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Parents' Knowledge and Behavior Regarding Fluoride Use for Their Children

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Abstract: (1) Background: Parents need an increased level of awareness regarding the role of fluoride in maintaining optimal oral health of their children. This cross-sectional study aimed to assess the level of parents' knowledge and behavior towards fluoride administration in children. (2) Methods: an online self-administered Google Forms questionnaire was used. (3) Results: 73.97% did not administer fluoride products to their children. From 16 parents who have given their child local fluoride products, 15.06% made it on the recommendation of the dentist. In total, 71.23% did not know exactly the importance of using fluoride for optimal oral health of the child. In total, 63.01% did not know the possible side effects of excess fluoride. (4) Conclusions: The dentist has an important role to educate the parents and also their children on the appropriate use of fluoride at home and in dental offices, explaining to them the benefits it brings for optimal oral health status and to motivate patients for adequate oral hygiene, proper diet and regular check-ups.

Keywords: fluoride; knowledge; children; parent's opinion

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Introduction

Over time, the use of fluoride as a preventive agent against caries has been studied in detail, the results being excellent when the dose is administered properly. Many studies have addressed the products that could be used both at home and in the dental offices, thus developing toothpastes, varnishes, mousses, mouthwashes that have different amounts of fluoride [1]. In times when there is not much emphasis on a healthy diet due to external factors such as stress or lack of time, fluoride can play an essential role in maintaining oral health due to its remineralization properties [2]. However, there are people who do not consider the beneficial effects of

fluoride intake because of side-effects that may occur. The family plays an important role in developing habits and knowledge for children's oral health [3,4]. The role of the dentist in this context is to educate parents that, administered in optimal doses, the risks are very low and the benefits high. Both mothers and fathers need an increased level of awareness regarding the fluoride role in maintaining optimal oral health of their children [1]. There is a need to increase parents' knowledge for adequate fluoride intake and its benefits on children's oral health [1,5]. The most regular mode of administering fluoride is through the use of toothpastes with fluoride content [6–8].

The present study aimed to assess the degree of knowledge and habits towards fluoride administration in children, among a group of parents.

Materials and Methods

This cross-sectional study was conducted by Oral Health and Community Dentistry Department, Carol Davila University of Medicine and Pharmacy from Bucharest, in Romania, between February and July 2020, on a group of 73 parents. The assessment of level of knowledge and behavior was performed using an on-line self-administered Google Forms questionnaire. Parents' knowledge of the indications, benefits and limitations of fluoride use in children was assessed. Additionally, the authors evaluated parents' behavior towards the use or non-use of fluoride in children, and the reasoning behind their choice. All the parents who agreed to answer the questionnaire, after the purpose of the study was explained to them and they were assured of anonymity, were involved in the study. The age of participants was between 30 and 54 years and their children were between 1 and 18 years old. The results were processed using Google Spreadsheet (Google Inc.) for descriptive analysis.

Results

Subjects' Behavior (Table 1)

From subjects who answered the questionnaire, 36.99% declared they usually chose their child toothpaste based on the fluoride content and its taste. For 28.77% the brand of toothpaste was important, and for 23.29% the effects specified on its packaging count. The choice of 2.74% of the parents was based on the appearance of the packaging and also two declared choosing it by chance. In total, 1.37% of subjects orient their options either by the age of the child, or by the lack of toothpaste aroma, or by its natural origin, or by the absence of fluoride.

Among the parents included in the study, 73.97% did not administer additional fluoride products to their children, and 19.18% subjects stated that the little ones use mouthwash that contains, among other compounds, fluoride. In total, 4.11% did not know if fluoride is found in products used by children in addition to the toothpaste. In total, 2.74% of parents said they apply mousse to their children and only 1.37% stated that an alternative source of fluoride is water or food.

Only 21.9% of parents stated that they decided to give their child oral fluoride supplements (like mousse or mouthwash), of which 15.06% made it on the recommendation of the dentist and 6.84% of them did not specify the reason.

Regarding the systemic intake of fluoride, 6.84% of parents administered fluoride to their child in the form of tablets, of which 2.73% on the recommendation of the paediatrician and 1.73% on the advice of the dentist, the rest did not specify the source of recommendation.

Regarding the use of fluoride in the dental office, only 6.86% parents reported their children were offered local fluoride applications on a regular basis while 13.60% only occasionally. Moreover, 5.49% of parents did not know if fluoride products were applied to their children in the dental offices, and most of them (73.97%) were certain that their children did not benefit from local professional fluoridation.

Table 1. Parents' behavior regarding use of Fluoride for their children.

Criteria for Choosing Toothpaste	Frequency (%)	N
Brand	28.77	21
Aspect of pack	2.74	2
Fluoride content	36.99	27
Taste	36.99	27
Data written on pack	23.29	17
Age of the child	1.37	1
Without flavor	1.37	1
Natural toothpaste	1.37	1
Without fluoride	1.37	1
Random	2.74	2
Use of Fluoride products for child		
Mouth wash	19.18	14
Mousse	2.74	2
Water, food	1.37	1
Nothing	73.97	54
I do not know	4.11	3
Reason for using Fluoride topically		
Recommendation of the dentist	15.06	11
Not specified	6.84	5
Use of Fluoride in dental office		
Periodic	6.84	5
Seldom	13.60	10
Never	73.97	54
I do not know	5.49	4
Use of Fluoride tablet form		
Recommendation of the dentist	1.36	1
Recommendation of pediatrician	2.73	2
Not specified	2.73	2

Subjects' Knowledge (Table 2)

More than two-thirds of parents (71.23%) did not know exactly the importance of using fluoride for optimal oral health of their child, while only 23.29% of parents are aware of its anti-caries effects, 8.22% mentioned anti-sensitivity effects, 5.48% of subjects identified a possible anti-microbial role of fluoride, and 1.37% stated that fluoride is an important element in teeth whitening.

When it comes to the possible side effects of fluoride used in inappropriate amounts, 63.01% of parents declared they did not know any, only 6.85% knew the risk of developing dental fluorosis, 5.48% mentioned that stains can appear on the surface of the teeth, and 4.11% declared the risk of intoxication.

While 83.5% of the parents did not know the reasons for possible side effects occurring due to the use of fluoride, 15.07% were aware of the negative consequence if the recommended dose is exceeded and 1.37% subjects believed that they occur in case of sudden cessation of its use.

Table 2. Parents' knowledge regarding Fluoride role in oral health.

Fluoride Content of Toothpaste	**Frequency (%)**	**N**
Yes	57.63	42
No	28.76	21
I do not know	13.69	10
Reasons for using Fluoride products		
Anti-caries effects	22.29	17
Desensitizing effect	8.22	6
Antimicrobial effects	5.48	4
Whitening effects	1.37	1
Not specified	71.23	52
Side effects of Fluoride use		
Dental fluorosis	6.84	5
Staining teeth	5.48	4
Thyroid disorders	4.11	3
Demineralizations	2.74	2
Intoxications	4.11	3
Unknown	76.71	56
Causes of Fluoride side effects		
Overdose	15.07	11
Sudden stop of F using	1.37	1
Unknown	83.5	61

Discussion

Most participants in the present study had no correct information about the fluoride role for oral health. Additionally, their habits related to fluoride use for their children are inadequate. This was also highlighted by the answers to the questionnaire where many of them were unspecified. In a similar study conducted by the Riyadh College of Dentistry and Pharmacy in Saudi Arabia [9], 55.9% of parents declared their child's toothpaste contains fluoride, similar to findings in our study, but while half of the Saudi parents are aware that the fluoride in the toothpaste helps prevent or reverse dental caries, only one quarter of Romanian parents in our study use fluoridated paste for their children specifically due to the know anti-caries effect.

While in other countries special importance is given to oral health education through programs dedicated to parents and children for acquiring knowledge regarding benefits, but also possible side-effects of fluoride products [10,11], in our country the level is much lower, given the results of the study. Parents are not instructed in either the positive or negative roles of fluoride, so one part prefers not to use fluoride-based products due to false beliefs, while the other party is unaware of the presence of this substance in toothpastes used by their children.

Parents should be informed of the existence of gels, varnishes or other current products that allow additional protection of the teeth, so that the appearance of dental caries could be postponed for a longer period [12].

Dental health education of parents has a crucial role in promoting, maintaining and preserving a good oral health status for children, also in forming their attitude for health. There is a need to educate parents, but also their children about adequate fluoride prophylaxis at home and in dental offices.

Conclusions

The study revealed limited parents' knowledge about the effects of fluoride on oral health and unhealthy behavior regarding fluoride administration for their children. Perhaps the most important role is played by the dentist, who has a moral obligation to educate the parents and their children on the use of products that contain fluoride, explaining to them the benefits it brings for an optimal oral health status, along with proper oral hygiene, a healthy diet and regular dental check-ups.

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