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Original Research

An Investigation of the Knowledge and Preferences of Parents About Dental Preventive Practices

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ABSTRACT

Objective: Dental caries poses a significant health concern affecting, 60%-90% of children globally. While fluoride is widely utilized to prevent and eliminate dental caries, recent negative media coverage and concerns about irresponsible fluoride use have prompted a shift in parental perspectives. This study explores parental knowledge, preferences, and attitudes regarding preventive measures, with a focus on fluoride and potential natural or herbal alternatives.

Methods: Our research was designed as a survey study. A survey form consisting of 11 questions was delivered to parents of children aged 6–14 years and presented to the Erciyes University Department of Pediatric Dentistry for examination or treatment were included in the study. A total of 300 parents participated in the study. Data was recorded as numbers and percentages.

Results: Of the parents, 69% (207) reported that if they were offered natural herbal compounds instead of fluorinated varnish, they would prefer natural alternatives. A statistically significant relationship was found between the responses received from the parents about the effects of fluoride and the educational level of the parents ($p<0.05$). Only 4 (1.3%) university graduate parents stated that fluoride had harmful effects. We found that 80.95% of the fathers and 68.39% of the mothers stated that they would prefer natural or herbal alternatives for their children instead of fluorinated varnish, and this was a statistically significant result ($p<0.05$).

Conclusion: Parents do not have sufficient knowledge and attitudes about preventive practices in oral dental health, and some parents still avoid the use of fluoride products. Therefore, there is a need to increase fluoride intake and its effects on children's health by educating parents or informing dentists.

Keywords: Fluoride, Natural preparation, Pediatric dentistry

INTRODUCTION

Dental caries is an important health problem, affecting 60%-90% of children worldwide [1]. Caries can be eliminated and reversible in the early stages, but without appropriate care, it is not self-limiting and may progress until it completely destroys the tooth [2]. Fluoride, which is the most widely used protective material to prevent and eliminate dental caries, shows its caries-preventive effect on tooth enamel by preventing demineralization and increasing remineralization [3, 4]. Fluoride applications conducted professionally, such as fluoride gel, varnish, and

restorative materials, as well as fluoride-containing mouthwashes and toothpaste, are effective in reducing dental caries, which is a social health problem [5, 6]. Brushing the teeth twice a day with fluoridated toothpaste in the amount recommended by the dentist is effective in reducing caries. Fluoride applications administered by the dentist to people with high caries risk also prevent caries formation [7, 8]. In addition to the available information about the danger of irresponsible fluoride use at high doses, negative publicity about fluoride in print and visual media in recent years has changed parents' perspectives and preferences towards fluoride-containing products [9-11]. The vagueness regarding fluoride-related information has led to the idea that natural or herbal compounds can be used as an alternative to fluoride in preventing and eliminating dental caries [12]. There are several studies evaluating the perspective of parents regarding dental preventive practices in Turkey [9, 13-15]. However, previous studies have not investigated the opinions of parents regarding the use of natural/plant compounds with antiplaque properties, such as Centella asiatica, Echinacea purpurea, and Sambucus nigra, as alternatives to fluoride. Therefore, the aim of this study was to examine the knowledge level and preferences of parents with children aged 6-14 about preventive applications and to investigate their perspectives on alternative natural antimicrobials.

MATERIALS AND METHODS

Ethics committee approval for this study was obtained from the Erciyes University Non-Interventional Clinical Research Ethics Committee (Decision Date: 07.10.2020; Issue No: 96681246/ Decision No: 2020/494).

Parents of children aged 6–14 years who presented to the Erciyes University Department of Pediatric Dentistry for examination or treatment between 10.10.2020 and 30.12.2020 were included in the study. It was calculated that at least 284 participants should be evaluated according to power analysis (α=0.05, β=0.95) [9]. Considering the losses that may occur, 309 patients who presented to the Department of Pediatric Dentistry were evaluated. 9 surveys were excluded from the study because there were non-marked questions.

The questionnaire consisted of a total of 11 items. The first 3 items were about the sociodemographic characteristics (gender, age, education level, and income level) of the parent and the child; items 4-7 were about the parents' perspectives, behaviors/ attitudes, and knowledge levels about fluoridated products, and items 8-11 were about their attitudes towards fluoride applications and alternative natural products applied to children in the previous six months to one year (Table 1).

The questionnaires were filled out by the parents. Incomplete questionnaires were excluded from the study.

Table 1. Survey: Families' perspectives on fluoride

1. Mother's Age: Father's Age: Parent Mother/Father Child's Age:
2. Your monthly income a) Less than 2000 TL b) 2000-5000 TL c) 5000 TL or more
3. Your level of education: a) Primary school b) Secondary school c) High school d) University
4. What do you know about fluoride? a) I have no information. b) Prevents caries formation. c) Causes mental and developmental retardation d) Damages bones e) Good for teeth
5. Who would you prefer to administer fluoride-containing protective applications? a) Teacher b) Nurse c) Dentist d) Pedodontist e) No answer
6. Where do you get information about fluoride? a) Internet b) Pediatrician d) Dentist e) Neighbor f) Family
7. Would you prefer fluoride-containing toothpaste for your child? a) Yes b) No c) No answer
8. Is there a dentist who regularly follows your child? If yes, in which institution? a) Family health center b) Health center c) Private hospital d) Public hospital, clinic e) None

Main Points:

- In our study, it was determined that parents do not have sufficient knowledge and positive attitudes about preventive practices in oral dental health. Some parents avoid using fluoride products, which shows that education and awareness should be increased.
- In addition, it is thought that the fact that parents choose the natural preventive product when an alternative to fluoride is offered may guide studies on natural preventive products.

9. Has your child received a preventive fluoride treatment in the last six months? a) Yes b) No c) I don't know
10. Have you allowed your child to receive preventive fluoride gel applications at school? a) Yes b) No c) Our school did not conduct a preventive fluoride gel application
11. If you had the option of choosing a herbal or natural alternative to fluoride protective treatment, which one would you prefer? a) Fluoride varnish b) Herbal or Natural preparation

Statistical Analysis

The data obtained were analyzed with IBM Statistical Package for Social Science (SPSS) V23 (Armonk, NY: IBM Corp., USA). The Chi-Square and Fisher's exact tests were used to compare categorical variables according to groups. The results of the analysis are presented as mean ± standard deviation, median (minimum- maximum) for quantitative data, and frequency (percentage) for categorical data. The significance level was taken as $p<0.05$. The descriptive statistics of the responses are expressed as percentages.

RESULTS

A total of 300 parents, 174 females (58%) and 126 males (42%), participated in the study. The mean age of the parents was 36.8±5.27 years. Of the parents, 84 (28.8%) had a primary school education, 97 (32.3%) had a secondary school education, 80 (26.7%) had a high school education, and 39 (13.0%) had a university education (Table 2).

Table 2. Distribution of sociodemographic characteristics of the parents

	Frequency (n)	Percentage (%)
Parents		
Mother	174	58
Father	126	42
Parents' Education Level		
Primary School	84	28.0
Secondary School	97	32.3
High School	80	26.7
University	39	13.0
Parents' Income Level		
Low	75	25
Moderate	197	65.7
High	28	9.3
Total	300	100.0
Parents' Age	**Mean±SD**	**Min-max**
	36.8±5.27	27-51

(SD: standart deviation)

Of the parents, 20% (60) stated that fluoride prevents dental caries, 17% (51) stated that it is beneficial for teeth, and 58.3% (175) stated that they had no idea about fluoride.

If a fluoridated product is applied to their children, 159 (53%) parents stated that they would prefer the pedodontist's application, while 101 (33.7%) parents stated that they would prefer the dentist's application.

The sources from which parents obtained information about fluoride according to their level of education are given in Figure 1. Parents stated that they obtained information about fluoride mostly from dentists, and then from the internet or social media.

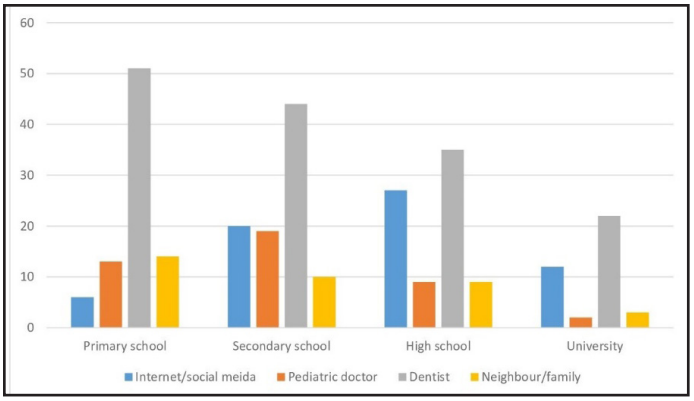

Figure 1. Parents' level of education and sources of information about fluoride

When asked whether they preferred toothpaste containing fluoride when choosing toothpaste for their children, 32.7% (98) parents stated that they preferred it, while 21.7% (65) parents stated that they did not.

Of the parents, 39.3% (118) reported that they regularly took their children to a dentist and they preferred state hospitals for these follow-up.

Of the parents, 28.3% (85) reported that their children had fluoride application in the last six months, while 55.3% (166) did not.

While 116 (39%) of the parents stated that they allowed their children to apply fluoride varnish at school, 37 (12%) stated that fluoride varnish was not applied at school (Figure 2).

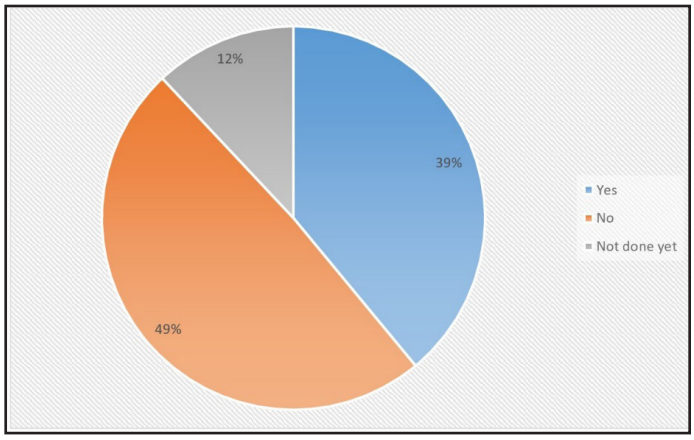

Figure 2. Percentage of parents who allow school-applied fluoride varnish

A statistically significant relationship was found between the responses received from the parents about the effects of fluoride and the educational level of the parents ($p<0.05$). Only 4 (1.3%) university graduate parents stated that fluoride had harmful effects. 41% of parents with a university education and 11.9% of the parents with a primary school education stated that fluoride application prevented caries formation.

There was no statistically significant relationship between the parents' preference for the person who would apply the fluoridated product and the level of education ($p>0.05$). Regardless of the level of education, the majority preferred a pedodontist.

It was found that the rate of choosing fluoridated toothpaste was higher among parents with high school and university education. While the rate of choosing fluoridated toothpaste among parents with high school and university education was 42.01%, this rate was 26.5% among parents with primary and secondary school education. A statistically significant relationship was found between parents' toothpaste preference for their children and education level ($p<0.05$) (Table 3).

Table 3. Parents' educational level and their opinions and preferences about fluoridated toothpaste

Education Level	Natural or Herbal Alternatives				Total
	Yes		No		
	n	(%)	n	(%)	p
Primary School	61	72.6	23	27.4	
Secondary School	55	56.7	42	44.3	
High School	62	77.5	18	22.5	**0.014**
University	29	74.4	10	25.6	
Total	207	69	93	31	300

Note: $p<0.05$, Chi-Square test

A statistically significant relationship was found between the parents' preference for natural orherbal alternatives instead of fluorinated varnish for their children and the level of education ($p<0.05$). There was no statistically significant relationship between parents' preference for natural or herbal alternatives instead of fluorinated varnish and income level. Of the parents, 69% (n=207) reported that they would prefer natural or herbal alternatives instead of fluorinated varnish.

We found that 80.95% of the fathers and 68.39% of the mothers stated that they would prefer natural or herbal alternatives for their children instead of fluorinated varnish and this was a statistically significant result ($p<0.05$).

DISCUSSION

Dental caries, one of the most common chronic infections in childhood, is a disease that results in disruption of the integrity of dental hard tissues [16, 17]. In studies conducted in Turkey, it is observed that the prevalence of caries in children aged 2-15 years ranges between 43.5% and 84.9% with an increasing trend [18, 19]. Accordingly, dental caries is still an important public health problem for children and their parents in Turkey. To decrease the prevalence of dental caries, which is a highly preventable disease, education and early diagnosis and preventive practices are of great importance [20]. Studies have shown that there are concerns in the society about the use of fluoride products [10, 21]. When the reasons for these concerns are analyzed, it is seen that they are mostly due to unsubstantiated information about fluoride on the social and print media [10].

Güler et al. [11] measured the level of knowledge of parents about fluoride in a study conducted with 50 parents. It was found that 48% of the participants allocated 1-3 hours a day to social

media tools, mostly (24%) obtained information about current issues from the internet (social media), and 35% found social media tools partially reliable. Similar results were obtained in our study. Of the parents, 21.7% reported that they received information about fluoride on the internet or social media.

Öter et al. [9] , in a study published in 2018, aimed to learn the knowledge levels and attitudes of parents with children aged 6-10 years about fluoride. They observed that parents did not have sufficient knowledge about fluoride applications and avoided the use of fluorinated products. In our study, we asked the parents "Did you allow your children to receive fluoridated varnish application during school screening?", and we found similar results. Of the parents, 49% reported that they did not allow for fluoridated varnish application at the school.

Çobanoğlu et al. [22] asked patients in different cities about their choice of fluoride in the toothpastes they used. While 13% of the patients used fluoride-free toothpaste, 40% reported that they thought fluoride-free toothpastes were more harmless. In addition, it was also found that patients did not deliberately choose toothpastes based on fluoride factor. The results obtained were found to be consistent with our study. In this study, it was found that 45.7% of the participants had no information about the choice of toothpaste for their children. Çobanoğlu et al. [22] reported that these results may be related to incomplete information provided by dentists to the parents. Since significant results ($p<0.05$) were obtained between the educational level of the parents and the choice of fluoridated toothpaste for their children in our study, we can say that the educational level of the parents is effective in the choice of fluoridated toothpaste in addition to incomplete information and inaccurate information disseminated by social media or TV.

Kalyoncu et al. [14] reported that 19 parents did not allow their children to receive topical fluoridated varnish application in public schools in their study titles "Attitudes and Approaches About Fluoride Varnish Application Program in Schools" conducted with parents in 2018, and of these 19 parents, 15.8% (n=3) reported that they were not sufficiently informed about the application, 26.3% (n=5) did not think that the application was performed in an appropriate environment, and 26.3% (n=5) thought that fluoride was harmful. Of the 40 parents who did not allow topical fluoride varnish application in a private school, 5% (n=2) reported that they were not adequately informed about the application, 22.5% (n=9) did not think that the application was performed in an appropriate environment, and 42.5% (n=17) thought that fluoride was harmful. Kalyoncu et al. [14] suggested that these results were due to insufficient knowledge of parents and that parents should be informed in detail about preventive applications, which have an important place within the scope of community oral and dental health promotion programs. In our study, we asked parents "What do you know about fluoride?" and found that 20% of the parents thought that fluoride varnish has various disadvantages (it causes mental and developmental retardation, damages bones, etc.). These results were found to be significantly correlated with parents' level of education. We think that educating parents can also help in solving this issue.

In studies published in the literature, parents' negative opinions about fluoride have led to the introduction of natural/herbal antimicrobial compounds as an alternative to fluoride [12, 23]. In the present study, we also asked the parents: "What would be your preference if a natural compound were to be used offered instead of fluoride varnish?", a statistically significant majority of parents (73.7%) preferred "natural/herbal alternatives".

Although fluoride has many advantages, different remineralization agents are being sought to replace the fluoride commonly used to provide remineralization. The reason for this is that excessive fluoride intake can be toxic. When taken regularly in small amounts, its toxicity can be acute or chronic, and in its chronic form, toxicity can affect mineralized tissues (bones and tooth enamel), leading to skeletal fluorosis and often dental fluorosis [24].

In recent years, great emphasis has been placed on research and education related to the identification of food components and the development of food products for health promotion. Numerous naturally occurring components in foods and vegetables have been shown to promote health and reduce the risk of many common diseases. It has been suggested that plant-derived antimicrobial compounds can be used as an alternative to the chemical compounds commonly used to control dental plaque and dental caries [12, 23]. In our study, although most of the parents stated that fluoride prevents dental caries and that they would prefer fluoridated toothpaste for their children, they reported that they would prefer natural/herbal alternatives instead of fluorinated varnish. This result suggests that when a natural-herbal product equivalent to fluoride is available in the future, parents may prefer these products more. We believe that this study will be beneficial in increasing the acceptability of

preventive measures in the community by exploring alternative natural compounds.

Limitations

The limitation of this study was that it is a cross-sectional study and was conducted in a single province in Turkey. In order to obtain generalizable results, a larger sample and studies in different regions should be conducted.

CONCLUSION

In conclusion, within the limitations of these studies, it is seen that parents do not have sufficient knowledge and attitudes about preventive practices in oral dental health, and some parents still avoid the use of fluoride products. Therefore, there is a need to increase fluoride intake and its effects on children's health by educating parents or informing dentists.

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REFERENCES

[1] Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C (2005) The global burden of oral diseases and risks to oral health. Bull World Health Organ 83:661-669.

[2] Selwitz RH, Ismail AI, Pitts NB (2007) Dental caries. The Lancet 369:51-59. https://doi.org/10.1016/S0140-6736(07)60031-2

[3] Moi GP, Tenuta LMA, Cury JA (2008) Anticaries potential of a fluoride mouthrinse evaluated in vitro by validated protocols. Braz Dent J. 19:91-96. https://doi.org/10.1590/S0103-64402008000200001

[4] Groeneveld A, Van Eck A, Dirks OB (1990) Fluoride in caries prevention: is the effect pre-or post-eruptive? J Dent Res. 69:751-755. https://doi.org/10.1177/00220345900690S145

[5] Petersen PE, Ogawa H (2016) Prevention of dental caries through the use of fluoride–the WHO approach. Community Dent Health 33:66-68. https://doi.org/10.1922/CDH_Petersen03

[6] Toumba, K.J., Twetman, S., Splieth, C. C. Parnell, C. van Loveren & N. A. Lygidakis (2019) Guidelines on the use of fluoride for caries prevention in children: an updated EAPD policy document. Eur Arch Paediatr Dent 20, 507–516. https://doi.org/10.1007/s40368-019-00464-2

[7] Ercan E, Baglar S, Colak H (2011) Topical Fluoride Application Methods in Dentistry. Cumhuriyet Dent J. 13:27-33.

[8] Kumar JV, Green EL (1998) Recommendations for fluoride use in children: A review. N Y State Dent J 64:40.

[9] Öter B, Karabulut B, Polat GG, Çehreli SB (2019) Evaluation of Perspectives And Attitudes Of Patients Towards Oral Care Products With Fluoride. J Dent Fac Atatürk Uni 29:373-380. https://doi.org/10.17567/ataunidfd.527050

[10] Ak AT, Aksoy H, Özdaş DÖ (2018) Evaluation of Turkish Parents' Knowledge and Opinions About Fluoride Toothpaste and Topical Fluoride Applications: A Pilot. J Dent Fac Ege Uni 39:160-164.

[11] Güler Y, Derelioğlu SŞ (2020) Influence Of Published News About Fluoride In Written And Visual Medıa On Patıent's Parents. J Dent Fac Atatürk Uni 30:41-47. https://doi.org/10.17567/ataunidfd.498737

[12] Rivero-Cruz JF, Zhu M, Kinghorn AD, Wu CD (2008) Antimicrobial constituents of Thompson seedless raisins (Vitis vinifera) against selected oral pathogens. Phytochemistry letters 1:151-154. https://doi.org/10.1016/j.phytol.2008.07.007

[13] Aktören O, Seymen F, Akinci T (2013) The Knowledge Levels And Attitudes Of The Society For Caries Prevention. J Dent Fac Istanbul Uni 24:106-111.

[14] Kalyoncu Iö, Seda H, Giray Fe, Kargül B (2019) Assessment Attitudes Of Parents About Application Of Fluoride Varnish In School-Based Programme. J Dent Fac Atatürk Uni 29:556-562. https://doi.org/10.17567/ataunidfd.479300

[15] Jahandideh A, Tüloğlu N (2019) Evaluation of Parental Knowledge About Preventive Applications in Oral and Dental Health. SDU Journal of Health Sciences10:403-412.

[16] Health UDo, Committee HSOHC (2016) US Department of Health and Human Services oral health strategic framework, 2014–2017. Public health reports 131:242-257. https://doi.org/10.1177/003335491613100208

[17] Mattheus D, Shannon M (2015) Oral health outcomes for children in Hawaii: Not much to smile about. J Dent Probl Solut 2:034-037. https://doi.org/10.17352/2394-8418.000014

[18] Akinci T, Aktören O, Sepet E, Oray H, Sağlam E, Burmabiyikoğlu S, Metin A, Kumbasar E, Bakirgil J, Bilgin B (2013) The Caries Prevalence Of Büyükçekmece Primary School Children In Istanbul. J Dent Fac Istanbul Uni 32:16-21.

[19] Köksal E, Uzamiş Tekçiçek M, Yalçin S, Tugrul B, Yalçin S, Pekcan G (2011) Association between anthropometric measurements and dental caries in Turkish school children. Cent Eur J Public Health. 2011 Sep;19(3):147-51. https://doi.org/10.21101/cejph.a3648

[20] Şahin FT, Özbey BUS (2007) Why Has There Been A Requirement for parent education Programmes?Why are parent education programmes important? Journal Of Social Policy Studies 12. https://doi.org/10.21560/spcd.12286

[21] Chi D, Basson A (2018) Surveying dentists' perceptions of caregiver refusal of topical fluoride. JDR Clinical & Translational Research 3:314-320. https://doi.org/10.1177/2380084418761846

[22] Çobanğlu N, Güngör Fs, Dönmez N, Alnaftachi N (2021) Toothpaste Preferences of Patients Applying to the Faculty of Dentistry and Their Opinions on Fluoride in Toothpaste. Selcuk Dent J. 8:56-60. https://doi.org/10.15311/selcukdentj.648117

[23] Carpiano RM, Chi DL (2018) Parents' attitudes towards topical fluoride and vaccines for children: Are these distinct or overlapping phenomena? Preventive Medicine Reports 10:123-128. https://doi.org/10.1016/j.pmedr.2018.02.014

[24] Conway DI, Macpherson LM, Stephen KW, Harper Gilmour W, Petersson LG (2005) Prevalence of dental fluorosis in children from non-water-fluoridated Halmstad, Sweden: fluoride toothpaste use in infancy. Acta Odontologica Scandinavica 63:56-63. https://doi.org/10.1080/00016350510019748

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