

FLUORINE – AN IMPORTANT ELEMENT IN PROPHYLAXIS

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Abstract

The fluorine is brought to the human body through 2 ways: with food and water, while through the respiratory way it is exceptional and by chance. The aim of this paper is to emphasize the importance of fluorine administration to children, in order to prevent the dental caries, when it is administrated for therapeutic purposes. The children who have taken continuously for a few years fluorine tablets are protected from the occurrence of caries, and those who took the tablets intermittently have a reduced number of caries.

Keywords: Fluorine, Prevention, Dental caries

INTRODUCTION

The fluorine can be found in the human body as an element in the form of shades, but its presence is absolutely necessary for a normal development, and compared to other similar elements, it is the only one anchored and appears in the apatite network of tough tissues, bones and teeth in a proportion of 99% from the total and only the rest of 1% in the muscles, brain and blood. (1)

The fluorine is brought to the human body through 2 ways: with food and water, while through the respiratory way it is exceptional and by chance.

The mechanism of fluorine fixing in the tough tissues is identical for bone and tooth and it is done with a ionic exchange at the level of the hydroxide and carbon-hydroxide-apatite crystals, by replacing the OH and CO₃ with fluorine ions. (3)

In the body's economy, the fluorine has a very important role in the mechanisms of defense against the aggression of the cariogen agents, including germs. In the human body, the fluorine is an element that can be found in very small quantities: 0,5-3 mg corresponding to 70 Kg. The fluorine is an element anchored inorganically in the body and appears in the apatite network of tough tissues. It is found in a varied proportion in all forms of vegetal or animal aliments.

THE SOURCES OF FLUORINE

The sources of fluorine can be divided into two major categories:

- natural sources: soil, natural waters, atmospheric particles, aliments
- therapeutic sources: waters secondary fluorized, salt, milk, products of buccal -dental hygiene

THE FLUORINE IN NATURAL WATERS

Natural waters contain variable quantities of fluorine, and the epidemiological studies showed that the anti-caries protection increases together with the quantity of fluorine in the drinkable water, up to the level of 1ppm. The fluorization of water proved to be safe and economic, inducing a reduction of 50-70% of the caries incidence. The fluorine from the drinkable water for Europe does not exceed 0,3-0,5 mg/l.(4)

The interruption of water fluorization for more than 3 months leads to the occurrence of caries explosion. (2)

THE FLUORINE IN ALIMENTS

All aliments contain variable doses of fluorine, according to its concentration in the soil they come from, to the water used for their industrial or domestic preparation. Among the aliments rich in fluorine we can mention: the salmon – 19,3mg/kg, tea – 120-190 mg/100g, nuts – 7,8mg/kg, etc.

The intake in the civilized food varies between 0,2-0,5 mg daily, and the resorption takes place at the level of the small bowel. (5)

MATERIAL AND METHOD

The aim of this paper is to emphasize the importance of fluorine administration to children, in order to prevent the dental caries, when it is administrated for therapeutic purposes.

The study was done on 158 children from urban areas, aged between 4 and 12 years. The children were clinically investigated in the dentist's office and observation sheets were drawn up for each of them. They were questioned about their oral hygiene and the possible administration of pills containing fluorine.

Data were collected from DSP (Direction of public health) Bihor regarding the fluorine content of the drinkable water.

RESULTS AND DISCUSSIONS

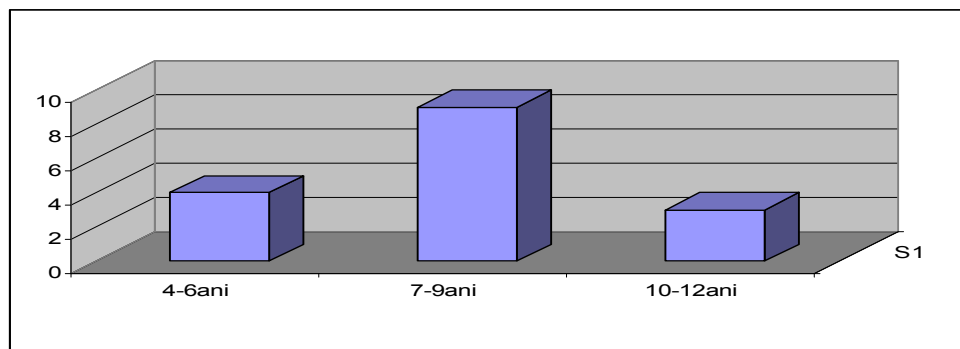
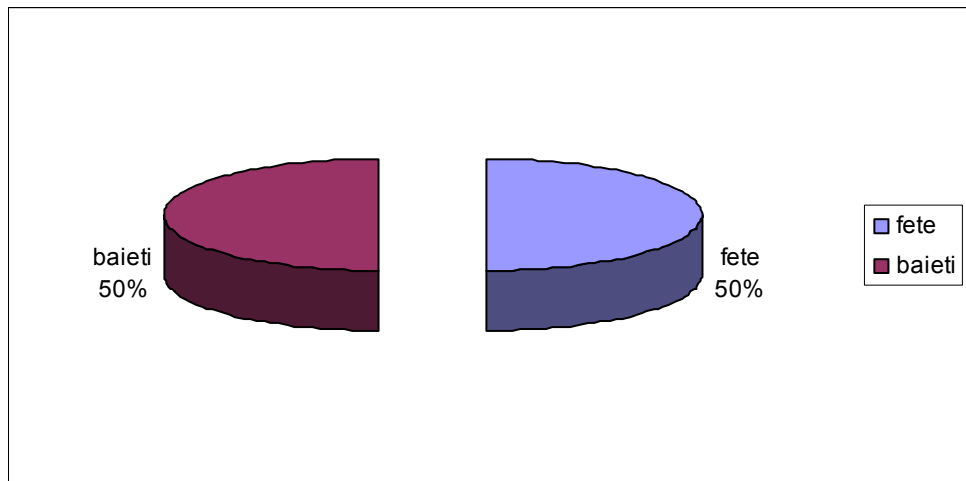


Fig.1. Distribution of cases on age groups



Baieti= boys; fete= girls

Fig.2. Distribution of cases on gender

Among the subjects who took fluorine tablets we found boys and girls with integral teeth in an equal proportion.

Table 1

The frequency of dental caries at pre-school children

Children's age	No. of investigated children	No. of children with no problems	Percentage %	No. of affected children	Percentage %
4 years old	10		0%	10	100%
5 years old	9	3	33,3%	6	66,7%
6 years old	8	2	25%	6	75%

It can be noticed a high morbidity among the pre-school children, children with a poor oral hygiene.

Among the children aged between 4 and 6 years, 17,08% took fluorine in the forms of tablets.(Fig 3)

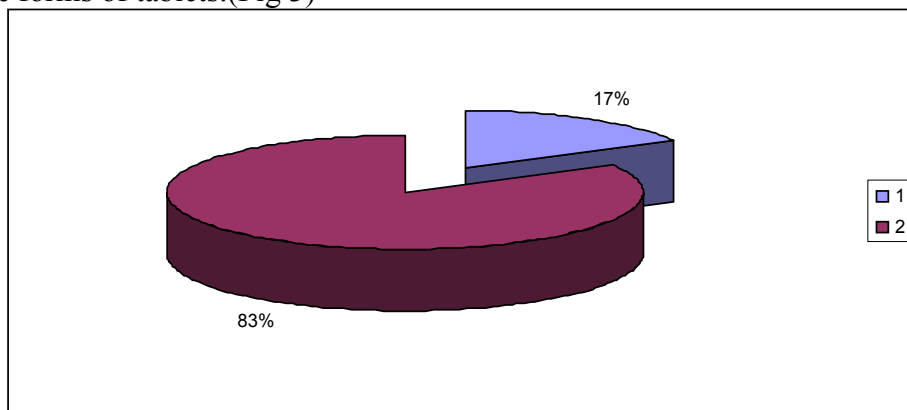


Fig.3

The administration of tablets was done intermittently at 100% of the children.

None of the children has taken fluorine tablets since their birth.

The degree of damage at the temporary teeth:

- 22% with multiple caries
- 18,51% with no caries
 - 14,81% took fluorine after the age of 2
 - 3,71% never took fluorine
- 59,27% have 1-2 caries on the temporary teeth

Among the children aged between 7 and 9, 15 cases (9%) took fluorine as tablets. The administration was done intermittently in 9 cases (60%) and continuously in 6 cases (40%) (Fig 4)

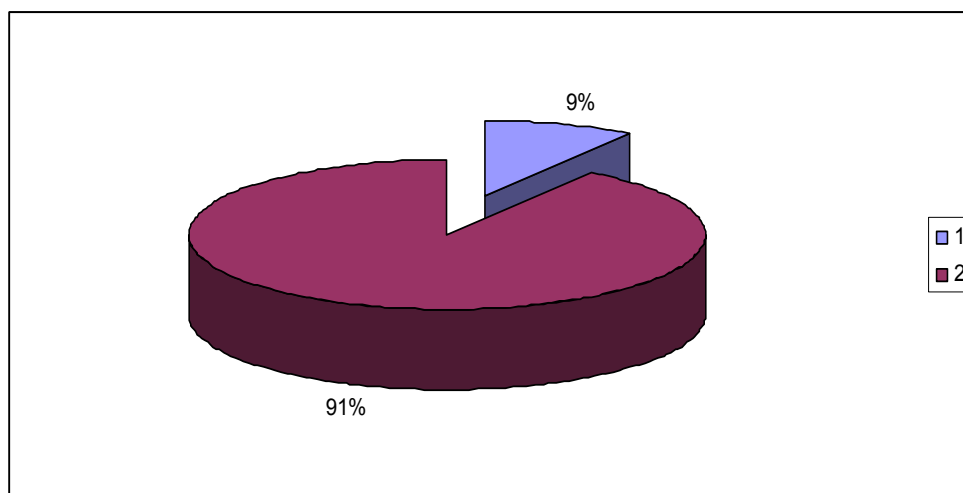


Fig 4

Table 2

The frequency of dental caries at school children aged between 7 and 9

Children's age	No. of investigated children	No. of children with no problems	Percentage %	No. of affected children	Percentage %
7 years old	21	1	4,76%	20	95,24%
8 years old	34	7	20,58%	27	79,42%
9 years old	37	5	13,51%	32	86,49%

Among the investigated children aged between 7 and 9:

- 85,86 % have multiple caries
- 14,13 % don't have any caries

The children not affected by caries:

Take / took F: 69%

Don't take/didn't take F: 31%

Among the investigated children aged between 10 and 12, 11 children (6,96%) took fluorine in the form of tablets. (Fig 5)

Table 3

The frequency of dental caries at school children aged between 10 and 12

Children's age	No. of investigated children	M1 affected %	M1 complete %
10 years old	18	38,88%	61,12%
11 years old	15	46,66%	53,34 %
12 years old	6	51%	49 %

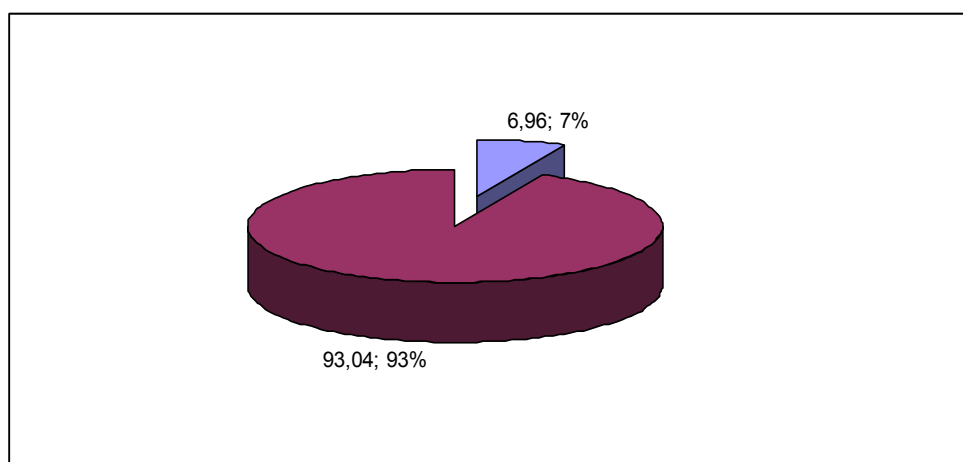


Fig. 5. Children who took fluorine in the form of tablets

We noticed an increased affection of the prim permanent molar, as simple caries, coronary destructions or its extraction. At the age of 12, more than half of the investigated subjects have at least one compromised molar of 6 years old.

CONCLUSIONS

In the group of investigated persons, aged between 4 and 12, from the urban area, the morbidity by caries is increased.

The ages with a more frequency of the dental caries are 4, 7, 10. From the total of the investigated children we noticed that, on average, 10,79% took or take fluorine tablets. Among these, most of them started after the age of 3.

The children who have taken continuously for a few years fluorine tablets are protected from the occurrence of caries, and those who took the tablets intermittently have a reduced number of caries.

There are persons who never had a fluorine treatment and are not affected by caries, but the majority has multiple caries.

In all cases of children with no caries, a good oral hygiene is associated.

As regards the fluorizing methods in the studied lot we noticed that they are the following: usage of tablets and toothpaste with fluorine.

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