

## STUDY REGARDING THE RELATIONSHIP BETWEEN DIET AND BABY BOTTLE TOOTH DECAY

### STUDIUL PRIVIND INTERRELATIA DIETA-CARIE DE BIBERON LA COPIL

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**Abstract.** *In the case of temporary teeth, a marked increase in all caries indicators was noted. Baby bottle tooth decay is a serious form of temporary teeth lesion that leads to rapid and accentuated tooth destruction. The study scope is determining the Incidence and Etiopathogenic Algorithm in Baby Bottle tooth decay in Children. We proposed to characterize epidemiologically a heterogeneous group of 140 children 64 girls and 75 boys from 18 months to 5 years and to provide valid data on (number and location of BBTD lesions, general clinical aspects, data on birth and nutrition). In terms of nutrition, 99 babies with baby bottle tooth decay were artificially fed, 38 sucked mother breast; 110 of the children receive a sweetened night bottle, 90 babies prefer sweetened beverages. Dietary bottle feeding accurately increases the risk of bottle-feeding. No etiological study was able to demonstrate the unique cause of nipple caries syndrome. An effective preventive action, early introduced by professionals, parents and children, is required.*

**Key words:** baby bottle tooth decay, decay, child, sucking habits, bottle content

**Rezumat.** *În cazul dinților temporari s-a remarcat o creștere marcantă a tuturor indicatorilor de carie. Caria de biberon este o formă gravă de leziune pe dinți temporari care duce la distrugerea rapidă și la vârste mici a dinților. Scopul studiului este stabilirea incidenței și a unui algoritm etiopatogenic în caria de biberon la copii. Ne-am propus să caracterizăm epidemiologic un lot eterogen de 140 copii 64 fete și 75 băieți, între 18 luni și 5 ani, și să oferim date valide privind numărul și localizarea cariilor de biberon, aspecte clinice generale, date cu privire la erupție și alimentație. În ceea ce privește alimentația 99 copii cu carie de biberon au fost hrăniți artificial, 38 au supt la sân; 110 dintre copii primesc un biberon de noapte cu un conținut îndulcit, 90 de copii preferă băuturile îndulcite. Alimentarea cu biberonul fără orar precis crește riscul de carie de biberon. Nici un studiu etiologic nu a putut demonstra cauza unică a sindromului cariei de biberon. Este necesară o acțiune preventivă eficientă, devreme introdusă, realizată de profesioniști, părinți și copil.*

**Cuvinte cheie:** carie de biberon, carie, copil, obiceiuri de sugere, conținutul biberonului

## INTRODUCTION

BB TD is a severe form of cavity injury on temporary teeth, characterized by anarchic localization, onset on immune surfaces, with the simultaneous

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damage of all dental groups, with rapid evolution in the surface and in depth which leads to the rapid destruction of all teeth. This type of lesion, formerly referred to as the circular decay of the upper fronts due to the characteristic localization, may be of simultaneous interest of all dental groups and is described under varied names: early acute caries, acute caries, baby bottle tooth decays.

Located on the vestibular faces in the cervical third of the upper frontals, BBTD is an acute, rampant, unsightly cavity that begins with the small white lesion immediately after the teeth eruption on the arcade. At the onset it has the aspect of a white spot located in the cervical third of the upper temporal incisors. The BBTD evolves rapidly in the surface, including the rough and deep faces, and differs from yellowish to black. The acute character and palliative regression phenomena lead to coronary fractures and periapical complications with repeated abscesses and fistula (fig.1).



**Fig.1** Intraoral image of a patient with BBTD

We purpose of the study: determining the incidence of BBTD in children; to identify of the clinical aspects of BBTD following rigorous clinical and paraclinical examinations; establishing an etiopathogenic algorithm in the BBTD.

## **MATERIAL AND METHOD**

We proposed ourselves to epidemiologically characterize a heterogeneous group of 140 preschool children presented to dental assistance with a diagnosis of BBTD and to provide valid data related to 7 epidemiological variables (age, gender, number and location of caries BBTD, general clinical aspects, birth data, dental eruption and nutrition). The study was conducted on a group of preschool children composed of 140 children, 64 girls and 75 boys aged 18 months to 5 years from the records of the Apollonia Orthodontic-Paedodontics Clinic during 2009-2017. For the statistical processing of the data in this research we used the specialized statistical software: SPSS version 13.0, Statistics version 6.0, as well as the Microsoft Office XP software package. The dental surfaces were examined with the probe and the mirror, and the incipient cavities, the detectable manifestations of the cervical enamel and the cervical enamel stains were identified. The gingival condition was examined, taking into account the inflammatory signs of the papillae and the free gingival margin. Oral hygiene was assessed by the presence / absence of the bacterial plaque during examination.

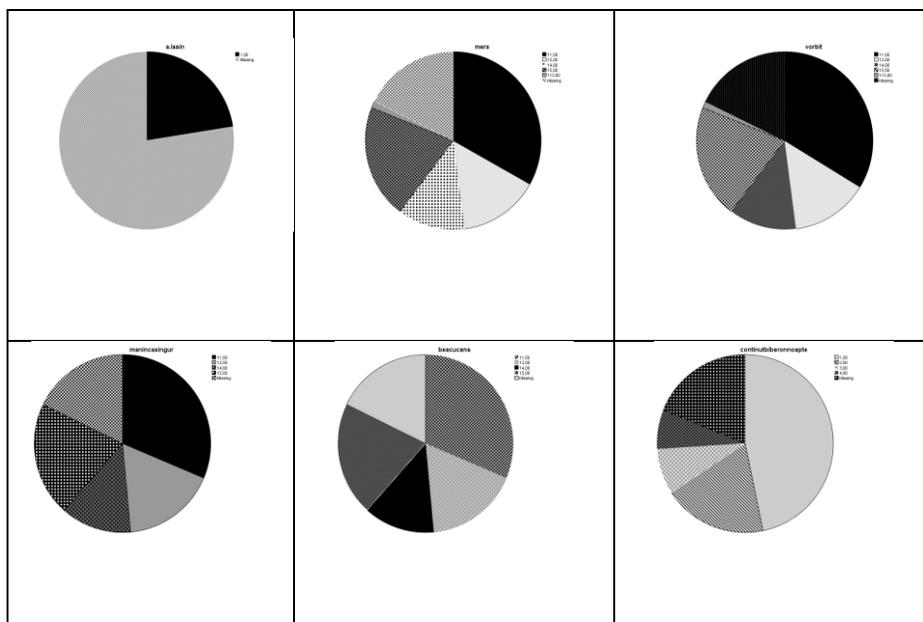
### **Distribution of the study group by age and sex**

As regards to the distribution of the study group by gender, there is a predominance of male sex (45%) versus feminine (37%). Age distribution is heterogeneous, as can be seen in the chart, with maximum values around the age of 18 months. The frequencies of

the age of patients registered by us vary as follows: 16% 20 months, 14% 19 months 8% aged 3 years, 7% aged 2 and respectively, and for small ages the frequency is sensitively equal to the lowest value in the lot 4%. 51.5%

## RESULTS AND DISCUSSIONS

Thus, 37.8% of the children with BBTD came from births with medical problems, 28.4% were born prematurely, 36.1% had birth defects and stayed under neonatological surveillance for a maximum of one week, 42.6% were treated for various conditions in the infancy. Most often children were diagnosed and treated for: varicella 5.9%, measles 2.6%, otitis 27.8%, 24% bronchitis (Acs *et al.*, 1992; Ayhan *et al.*, 1996; AAPD Guide, 2006) (fig. 2). For the assessment of growth and general development, a number of parameters related to acquired skills were investigated: the age at which the child went, ate alone, drank with a cup, talked, and eating preferences (AAPD Guide, 2006; Guide AAP, 2001, AAP Guide, 2011; Drury *et al.*, 1999).



**Fig.2** Diagrams of growth assessment parameters studied in the studio group: the age at which the children went, they spoke, the food, ate alone and drank

On average, the children in our study group went around 14 months, talked at 14 months, ate alone and drank with cup at 12 months, and the dental eruption began at 5.7 months, all values falling within normal (AAPD Guide, 2006; AAP Guide, 2001; Fillstrup *et al.*, 2003; Tinanoff *et al.*, 2002; Tinanoff and Reisine, 2009) (fig.2,3, tab.1).

Table 1

Statistical indicators for small child acquisitions

	N	Minimal	Maximal	Average	Standard Deviation
Walk	139	11.00	112.00	14.0935	11.99208
Talkingt	139	11.00	112.00	14.0863	11.99365
Eat alone	139	11.00	15.00	12.6906	1.68045
Drink with cup	139	11.00	15.00	12.6906	1.68045
Dental eruption	139	4.00	12.00	5.7050	1.55318

In terms of nutrition, 99 BBTD babies were artificially fed, 38 sucked at mother breast, 135 started dental brushing, over 110 children continued to receive a snight baby bottle, over 90 of the children preferred sweetened drinks (Tinanoff *et al.*, 2002; Tinanoff and Reisine, 2009) (tab. 2, 3).

Table 2

Descriptive nutrition indicators in the studygroup

	N	Minim	Maxim	Medium values	Standard Deviation
Succion	135	.00	1.00	.4000	.49172
Brushing teeth	135	6.00	24.00	17.9704	4.11938
Artificial fed	99	1.00	1.00	1.0000	.00000
Sucking to the breast	38	1.00	1.00	1.0000	.00000
Night bottle	113	1.00	1.00	1.0000	.00000
Bottle content noapte	137	1.00	4.00	1.7007	.97290
Sweet solid table	0				
Sweet soft drinks	96	1.00	1.00	1.0000	.00000

There is a net trend in the group asking the bottle without the precise timetable to be touched by the BBTD.

Table 3

Tendency of cavity damage according to the frequency of bottle nipple sugars

Frequency of baby bottle	Whitout decay	BBS
All nights and daily rests	90.2%	57.9%
All daily rests	0.6%	0%
All night	13.4%	21.1%
4-5 times/week	1%	5.3%
ocasionaly	5.3%	5.3%
never	36.6%	10.5%

The habit of consuming a bottle during siesta and sleeping with the bottle most often leads to a BBTD. 36.6% of the cavity-free group does not lie with the bottle as compared to only 10% of the cavity group. More than 40% of healthy babies suck the bottle but are not affected by the caries. Even 30 children surveyed in one study remained prone to caries while holding a bottle in their mouth for 8 hours a day, which shows that other factors predispose to BBTD caries. Keeping the baby bottle in the mouth all night is more common in the group of affected children. The prolonged use of the bottle during the day is also the most common in the group of patients affected by nipple caries (Tinanoff *et al.*, 2002; Tinanoff and Reisine, 2009) (tab. 3).

The bivariate T student test demonstrates that there are statistically significant correlations with  $p$  less than 0.05 between age and normal acquisition of walking, speaking, brushing their teeth, and especially between the presence of sucking ticks, artificial food and baby bottle nourishment. The parents have some idea of the excessive amount of sugars they give to their children: only 36% of parents indicate a high consumption of sweets, and 59% of them think that children drink plenty of sweetened liquids. The liquid most often used in the bottle is the milk alone or with the addition of sweet, flour and fruit juices.

## CONCLUSIONS

No etiological study has been able to demonstrate the unique cause of bottle feeding syndrome, and BBTD should be considered as a multifactorial disease difficult to treat.

In order to increase the volume of dental care for babies effectively. Sustained, early preventive action is required, carried out by professionals, parents and children. No therapeutic method is better than another, but the therapeutic methodology differs.

If we balance the oral hygiene from the first days of life and the costs associated with the lack of hygiene, the final balance is beneficial for the preventive patients in all social categories.

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