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Evaluation of Parents' Information Sources Perceptions and Attitudes Regarding Fluoride Toothpastes and Topical Fluoride Applications: A Cross-Sectional Study

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ABSTRACT

Purpose: The aim of this study was to evaluate parental attitudes, perceptions and sources of information regarding fluoride toothpastes and topical fluoride applications.

Methods: This study was designed as a cross-sectional questionnaire. Parents of pediatric patients who applied to Sivas Cumhuriyet University, Faculty of Dentistry, Department of Pedodontics for routine treatment were included in the study. A self-administered survey consisting of 23 items in 4 sections was administered to the parents. Chi-square test was used to evaluate categorical variables.

Results: Of the 259 parents surveyed, 54.1% were in their 30s, and 76.1% were female. The study revealed that 60.6% of the parents were unaware of the purpose of fluoride. They primarily relied on the internet and social media as sources of information about fluoride. This study indicated that the aspect parents prioritized most when selecting toothpaste was the naturalness of its ingredients. Additionally, it was found that university graduates paid significantly more attention to the content of toothpaste (p-value = 0.022), while females were less inclined to choose toothpaste containing fluoride (p-value = 0.010). Furthermore, parents who believed that fluoride was toxic and harmful were significantly more likely to be university graduates and more likely to refuse topical fluoride applications (p-value < 0.001).

Conclusions: This study revealed that parents' knowledge of topical fluoride applications is inadequate, with the belief that fluoride is harmful being more prevalent among university graduates. These findings emphasize the important role of dentists in providing parents with accurate and reliable information. To prevent hesitancy and refusal of fluoride applications within society, it is essential to ensure media control and to conduct informative and educational activities for parents.

Keywords: *fluoride hesitancy; fluoride refusal; toothpaste; topical fluoride; parents*

INTRODUCTION

Dental caries is a common chronic bacterial infectious disease in childhood [1, 2]. Untreated dental caries leads to pain, infection, decreased school attendance and achievement, eating, speaking, socializing and sleeping problems [3, 4]. Studies in literature have reported that the prevalence of caries in school-age children ranges between 60% and 90% [5, 6]. Although dental caries is a preventable disease, it is still an important public health problem that is common in children. Awareness of oral and dental health and positive parental attitudes have a significant impact on reducing the prevalence of dental caries in children. The parental attitudes directly affect dietary habits, the oral hygiene routines, regular dental visits and the implementation of preventive practices. Therefore, parental attitudes towards preventive oral and dental health strategies such as fluoride applications play an

effective role in the prevention and management of dental caries [7].

Fluoride is widely used both systemically and topically as an effective mineral for the prevention of dental caries. Topical fluoride applications strengthen tooth enamel, reduce the formation of caries, and promote the remineralization of tooth surfaces, particularly in children [8, 9]. The American Academy of Pediatric Dentistry recommends brushing teeth twice a day with fluoride toothpaste and applying topical fluoride based on the individual's caries risk to prevent and control dental caries [10]. Additionally, in Türkiye, topical fluoride applications are integrated into school-based oral and dental health programs in collaboration with the Ministries of National Education and Health [11].

Although the effectiveness and safety of fluoride have been scientifically established, many parents are becoming increasingly hesitant and are refusing the administration of these treatments [12]. Some studies in the literature indicate that parents believe fluoride is toxic, can lead to health issues such as autism or damage to the pineal gland, and may impact intelligence levels [13, 14]. Both dentists and the scientific community should address this situation with care.

Parents' perceptions to fluoride applications are directly influenced by their sources of information, educational backgrounds, and levels of awareness regarding oral and dental health. Research indicates that individuals who perceive fluoride as harmful predominantly rely on social media and websites for their information [15, 16].

Media tools such as television, radio, the internet, and printed publications serve as primary sources for individuals seeking information, news, entertainment, and social interaction. The significant influence of the media, combined with the ease of access to information, can lead to the rapid dissemination of content without proper scrutiny of its accuracy. This phenomenon may result in society encountering incomplete or incorrect information, ultimately leading to misguided decisions, particularly in the realm of health [17]. Given that parental consent is a legal requirement for the treatment of minors, it is crucial for parents to be well-informed about preventive treatments, such as fluoride applications, based on scientifically validated information. However, the extensive media coverage of anti-fluoride narratives, which often lack a solid scientific foundation, fosters hesitation and refusal among parents, thereby adversely impacting children's access to essential preventive health services [18].

To our knowledge, there are currently no studies evaluating parents' perceptions and attitudes toward topical fluoride applications in Sivas Province. Furthermore, the existing literature contains limited research on parents' knowledge levels regarding fluoride and the influence of media on their decision-making processes. In this context, this study aims to address a regional gap by examining parents' attitudes toward topical fluoride applications, while considering the impact of media. The objective of this study is to evaluate parents' attitudes, perceptions, and sources of information regarding fluoride toothpastes and topical fluoride applications.

MATERIAL AND METHODS

Study design

This study was designed as a cross-sectional survey. The participants included the parents of pediatric patients who applied routine treatment at the Department of Pedodontics, Sivas Cumhuriyet University Faculty of Dentistry, between July 29, 2024, and September 29, 2024. Our research was conducted in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines [19].

Ethical approval

Ethical approval was obtained from the Sivas Cumhuriyet University Non-Interventional Clinical Research Ethics Committee, with permission number 2024/07-19. The study adhered to the ethical standards outlined in the Declaration of Helsinki.

Sample size estimation

In this study, the minimum sample size was established at 251 individuals, based on a 90% confidence interval, a 5% alpha margin of error, and a medium effect size [20]. Although 251 participants were deemed sufficient for this study, a total of 259 parents ultimately participated.

Participants

The content and purpose of the study were verbally explained to the parents, and an informed consent form was signed by those who agreed to participate. Parents who consented and completed all items were included in the study. Conversely, illiterate parents, those who declined to participate, parents who did not answer all items completely, and parents who did not speak Turkish were excluded from the study.

Validity of questionnaire

To ensure the content validity of the questionnaire, feedback was obtained from three expert dentists, who evaluated the items for their alignment with the study's objectives. Based on the experts' recommendations, some questions were removed, while others were revised for clarity and comprehensibility. At the conclusion of this process, it was determined that the questionnaire was both valid and comprehensive.

Table 1. Distribution of the demographic information of the parents

		Female n (%)	Male n (%)	Total n (%)
Age	**<30**	29 (14.7)	1 (1.6)	30 (11.6)
	31-40	107 (54.3)	33 (53.2)	140 (54.1)
	41-50	60 (30.5)	21 (33.9)	81 (31.3)
	≥51	1 (0.5)	7 (11.3)	8 (3.1)
Education Level	**Primary School**	88 (44.7)	22 (35.5)	110 (42.5)
	High School	68 (34.5)	14 (22.6)	82 (31.7)
	University and above	41 (20.8)	26 (41.9)	67 (25.9)
Employment Status	**Employed**	32 (16.2)	60 (96.8)	92 (35.5)
	Unemployed	165 (83.8)	2 (3.2)	167 (64.5)
Total	**n (%)**	197 (76.1)	62 (23.9)	259 (100)

Data collection

In this study, a structured questionnaire consisting of 23 multiple-choice items divided into four sections was utilized. The survey items were developed by reviewing similar studies in the literature [16, 21, 22]. The questionnaire was distributed to parents during their free time at the dental clinic, and they were instructed to complete it independently. The face-to-face surveys were administered and collected by the same individual on the same day. Section 1 of the questionnaire included items assessing the demographic information of the parents. Section 2 focused on parents' oral and dental care practices for their children, while Section 3 addressed the use of media tools. Finally, Section 4 evaluated the parents' opinions and attitudes regarding fluoride.

Statistical analysis

Data were analyzed using IBM SPSS Statistics for Windows version 23 (SPSS Inc., Chicago, IL, USA). Continuous variables in the statistical analysis were presented as descriptive statistics, including the mean, standard deviation, minimum, and maximum values, while categorical variables were expressed as counts and percentages. The Chi-square test was employed to evaluate categorical variables, with a p-value of less than 0.05 considered statistically significant.

RESULTS

Demographic information of the parents is shown in Table 1. Accordingly, 76.1% of the parents were female and 23.9% were male. 54.1% of the parents were aged between 31 and 40 years, while 31.3% were aged between 41 and 50 years. 42.5% of the parents were primary school graduates, 31.7% were high school graduates and 25.9% were university graduates. It was determined that 64.5% of the parents were not employed, whereas 35.5% were employed.

The brushing habits of the parents' children were evaluated. It was found that 56.8% of children brushed regularly, 43.2% did not brush regularly, 37.8% brushed once a day, 28.3% brushed twice a day and 33.9% brushed occasionally. It was also found that 79.5% of children had their own toothpaste, whereas 20.5% did not.

Parents' responses to the media-related items are shown in Table 2. In response to the item 'How much time do you spend daily on media tools?', it was determined that 42.1% of the parents spent 1-2 hours and 12.4% spent 3-5 hours. In response to the item 'What do you think about the reliability of the information you obtain from the media tools?', it was determined that 68% of the parents found it partially reliable and 13.9% did not find it reliable. In response to the item 'From which source do you get information about current health issues?', it was determined that 56.8% of the parents get information from experts, while 33.9% get it from the internet and social media. In response to the item 'How much are you influenced by the messages in the media?', it was determined that 57.1% of the parents were partially influenced and 14.7% were mostly influenced.

Table 2. Distribution of parents' responses to media-related items

		Female n (%)	Male n (%)	Total n (%)
How much time do you spend daily on media tools (newspapers, television, and social media)?	**0-30 minutes**	39 (19.8)	6 (9.7)	45 (17.4)
	30-60 minutes	48 (24.4)	14 (22.6)	62 (23.9)
	1-2 hours	82 (41.6)	27 (43.5)	109 (42.1)
	3-5 hours	20 (10.1)	12 (19.4)	32 (12.4)
	6 hours or more	8 (4.1)	3 (4.8)	11 (4.3)
What do you think about the reliability of the information you get from the media tools?	**I find it absolutely reliable**	3 (1.5)	7 (11.3)	10 (3.9)
	I find it mostly reliable	21 (10.7)	3 (4.8)	24 (9.3)
	I find it partially reliable	137 (69.5)	39 (63)	176 (68)
	I do not find it reliable	26 (13.2)	10 (16.1)	36 (13.9)
	I find it absolutely unreliable	10 (5.1)	3 (4.8)	13 (5)
From which source do you get information about current health issues?	**From experts on the subject**	114 (57.9)	33 (53.2)	147 (56.8)
	From television programs	16 (8.1)	4 (6.5)	20 (7.7)
	From the internet and social media	65 (33)	23 (37.1)	88 (33.9)
	From newspapers, magazines, brochures	2 (1)	2 (3.2)	4 (1.6)
How much are you influenced by the messages in the media?	**Definitely influenced**	3 (1.5)	2 (3.2)	5 (1.9)
	Mostly influenced	33 (16.8)	5 (8.1)	38 (14.7)
	Partially influenced	111 (56.3)	37 (59.7)	148 (57.1)
	Not influenced	39 (19.8)	15 (24.2)	54 (20.8)
	Absolutely not influenced	11 (5.6)	3 (4.8)	14 (5.4)

Table 3. Distribution and relationship of parents' responses to the items "Do you pay attention to the content of toothpastes?" and "Do you want toothpastes to contain fluoride?" according to demographic information

		Do you pay attention to the content of toothpastes?		*p-value*	Do you want toothpastes to contain fluoride?		*p-value*
		Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Gender	**Female**	136 (69)	61 (31)	0.962	81 (41.1)	116 (58.9)	**0.010***
	Male	43 (69.4)	19 (30.6)		37 (59.7)	25 (40.3)	
Age	**<30**	22 (73.3)	8 (26.7)	0.604	12 (40)	18 (60)	0.932
	31-40	93 (66.4)	47 (33.6)		67 (47.9)	73 (52.1)	
	41-50	57 (70.4)	24 (29.6)		35 (43.2)	46 (56.8)	
	≥51	7 (87.5)	1 (12.5)		4 (50)	4 (50)	
Education Level	**Primary School**	71 (64.5)	39 (35.5)	**0.022***	44 (40)	66 (60)	0.090
	High School	53 (64.6)	29 (35.4)		36 (43.9)	46 (56.1)	
	University and above	55 (82.1)	12 (17.9)		38 (56.7)	29 (43.3)	
Employment Status	**Unemployed**	115 (68.9)	52 (31.1)	0.907	68 (40.7)	99 (59.3)	**0.035***
	Employed	64 (69.6)	28 (30.4)		50 (54.3)	42 (45.7)	
Total n (%)		179 (69.1)	80 (30.9)		118 (45.6)	141 (54.4)	

*__p-value__<0.05 statistically significant, Chi-Square test

The distribution and relationship of parents' responses to the items 'Do you pay attention to the content of toothpastes?' and 'Do you want toothpastes to contain fluoride?' according to age, gender, education level and employment status is shown in Table 3. While 69.1% of the parents paid attention to the content of toothpastes, 30.9% did not. According to educational status, it was found that university graduates paid significantly more attention to the content of toothpastes. It was found that 45.6% of the parents wanted toothpastes to contain fluoride and 54.4% did not want them to contain fluoride. It was found that females and unemployment participants significantly did not want toothpastes to contain fluoride.

Table 4. Distribution of parents' responses to the item "What do you pay attention to when buying toothpaste for your child?" according to demographic information

		Naturalness	Taste	Child age	Fluoride content	Price	I don't buy Special paste
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Gender	Female	79 (40.1)	9 (4.6)	53 (26.9)	7 (3.6)	12 (6.1)	37 (18.8)
	Male	25 (40.3)	4 (6.5)	20 (32.3)	3 (4.8)	4 (6.5)	6 (9.7)
Age	<30	10 (33.3)	2 (6.7)	12 (40)	2 (6.7)	3 (10)	1 (3.3)
	31-40	59 (42.1)	4 (2.9)	40 (28.6)	7 (5)	7 (5)	23 (16.4)
	41-50	33 (40.7)	7 (8.6)	18 (22.2)	0 (0)	6 (7.4)	17 (21)
	≥51	2 (25)	0 (0)	3 (37.5)	1 (12.5)	0 (0)	2 (25)
Education Level	Primary School	34 (30.9)	8 (7.3)	36 (32.7)	2 (1.8)	7 (6.4)	23 (20.9)
	High School	33 (40.2)	4 (4.9)	21 (25.6)	6 (7.3)	5 (6.1)	13 (15.9)
	University and above	37 (55.2)	1 (1.5)	16 (23.9)	2 (3)	4 (6)	7 (10.4)
Employment Status	Unemployed	72 (43.1)	7 (4.2)	42 (25.1)	5 (3)	10 (6)	31 (18.6)
	Employed	32 (34.8)	6 (6.5)	31 (33.7)	5 (5.4)	6 (6.5)	12 (13)
Total n (%) 259 (100)		104 (40.2)	13 (5)	73 (28.2)	10 (3.9)	16 (6.2)	43 (16.6)

The distribution of parents' responses to the item 'What do you pay attention to when buying toothpaste for your child?' according to age, gender, educational level and employment status is shown in Table 4. It was determined that 40.2% of the parents paid attention to the naturalness of the toothpaste content, 28.2% paid attention to the toothpaste being suitable for the age of the child and only 3.9% paid attention to the fluoride content of the toothpaste.

Table 5. Distribution and relationship of parents' responses to items about fluoride according to educational status

		Education Level			Total n (%)	*p-value*
		Primary School	High School	University and above		
Do you know for what purpose fluoride is used?	**Yes**	33 (30)	33 (40.2)	36 (53.7)	102 (39.4)	**0.007***
	No	77 (70)	49 (59.8)	31 (46.3)	157 (60.6)	
From which source do you get information about fluoride?	**Newspapers, magazines, brochures**	1 (1)	1 (1.2)	2 (3)	4 (1.5)	**0.005***
	Internet, social media	36 (32.7)	44 (53.7)	39 (58.2)	119 (46)	
	Television, News	16 (14.5)	2 (2.4)	3 (4.5)	21 (8.1)	
	Dentist	46 (41.8)	29 (35.4)	15 (22.4)	90 (34.8)	
	Other (teacher, etc.)	11 (10)	6 (7.3)	8 (11.9)	25 (9.6)	
Do you think fluoride applied by dentists in clinics or schools is beneficial?	**Yes**	42 (38.2)	29 (35.4)	26 (38.8)	97 (37.5)	0.201
	No	15 (13.6)	17 (20.7)	18 (26.9)	50 (19.3)	
	No opinion	53 (48.2)	36 (43.9)	23 (34.3)	112 (43.2)	
Do you believe media news that fluoride causes mental retardation and autism?	**Believed**	5 (4.5)	14 (17.1)	11 (16.4)	30 (11.6)	**0.006***
	Not believed	29 (26.4)	29 (35.4)	19 (28.4)	77 (29.7)	
	No opinion	76 (69.1)	39 (47.6)	37 (55.2)	156 (58.7)	
If you want to briefly explain the effect of fluoride, which one would you choose?	**No opinion**	39 (35.5)	14 (17.1)	11 (16.4)	64 (24.7)	**<0.001***
	I do not have enough information	51 (46.4)	29 (35.4)	20 (29.9)	100 (38.6)	
	Prevents caries	15 (13.6)	24 (29.3)	19 (28.4)	58 (22.4)	
	Harmful	5 (4.5)	15 (18.3)	17 (25.4)	37 (14.3)	

***p-value*<0.05 statistically significant, Chi-Square test**

The distribution and relationship of parents' responses to items about fluoride according to educational status is shown in Table 5. It was determined that 60.6% of the parents did not know for what purpose fluoride was used and 39.4% knew. A significant difference was found between the item 'Do you know for what purpose fluoride is used?' and educational status. It was determined that university graduates were more aware for what purpose fluoride was used. In response to the item 'From which source do you get information about fluoride?', it was determined that 46% of the parents get information from the internet and social media, while 34.8% get information from dentists. To the item 'Do you think fluoride applied by dentists in clinics or schools is beneficial?', it was determined that 43.2% of the parents had no opinion, 37.5% believed it was beneficial. To the item 'Do you believe media news that fluoride causes mental retardation and autism?', it was determined that 58.7% of the parents had no opinion and 11.6% believed it. The majority of parents who said they had no opinion were primary school graduates. In response to the item 'If you want to briefly explain the effect of fluoride, which one would you choose?', it was determined that 38.6% of the participants had not enough information, 22.4% believed that it prevented caries, and 14.3% believed that it was harmful. Parents who believed that fluoride was harmful were significantly more likely to be university graduates.

Table 6. Distribution and relationship of parents' responses to the item "Do you think fluoride is harmful?" according to their approval of fluoride applications

		Do you think fluoride is harmful?			Total	*p-value*
		Yes	No	Undecided		
Would you approve of the dentist applying fluoride to your child?	**Yes**	6 (6.4)	54 (56.8)	35 (36.8)	95 (36.7)	**<0.001***
	No	33 (80.5)	3 (7.3)	5 (12.2)	41 (15.8)	
	Undecided	18 (14.6)	16 (13)	89 (72.4)	123 (47.5)	
Did you approve the school-based application of fluoride varnish to your child?	**Yes**	10 (10.5)	45 (47.4)	40 (42.1)	95 (36.7)	**<0.001***
	No	31 (57.4)	6 (11.1)	17 (31.5)	54 (20.8)	
	Not done	16 (14.5)	22 (20)	72 (65.5)	110 (42.5)	
Total		57 (22)	73 (28.2)	129 (49.8)	259(100)	

***p-value*<0.05 statistically significant, Chi-Square test**

The distribution and relationship of parents' responses to the item 'Do you think fluoride is harmful?' according to their approval of fluoride applications is shown in Table 6. In response to the item 'Would you approve of the dentist applying fluoride to your child?', it was determined that 47.5% of the parents were undecided and 36.7% of the parents wanted fluoride application. In response to the item 'Did you approve the school-based application of fluoride varnish to your child?', it was determined that 20.8% of the parents did not allow fluoride application in their schools, while 36.7% allowed it. To the item 'Do you think fluoride is harmful?', it was determined that 49.8% of the participants were undecided and 22% believed it was harmful. It was determined that parents who did not approve the application of fluoride to their children by the dentist significantly believed that fluoride was harmful.

DISCUSSION

This study was motivated by the negative news about fluoride that has recently been widely disseminated in the media, as well as the hesitancy and refusal to topical fluoride applications among the parents of patients admitted to our clinic. Recent studies have reported biased attitudes towards topical fluoride applications among parents, underscoring this as a significant public health issue [12, 14, 21, 23]. The aim of this study was to evaluate parents' attitudes, perceptions, and sources of information regarding fluoride toothpastes and topical fluoride applications.

With the advancement of technology, individuals have increasingly utilized mass media, particularly television and the internet. It is also noteworthy that contemporary audiences tend to accept the content they encounter without applying critical analysis and are receptive to guidance. This study found that most parents spent 1-2 hours per day using media tools, believed that the information obtained from these sources was only partially reliable, and sought information about current health issues from experts as well as from the internet and social media. Additionally, they reported being somewhat influenced by the messages conveyed through the media. Güler et al. reported similar findings regarding media tool usage in their study [16]. Also, Basch et al. reported that anti-fluoride content predominated among fluoride-related posts on social media, emphasizing conspiracy theories and health risks and that misinformation regarding health can spread rapidly on social media without scrutiny of its accuracy [24].

Toothpastes are among the most effective agents for maintaining oral hygiene and are widely used by consumers. Studies have demonstrated that the use of fluoridated toothpaste significantly reduces the formation of dental caries [9]. In this study, an examination of the tooth brushing habits of parent's children revealed that the majority of children brush their teeth regularly. Furthermore, the aspect that parents prioritized most when selecting toothpaste was the naturalness of its ingredients, followed by suitability for the child's age and the avoidance of specialized toothpaste. Notably, only 3.9% of parents

considered the fluoride content when making their choice. Similarly, Liu et al. reported that Chinese participants placed greater emphasis on taste and brand rather than fluoride content when selecting toothpaste [25]. Conversely, Duman et al. found that the most important factor for Turkish participants when choosing toothpaste for their children was the chemical composition, followed by the fluoride concentration [22]. In the current study, the percentage of parents who paid attention to the fluoride content in toothpaste was found to be lower compared to the previous study. This discrepancy may be attributed to the differing educational levels of participants in the two studies. It can be inferred that parents become more aware and engaged in their children's oral and dental health care as their education level increases. Consistent with this perspective, our study determined that university graduates paid significantly more attention to the ingredients in toothpaste. Additionally, it was found that female and unemployed parents were significantly less inclined to choose toothpaste containing fluoride. In Japan, Ota et al. reported no significant relationship between gender and the use of fluoride-free toothpaste [26]. In contrast, Buckerdige et al. indicated that Australian mothers, in particular, tended to prefer non-fluoride toothpaste for their children [27].

In this study, it was determined that most parents were unaware of the purpose of fluoride. Similarly, Ak et al. in Turkey, as well as Taravati and Lak in Iran, reported that parents' fundamental knowledge regarding fluoride applications was inadequate [21, 28]. Literature indicates that parents with a higher level of education demonstrated a statistically significant greater awareness of the purpose of fluoride use [29]. In line with this, the present study found that university graduates were significantly more likely to understand the purpose of fluoride. When evaluating the sources of information that parents use regarding fluoride, it is evident that the internet and social media are preferred over consultations with dentists. Notably, university graduates showed a significant preference for obtaining information from the internet and social media [18]. This suggests that as educational attainment increases, parents become more interested and inquisitive about their children's care. However, relying on the internet and social media as sources of information poses risks concerning the accuracy and reliability of the information obtained. It is believed that seeking information online may be one of the reasons for the refusal of fluoride treatment [30].

In this study, it was found that parents were uncertain about the application of topical fluoride to their children. Ko and Chi reported in their research that American caregivers exhibited similar hesitancy regarding topical fluoride applications, fluoridated toothpaste, and fluoridated water for their children [31]. While there was no significant relationship between age and gender regarding the acceptance of fluoride applications, it was observed that parents who believed fluoride was harmful were significantly more likely to refuse fluoride varnish application. Özbey İpek and Bolaca reported results similar to these findings in their study [15]. Additionally, Chi's review study evaluating parental refusal of fluoride applications emphasized that many undecided parents may be open to accepting the application, and it is essential to identify the underlying reasons for the refusal of fluoride applications [14].

In our study, we found that a minority of parents believed that fluoride prevents dental caries, while the majority lacked sufficient knowledge regarding the effects of fluoride. Similarly, Almehmadi et al. in Saudi Arabia and Duman et al. in Türkiye reported in their studies that most parents were unaware of fluoride's role in caries prevention [22, 32].

In current study, 11.6% of the participants believed media reports claiming that fluoride causes mental retardation and autism, while 14.3% considered fluoride to be harmful. Lotto et al. reported in their study that misinformation about fluoride is widespread on the internet and may lead users to think that fluoride is harmful [33]. It was found that university graduates were significantly more likely to perceive fluoride as harmful. Consistent with this study research conducted by Ak et al. in Türkiye and Chi et al. in USA also indicated that the proportion of individuals who viewed fluoride as harmful increased with higher levels of education [21, 34]. These findings reveal that although parents have greater access to information as their education level increases, they often lack the awareness to discern accurate information.

Limitations

This study has several limitations. It employed a cross-sectional design and was conducted at a single institution over a specific time frame. Consequently, the results are only applicable to the current population. Given that knowledge, attitudes, and behaviors can evolve over time, it would be beneficial to conduct similar studies in diverse geographic regions and among various socioeconomic groups in the future. Additionally, the parents who participated in the study did not receive training on fluoridation. The findings reflect the current perceptions of the parents based on their personal experiences rather than being grounded in scientific evidence. Future research could involve providing parents with training on fluoride applications, allowing for an evaluation of their attitudes and behaviors by dentists both before and after the training.

CONCLUSIONS

The results obtained within the limitations of this study indicate that parents' knowledge regarding topical fluoridation is inadequate. Notably, the proportion of parents who believe that fluoride is harmful increases among those with a university education. Furthermore, it was found that most parents who perceive these applications as harmful do not allow their children to receive topical fluoride treatments from dentists. Dentists have a significant responsibility to provide parents with accurate and reliable information about the effects of fluoride. Epidemiological studies should be conducted to identify the behavioral, social, and cultural factors that contribute to parents' refusal of topical fluoridation, as well as to develop evidence-based interventions to address these issues. Additionally, health-related publications in the media, which serve as a primary source of information for the public, should be monitored by qualified individuals. Given the considerable influence of social media today, it would be beneficial to implement educational initiatives through these platforms. This approach may help prevent the public from experiencing hesitancy or refusal regarding critical health matters.

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CONFLICT OF INTERESTS

None.

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