

DEMOGRAPHIC TRENDS OF EARLY CHILDHOOD CARIES

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Abstract. Aim. This study was carried out in order to investigate the prevalence, the degree of severity and related feeding habits of baby bottle caries in children who have required dental care at Department of Pediatric Dentistry. **Materials and methods.** This research was performed in 216 children: 91 boys and 125 girls aged between 3-8 years old. The examined subjects were pre-school and school populations from Suceava county. **Results and discussion.** The incidence of ECC in Suceava county, in 2006 was 0.047%. About 10.7% of the examined children presented severe temporary tooth decay, due to the prolonged use of nursery bottles. A percentage of 60.8% of these children presented complicated caries with or without tooth crown destruction. The most prevalent habit was sweetened milk (33.3%), honey, sweetened tea and juices (16.7%). **Conclusions.** This study attempts to give indications regarding the degree of severity of ECC in affected children. Baby bottle caries can cause severe lesions. A most one half of children presented pulpal and periapical involvement of affected teeth with or without tooth crown destruction.

Key-words: early childhood caries, incidence, tooth crown destruction

Rezumat. Scop. Acest studiu și-a propune să investigheze prevalența cariei de biberon, gradul de severitate în relație cu obiceiurile alimentare la copiii investigați în Secția de Stomatologie Pediatrică. **Material și metode.** Au fost investigat 216 copii: 91 băieți și 125 fete, cu vârste cuprinse între 3 și 8 ani. Subiecții, preșcolari și școlari, au provenit din școli ale județului Suceava. **Rezultate și discuții.** Incidența cariei de biberon, în județul Suceava, în anul 2006 a fost de 0,047%. 10,7% dintre copiii investigați au prezentat carii severe la dinții temporari datorate folosirii prelungite a biberonului în alimentație. 60,8% dintre copii au prezentat, complicații cu distrugere coronară a dinților. Cel mai frecvent consum înregistrat a fost cel de lapte dulce (33,3%), miere, ceai îndulcit și sucuri (16,7%). **Concluzii.** Acest studiu își propune să ofere indicații privind gradul de severitate al cariei de biberon la copiii afectați. Caria de biberon poate cauza leziuni severe la peste jumătate dintre copiii cu pulpită și dezvoltare periapicală a dinților afectați înafara dinților cu distrucție coronară.

Cuvinte cheie: mineralizare, prevalență, Sindrom Hipomineralizare Incisiv Molari

INTRODUCTION

About 10.7% of the examined children in a dental care unit present temporary teeth hard tissue destruction due to clinical caries. Known as "baby bottle syndrome", "baby bottle caries", "sucking caries" or "temporary teeth rampant caries" (1).

According to Anglo-Saxons the "artificial oral syndrome" has been recently redefined as "early childhood caries" (ECC)- the presence of one or several decayed tooth surfaces (cavity or non-cavity lesions), tooth absence (due to caries) or dental restorations for any of the temporary teeth of

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children between 3-4 years old, earlier than 72 months (1).

A more particular clinical form of this clinical entity is called “nursery bottle syndrome”/“pacifier syndrome” which shows a real progressive opening of the superior and inferior incisors taking the form of the pacifier (2). In this case, the pacifier has been always dipped in a sweetener: honey, syrup or/and sugar.

Early childhood caries is placed by some French authors in the category of dental dystrophy together with infantile melanodontia (3).

Other authors describe the early childhood caries as a separate entity (McDonald, Levine, Johnsen), or consider it as a condition of rampant caries having a specific cause (Timanoff, Mitchel, EDEN, Marsh and Martin) (4, 5, 6).

In the developed countries, ECC frequency is ranged between 1 and 12%. In the developing countries as well as with in disadvantaged population groups, the frequency of ECC is reaching 70% of the pre-school population (Milnes, 1996), both sexes being affected equally (7-14).

The Purpose of the Study

The aim of the present study was to investigate the prevalence of ECC, the degree of severity, and the related feeding habits of the children affected by this disease.

MATERIAL AND METHOD

This research was performed within 216 subjects: 91 boys and 125 girls aged between 3 and 8 years old (fig. 1 and fig. 2).

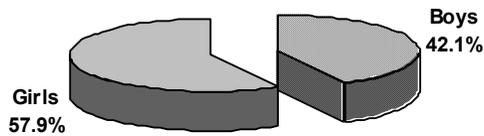


Fig. 1. Structure of the investigated children lot according to sexes

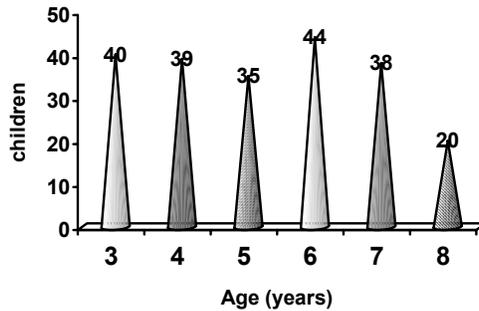


Fig. 2. Structure of the investigated children lot according to age

The examined subjects were coming from pre-school and school populations from Suceava county: Schools with I-VIII classes from Paltinoasa and Capu-Codrulului.

The distribution of children from the School in Capu-Codrulului was:

- 4 groups of pre-school mixed children, aged 3-6 y:
 - group I with 25 children (6 boys, 19 girls);
 - group II with 26 children (11 boys, 15 girls);
 - group III with 29 children (12 boys, 17 girls);
 - group IV with 21 children (8 boys, 13 girls).
- 2 first grade classes with children aged 6-8 y:
 - grade I A 13 children (9 boys, 4 girls);
 - grade II B 16 children (10 boys, 6 girls).

The distribution of children from the School in Paltinoasa was:

- 2 groups of pre-school mixed children aged 3-6 y:
 - group I –with 27 children (11 boys, 16 girls);
 - group II – with 30 children (12 boys, 18 girls).
- 2 first grade classes children aged 6-8 y:
 - grade I A –with 14 children (5 boys, 9 girls);
 - grade I B –with 15 children (7 boys, 8 girls).

This investigation within our research was approved by the institutions and by children's parents and teachers as well.

The children were examined under standard conditions, natural light, without previous brushing and drying of the teeth. Ideally, teeth should be dried, brushed during examination, and the extrinsic pigments and accumulation of matter should be removed, but within epidemiology studies, this ideal can not be attend. This study was not carried out in a dental office.

The clinical examination was undertaken with current dentistry instruments, special attention being given to the affected dental structures and dental morphology.

The following data were estimated within the examined children:

- age;
- sex;
- number of carious temporary teeth (dental pattern);
- diagnosis of ECC;
- feeding habits- the content of the nursery bottle (data got from parents, brothers);
- classification of subjects according to the degree of severity of temporary teeth decay.

The estimated age was the age at the moment of examination.

All the data were registered on pedodontic observation sheets and introduced in the data base.

The complementary explorations of the clinical examination included:

- photographic examination;
- radiological examination.

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RESULTS

This study was carried out to investigate the prevalence, the degree of severity, and the related feeding habits of ECC in children.

About 10.7% of the examined children presented severe temporary tooth decay, due to the prolonged use of nursery bottles. A percentage of 60.8% of these children presented also complicated caries with or without tooth crown destruction. The most prevalent habit was sweetened milk

(33.3%), honey, sweetened tea and juices (16.7%).

The incidence of ECC in Suceava county, in 2006 was 0.047%.

I 3-8 years old =

$$23/48448 * 1000 = 0.047\%$$

A number of 23 of the examined children, (about 10.7%) presented extensive caries of temporary teeth due to the use of nursery bottle (fig. 3).

The highest frequency of caries is 34.8% in 6 y old children followed by 5 y old children (fig. 4).

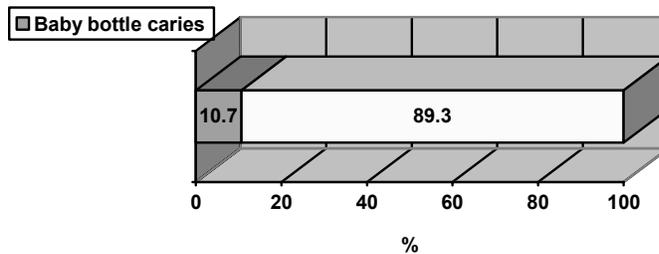


Fig. 3. Prevalence of baby bottle caries in the subjects

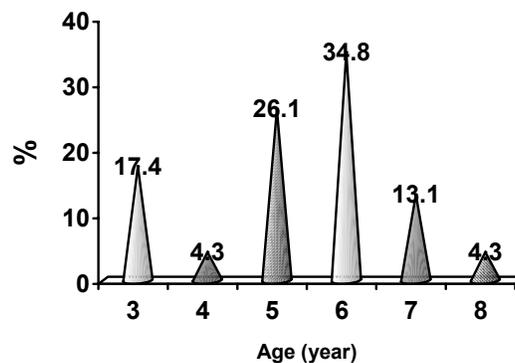


Fig. 4. Distribution of baby bottle caries according to age

Table 1. Distribution of caries according to tooth categories.

Teeth	No. of affected teeth	Percentage (%) (23 patients)
51-61	39	17.1
52-62	35	15.4
53-63	15	6.6
54-64	38	16.7
55-65	30	13.2
71-81	3	1.3
72-82	4	1.8
73-83	5	2.2
74-84	29	12.7
75-85	30	13.2

According to tooth category, 17.1% of subjects presented caries of the teeth of 51-61. The lowest percentage of subjects (1.3%) presented caries of the teeth of 71-81 category (table 1).

The degree of severity of caries has been determined on the basis of the type of therapy for optimal the affected patients (optimal treatment):

A. Children whose tooth decay involves enamel and dentine only (4 patients);

B. Children with tooth decay involving the pulpal tissues (6 patients);

C. Children with tooth decay with pulpal and periapical involvement and/or with crown destruction (8 patients).

Figure 5 shows the percentage of the degree of severity of the 18 patients. The bottle content of all the 18 children (78.3%) are shown in table 2.

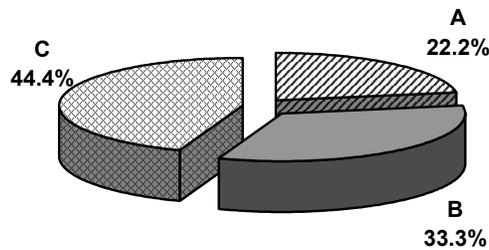


Fig. 5. Distribution of baby bottle caries according to the degree of severity

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The highest percentage (33%) of patients presenting caries according to

the bottle content of milk and cakes is showed in the table 2.

Table 2. Distribution of caries according to the bottle content

Teeth	No. of patients	Percentage (%) (18 patients)
Milk & cakes	6	33.3
Honey	3	16.7
Sweetened water	3	16.7
Fruit juice	3	16.7
Coca cola	2	11.1
Tea	1	5.5

DISCUSSION

Our study reveals the very high prevalence of baby bottle caries. A percentage of 10.7% of the examined children presented extensive caries of the deciduous dentition due to the use of nursery bottle. These results call for an effective preventive program in order to reduce the prevalence of baby bottle caries in children aged 3 to 6 y.

The high prevalence of BBC was observed in children aged 3 to 4, representing about 39.1% of the total children examined in our study.

The prevalence of caries in children aged 5 y (26.1%) was higher than at 4 years old (21.73%). The prevalence in children aged 4 years was higher than at 3 years old (17.4%), showing an increase of caries prevalence with age. Beginning with 5 years old, the prevalence decreases with age due to tooth eruption sequence. Thus, at the age of 6 it is about 17.4%, at 7, 13.1% and at 8, 4.3%.

High prevalence levels in pre-school children are constantly associated with low therapy levels (3).

Temporary deciduous teeth involved in ECC are maxillary central incisors (17.1% of affected teeth), followed by maxillary first deciduous molars (16.7%) and by maxillary deciduous lateral incisors (15.4%).

CONCLUSIONS

The prevalence of dental caries in childhood in Early Childhood Caries (ECC) in the study was 10.7%, indicated that EEC increases with age between 3 and 5 y and decreases between 5 and 8 y.

The EEC severity is very high in children. Most of them presented a great destruction of coronal portion of the teeth and in those showing periapical lesion to an extent of 44.4%.

A percentage of 33.3% of the studied cases had enamel dentinal and pulpal lesions, of which 22.2% presented enamel and dentinal lesions.

This study showed that the age group most severely affected by ECC is 5 years old (26.1%).

The prevention program instituted to deal with this health problem of early childhood caries should include prenatal and post natal interventions and education of parents. Considering that early nutrition has late effects on dental health.

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