrinsic discoloration</td>
<td>15</td>
<td>5.8%</td>
</tr>
<tr>
<td>Extrinsic and intrinsic discoloration</td>
<td>34</td>
<td>13%</td>
</tr>
<tr>
<td>All types of discoloration</td>
<td>59</td>
<td>22.7%</td>
</tr>
</tbody>
</table>

Table I- Frequency of tooth discoloration in deciduous teeth and the type of them (intrinsic and extrinsic).

<table>
<thead>
<tr>
<th>Type of discoloration</th>
<th>Girl</th>
<th>Boy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic discoloration (with or without extrinsic discoloration)</td>
<td>23 (8.8%)</td>
<td>21 (8.1%)</td>
<td>44 (16.9%)</td>
</tr>
<tr>
<td>Extrinsic discoloration only</td>
<td>6 (2.3%)</td>
<td>9 (3.5%)</td>
<td>15 (5.8%)</td>
</tr>
<tr>
<td>All types of discoloration</td>
<td>29 (11.2%)</td>
<td>30 (11.5%)</td>
<td>59 (22.7%)</td>
</tr>
</tbody>
</table>

Table II- Frequency of tooth discoloration and it’s relation with gender
Since most of these teeth have been developed after birth, they are more sensitive to environmental factors (specially hypoplasia), which can cause intrinsic discoloration.

In this study, frequency of extrinsic discoloration was 5.8%. There has not been a general study about prevalence of this type of discoloration in deciduous teeth. Among all extrinsic discolorations, only black and orange discolorations have been seen. According to the previous studies, prevalence of black and orange discoloration were 10-14% and 3% respectively. Frequencies in this study are much lower than them. This may be caused by differences in oral hygiene status, and increased usage of antibiotics, which might cause changes in normal oral micro flora and gradually decrease in chromogenic bacteria, or medical administration of iron drops. In this study, there were no relation between sex and type of discoloration.

Since the study population was too small, these findings cannot reveal the real information about primary teeth discoloration of the whole country population. To get a better and accurate picture, a wide spread evaluation over the country will be needed.

Also, it is important that pedodontists give some information to parents about the preventive methods of deciduous teeth discoloration. Increasing population knowledge about tooth discoloration etiology especially systemic diseases, which can cause discoloration, the importance of oral hygiene, pregnancy and infancy care, and preventing the deciduous teeth injury should be concerned.

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