DEMOGRAPHIC ASPECTS OF
DENTAL DYSPLASIA IN ROMANIA

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Abstract. Aim: to monitor the prevalence and distribution of the developmental defects of enamel by the help of DDE index in preschool and school communities from Romanian counties. **Results and discussion**: The prevalence of the developmental defects of enamel according to the modified DDE index is of 18%. The age and sex group distribution shows a higher frequency in girls from aged 15-18 compared to boys (24.42% vs 21.11%). Analyzing the structure according to the code of the defect there is noted a high frequency of opacities (10.93%), followed by hypoplasias (6.01%). **Conclusions**: Our research has proved that there are no statistically significant differences of distribution in children with enamel defects according to sex at any age.
Key words: child, DDE-index, developmental defects of enamel

Rezumat. Scop: de a monitoriza prevalenţa şi distribuţia defectelor de dezvoltare ale smalţului cu ajutorul indicelui DDE în comunităţi preşcolare şi şcolare din diferite judeţe din România. **Rezultate şi discuţii**: Prevalenţa defectelor de dezvoltare ale smalţului după indicele DDE a fost de 18%. Distribuţia pe grupe de vârstă şi pe sex relevă o frecvenţă mai mare la fete din grupa de vârstă 15-18 ani în comparaţie cu băieţii (24,42% vs 21,11%). Analizând structura după codul defectului se remarcă frecvenţa indicată a opacităţilor (10,93%) urmate de hipoplazii (6,01%). **Concluzii**: Cercetarea noastră a ilustrat că nu sunt diferenţe statistic semnificative de distribuţie la copiii cu defecte de smalţ în funcţie de sex la fiecare etapă de vârstă.
Cuvinte cheie: copil, indice DDE, defect de dezvoltare a smalţului

INTRODUCTION

Even if dental dysplasias as structure anomalies of complex pathogenic substantiation have a relatively low incidence in the oral pathology of children, there is great interest in the domain demonstrated by the literature.

A lot of indexes of descriptive nature have been suggested to monitor enamel defects. In this paper we have chosen the Developmental Defects of Enamel (DDE) that was adapted and validated for an efficient assessment of prevalence and incidence of enamel defects.

The present study has continued the scientific activities of the Pedodontia Discipline, of the "Gr. T. Popa" University of Medicine and Pharmacy Iaşi (UMP), in order to prevent the oral diseases in children and adolescents during 1990–2004. Within the 2003 it is to be found the screening of the World Health Organization (WHO) Collaboration Center in Iaşi – Romania, in which the Department of Pediatric Dentistry finds itself as an integrative and operative part

one. The research study is correlative also with the preoccupations of the Department of Pediatric Dentistry "Gr. T. Popa" UMP Iaşi, within the national program of Ministry of Health and Ministry of Education and Research in Romania, "Education for Health in Romania Schools". In order to elaborate a national strategy for preventing the oral diseases in children and adolescents reliable for short, medium and especially for long term, it was evaluated the oral health status in children populations from the counties and regions of Moldova, Muntenia, Maramureş, Banat, Ardeal.

This paper aimed to study and monitor the prevalence and distribution by code of DDE index in preschool and school communities of various Romanian counties.

MATERIAL AND METHODS
The index we used for systematizing the information was DDE – modified introduced by Clarkson and O'Mullone in 1989 (1). The advantage of this index is that it can be used in a flexible manner according to the research needs and the codes can be added or erased according to the study's objectives. Table 1 shows the classification of the enamel defects according to DDE.

We mention that there were registered only anomalies there were cited in index classification indicated by table 1. When an anomaly was not evident and could not be immediately classified in one of the categories from the defects list, it was not registered and counted in order to eliminate selection errors.

The databases and statistical analysis were created with the EXCEL program. There have been used the 95% confidence intervals; t-Student test and χ^2 in order to the highlight the comparison between children with DDE code = 0 (Control lot) and those with DDE code # 0 (Cases lot).

Table 1. The classification of enamel defects according DDE index

Types of defects	CODE
Normal	0
Opacities	1
Hypoplasia	2
Tetracycline dyschromia	3
Attrition	4
Erosion	5
Opacities + dyschromias	1;3
Opacities + hypoplasias	1;2
Opacities + attrition	1;4
Opacities + attrition + erosion	1;4;5
Hypoplasia + attrition	2;4

RESULTS AND DISCUSSION
A number of 3170 subjects, 1408 (44.4%) boys and 1762 (55.6%) girls, were examined under standardized conditions that refer to natural light and without previous drying of the teeth (2) (fig.1).
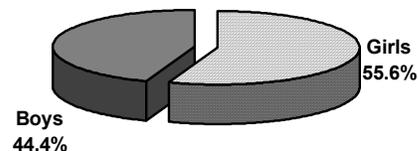

Fig. 1 Distribution of enamel defects in examined children, in Romania

From the figure 2 it can be noticed that most of the examined children were in the age group of 15-18 y (45.53%).
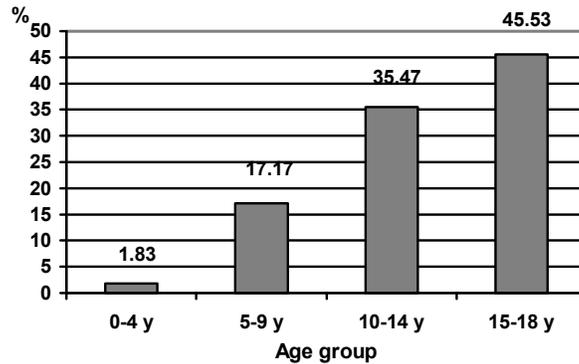

Fig. 2 Age distribution of examined children, in Romania

The prevalence of the developmental defects of enamel according to the modified DDE index was 18% (fig. 3). Comparing the average values between sexes according to t-Student (t=0.78), we noticed that gender is not a risk for developmental defects of enamel.

Table 2 illustrates the distribution of DDE by code and age groups. The statistic significance for the 5-9 aged group (p = 0.02) draws attention on the fact that the phenomenon is not casual, taking into account the fact that this age group is characterized by the beginning of mixed dentition, where on the arch coexist both young and permanent teeth. Therefore there is a long stage with many possibilities for the intervention of same various etiologic factors on enamel status.
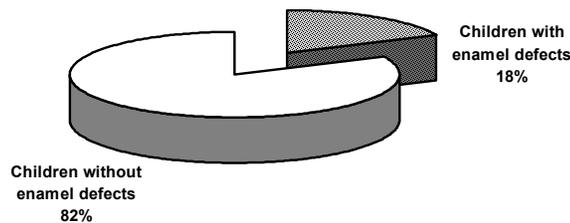

Fig. 3 The prevalence of enamel defects according to the DDE index

Table 2. Examined children by age group, with Code 0 and different anomalies

Significance level	Age group			
	0-4 y	5-9 y	10-14 y	15-18 y
p	0.57	0.02	0.57	0.06

The age and sex group distribution shows a higher frequency in girls from the 15-18 years age group (24.42%) than in boys (21.11%) (fig .4). A closer percentage for the prevalence of enamel defects appears in girls from 10-14 years age group. The small number of examined subjects in the 0-4 y age group may explain the low percentage of dysplasia of 0.66% in boys and 1.17% in girls.
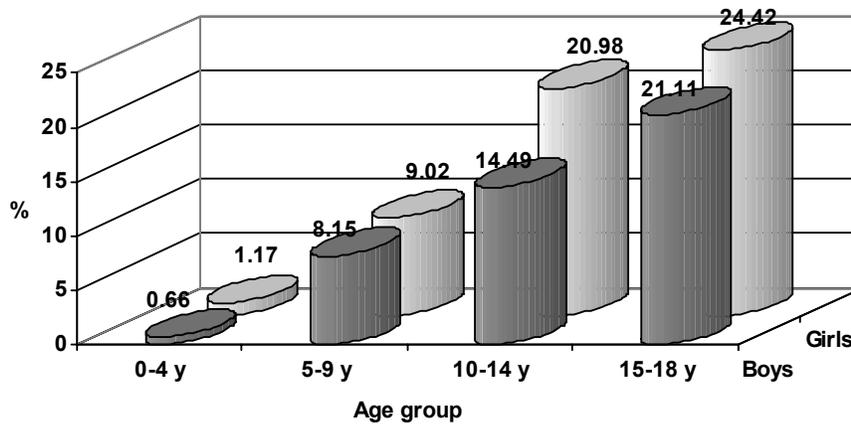

Fig. 4 Age and sex distribution of examined children

Analyzing the structure according to the code of the defect a high frequency of opacities may be noticed (10.93%) followed by hypoplasias (6.01%) and dyschronias (1.32%) (fig. 5). The other enamel defects and their combinations registered very low values, between 0.13% and 0.03%.

The distribution of the developmental defects of enamel by age groups emphasizes the highest frequency of opacities of 4.89% and hypoplasias of 4.13% in the 15-18 aged groups (fig. 6). The combinations of defects have minimum values of 0.03%.
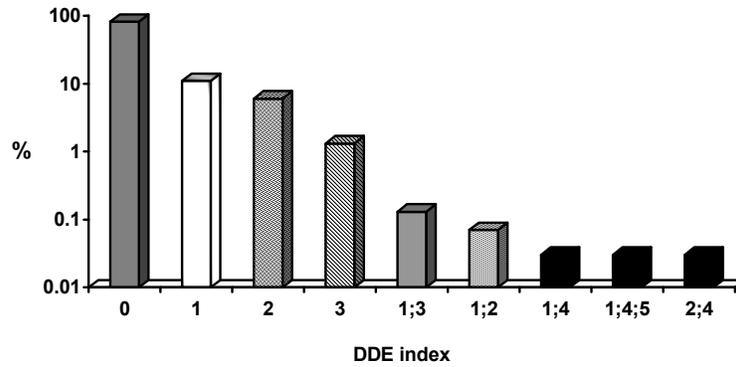
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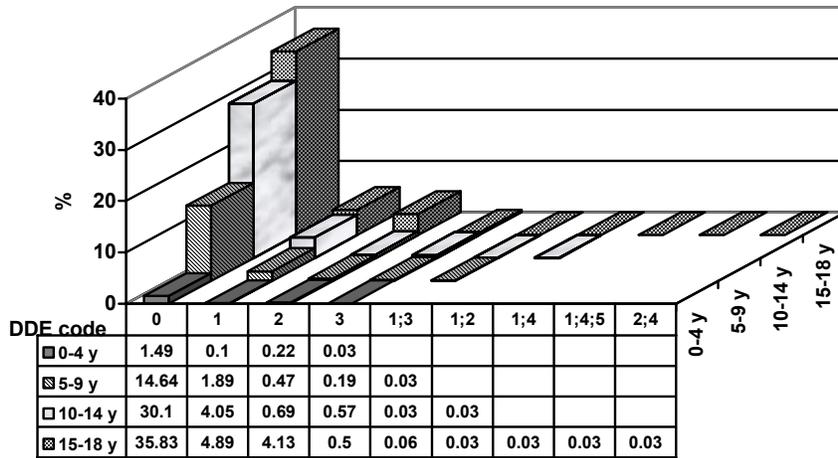**Fig. 5 The distribution of enamel defects in children by DDE codes**

DDE code	0	1	2	3	1;3	1;2	1;4	1;4;5	2;4
0-4 y	1.49	0.1	0.22	0.03					
5-9 y	14.64	1.89	0.47	0.19	0.03				
10-14 y	30.1	4.05	0.69	0.57	0.03	0.03			
15-18 y	35.83	4.89	4.13	0.5	0.06	0.03	0.03	0.03	0.03

Fig. 6 The DDE distribution of enamel defects by DDE codes and age group

The prevalence of the enamel defects there were evaluated with the modified DDE index is for the studied group of 18%, a very close value to the reported previously one of 15%, in the studies there were performed on school communities in the county of Iasi (3).

Also we noticed a higher prevalence of opacities and hypoplasias for the 15–18 years age group (4.13%). Previous studies by Suckling has showed that hypoplasias are more frequent in schoolchildren than in preschool ones, emphasizing the fact that every dental type has a critic time in which teeth are more susceptible to develop enamel defects (4). Sarnat and Schour have showed that there is a close relationship between the childhood diseases and the development of dysplazic enamel (5). Sweeney found a significantly high prevalence of the hypoplasic enamel in children with malnutrition (6). Nikiforuk and Fraser suggested that the enamel hypoplasia could be the result of a hypocalcemia induced by disturbances of the phosphocalcium equilibrium, using a radiological technique to assess mineralization in the cortical area of the humerus in premature children (7). Soew showed that the ones with hypoplasic enamel have a lower average of the cortical than the ones without hypoplasia.

Although the precise cause and its effect on ameloblast's metabolism were not clearly distinguished, it becomes obvious that the local or systemically disturbed environment, the hereditary factors or a combination of these are responsible for the developmental defects of enamel.

CONCLUSIONS

1. The prevalence of dental enamel dysplasias there were assessed in our study with the help of DDE Index is of 18% with preponderance of the frequency of opacities of 4.89% and hypoplasias of 4.13% for the 15-18 years age group.

2. Our research has proved that although, there are no statistically significant differences of distribution in children with enamel defect according to sex, for any age stage, the 5-9 group of age are at risk for DDE.

3. The modified DDE Index is an adequate working instrument for our population allowing the assessment of the enamel developmental defects, opacities, hypoplasias, dyschromias as well as combinations between them which offers flexibility for registration of data based on tooth or dental surface.

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