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Original Article

Knowledge and awareness of Turkish family physicians about children's oral health

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Abstract

Background: Family physicians are primary health care providers and they mostly interact with pediatric patients before a pediatric dentist. This study aimed to investigate the knowledge and attitudes of family physicians, who play a key role in the preventive health care system, about pediatric oral health.

Methods: An online survey consisting of questions about the sociodemographic status of family physicians (11 questions) and measuring the level of their knowledge about children's oral health (16 questions) was created. Four hundred family physicians (264 females, 136 males, mean age±SD for all variables: 33.42±7.63 years) participated in the survey. The Mann-Whitney U, Kruskal-Wallis, and multiple linear regression analysis tests were used for statistical analyses.

Results: The median score of the correct answers to the questions about pediatric oral health was 10 on a scale of 0–16. The knowledge level of 48.3% of the family physicians was below the median value. The family physicians who were parents, had an educational background on the subject, and had more work experience had a higher level of knowledge about children's oral health than others ($P<0.001$).

Conclusion: The level of Turkish family physicians' knowledge about pediatric oral health is not sufficient. There is a need for a comprehensive training program on the subject for family physicians.

Keywords: Family physicians, Health, Oral, Children, Turkey

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Introduction

The World Health Organization (WHO) describes oral health as being free from mouth and face pain, infection, wounds, mouth and throat cancer, orodental problems, and other diseases.[1] It has been proven that there is a relationship between oral health and overall body health.[2] Oral health can be affected by several chronic and infectious diseases that have oral symptoms. Moreover, oral diseases can cause infection, inflammation, and serious effects on general health. Therefore, maintaining oral health is crucial to overall health.[3]

Tooth decay is the most common childhood disease.[4] According to the American Association of Pediatric Dentistry (AAPD), early childhood caries (ECC) is defined as the presence of one or more decayed, missing, or filled primary teeth in children aged 71 months or younger.[5] ECC in children is recognized as a major public health problem in both developed and developing countries with a prevalence of 1%–12% and 70%, respectively.[6] Since family physicians keep in touch with children regularly and are the children's first point of contact with the health system, their knowledge levels, awareness, and protective attitudes are important to eliminate risk factors that may cause ECC in children, prevent caries, and refer parents and children to dentists for preventive treatment.[7] Since oral diseases are mostly preventable diseases, it is expected that the incidence of ECC will decrease with the early initiation of oral and dental health protective practices.[8]

Studies have emphasized that family physicians providing primary health care services in all fields of general health. At the same time they take an active part in improving the oral health of society.[9,10] Oral and dental health is an integral part of general health.[11] The American Academy of Pediatrics (AAP) recommends that primary health care providers advise families on teething and dental care and recommend the timing of the first dentist visit.[12] In public health studies and clinical studies, it has been shown that the measures taken, individually and together as a society, and preventive treatments can prevent many oral and dental diseases.[13]

No similar study was found in the literature, except for a study conducted on 160 family medicine physician assistants,[11] in which Turkish family physician assistants' knowledge and attitudes about oral health were evaluated. Therefore, this study aimed to determine Turkish family physicians' knowledge and attitudes about children's oral health.

The null hypothesis of this study is that the socio-demographic findings of family physicians do not make a significant impact on their knowledge of pediatric oral health.

Methods

This cross-sectional study was performed between March 2021 and April 2021. Before starting the study, the required approvals were obtained from the Inönü University of Health Sciences Non-Interventional Clinical Research Ethics Committee (approval number: 2020/973), the Malatya Provincial Health Directorate (approval number: 2003923592), and the Ministry of Health (approval number: 16847).

A literature search was carried out using the keywords "family physician," "oral health," "children," "early childhood caries (ECC)," "knowledge," and "awareness." In light of the information obtained, a survey was created on the knowledge and attitudes of family physicians about children's oral health on Google Forms.

The survey consisted of two sections: Section 1 was about physicians' demographic characteristics and previous education on children's oral health, and section 2 was about the level of knowledge and awareness of physicians about children's oral health.

The content validity of the survey was confirmed by ten experts (five pediatric dentists and five family physicians). Based on the experts' comments, three questions were added and one was removed in section 2, and some textual changes were made. The clarity of the survey language was checked by a linguist and necessary corrections were made accordingly.

For section 2, internal consistency was evaluated through Cronbach's alpha and test-retest reliability was assessed through Cohen's kappa. For test-retest reliability, 30 different family physicians (10 family physicians, 10 family medicine residents, seven specialists in family medicine, two faculty members in the family medicine department, and one biostatistician) approved the last version of the survey twice in a two-week period and were then excluded from the study samples.

The final version of the survey consisted of two parts, with 11 questions in the first section and 16 questions in the second section.

The number of family physicians was obtained for each province of Turkey and for all Turkey. Based on the data obtained from the Ministry of Health, the number of physicians in the seven geographical regions of Turkey was calculated.

A power analysis determined that, in a population of 26,452 individuals, a minimum of 379 participants (approximately 1.43%) would be necessary to achieve a 95% confidence level and ensure that the true values of the overall variables were within 5% of the survey results. Four hundred (1.51%) individuals were included in this study. The minimum number of family physicians needed for each of the seven regions in Turkey was determined through the stratified random sampling method taking the consideration of the targeted sample size.

The online survey was sent to all family physicians who could be contacted by email, WhatsApp, and social networking platforms. An electronic reminder was sent three times, two weeks apart. A total of 400 family physicians from Turkey, all volunteers, answered the survey.

The physicians' level of knowledge about children's oral health was calculated based on section 2. The correct answers were determined with reference to the AAPD guidelines.[14,15] The participants got 1 mark for the right answers and 0 marks for the wrong answers. The scores were summed to determine the total score for the physicians' level of knowledge about children's oral health (theoretical sum: 16).[16]

Statistical analysis

Internal consistency and test-retest reliability to measure the survey reliability were checked with Cronbach's alpha and Cohen's kappa, respectively. The normal distribution of the data was checked with the Kolmogorov-Smirnov test. The results were compared with Mann-Whitney U and Kruskal-Wallis tests. Multiple linear regression analysis was used to predict the score of knowledge about children's oral health based on the associated parameters. IBM SPSS Statistics 22 (SPSS Inc., Chicago, IL, USA) was used for the statistical analyses. The significance level was set at $P < 0.05$.

Results

The Cronbach's alpha value was 0.92 and Cohen's kappa value was 0.93. Therefore, the survey was considered valid and reliable.

The percentage of the physicians' answers to the questions (11 questions) about the socio-demographic status and receiving information about the subject are presented in Table 1. The mean age of the participants was 33.42 ± 7.63 (ranging from 24 to 61). Of the participants, 66% were female, 51.2% had more than 5 years of experience, and 50.2% were parents. Considering information sources, 39.8% had received no information about oral health, and most of those who had received information on the subject (41.8%) stated that they received information from the medical school they graduated from, followed by the Internet (23.8%).

Table 1. Physicians' sociodemographic status and the status of whether or not they have received education/ involved in the screening on oral health

Personal Data of The Physicians (8 questions)		
	Mean ± SD	**Min-Max**
Q1. Age	33.42 ± 7.63	24-61
	n	**%**
Q2. Gender		
Female	264	66.0
Male	136	34.0
Q3. Title		
Physician at family health center	96	24.0
Family medicine resident	226	56.5
Specialist in family medicine	61	15.3
Faculty member in family medicine department	17	4.3
Q4. Institution		
State Hospital	225	56.3
University	171	42.8
Private Hospital	4	1.0
Q5. Years of experience		
<3 years	115	28.7
3-5 years	80	20.0
>5 years	205	51.2
Q6. Where you work?		
City center	331	82.8
District	55	13.8
Town	14	3.5
Q7. Geographic regions where you work		
Marmara	118	29.5
Aegean	51	12.8
Mediterranean	52	13.0
Central Anatolia	63	15.8
Southeastern Anatolia	43	10.8
Eastern Anatolia	36	9.0
Black Sea	37	9.3
Q8. Do you have children?		
Yes	201	50.2
No	199	49.8
Knowledge and/or experience of the physicians about oral health (3 questions)		
Q9. Have you ever had access to any information about oral health?		
Yes	241	60.3
No	159	39.8
Q10. If yes, from where?		
Faculty of medicine	167	41.8
The institution where I received my specialty education	35	8.8
Dentist	18	4.5
Scientific journals	21	5.3
Congress, seminar, webinar etc.	35	8.8
Internet	95	23.8
Q11. Have you been to schools for an oral health screening?		
Yes	65	16.3
No	335	83.8

SD, standard deviation.

The percentage of the physicians' answers to the questions in the second part of the survey measuring the level of knowledge about children's oral health is presented in Table 2.

The mean ± SD of the correct knowledge score (based on section 2) was 9.62 ± 2.60 and median (min-max) score was 10 (3–15) (in the range of 0 to 16). The mean (SD) and median (min-max) values of the correct answer scores about the physicians' sociodemographic characteristics and previous experience with oral health and their statistical comparisons are presented in Table 3.

The statistically significant differences in the level of physicians' knowledge were found in terms of the parameters "years of experience," "having children," and "receiving education about the subject."

While the knowledge level of physicians with less than 3 years of experience was lower than others ($P < 0.001$), the level of knowledge of physicians who had children and who had received information about the subject was found to be higher than others ($P < 0.001$). In addition, although not statistically significant, the knowledge level of female participants and faculty members was found to be higher than others ($P = 0.060$ and $P = 0.058$, respectively).

The percentage of the physicians' level of knowledge about children's oral health was calculated as low (correct answer score < 10), moderate (correct answer score = 10), and high (correct answer score > 10) according to the median value of the correct answer score (in the range of 0 to 16), and these values are shown in Figure 1.

According to the ten variables in Section 1 included in the regression model, 13.1% of the variances can be estimated in the correct answer scores on children's oral health among the family physicians. The variable "having children" had the most estimation power, which was significant ($P < 0.001$) and positively related ($\beta = 0.239$) to the higher knowledge scores, followed by "whether the individual has accessed information about oral health" and "gender." High level of knowledge was positively related to the female participants (Table 4).

Discussion

The AAP recommends that primary healthcare providers advise families on teething, oral care, and the timing of the first dental visit.[12] Similarly, in the periodic health examination guide prepared by the Ministry of Health for Turkish family physicians, it is stated that dental visits should begin with the eruption of the first primary tooth and should occur every six months.[17] In this study, the awareness of Turkish family physicians about pediatric oral health was assessed.

In babies, primary teething usually begins with the eruption of the lower central primary teeth at the age of 6 -8 months, and is completed by the eruption of the primary second molars around the age of 3. The eruption of the first permanent teeth begins at the age of 6. In this

Table 2. The percentages of the physicians' answers given to the questions on children's oral health

	n	%
Q1. When do the first primary teeth erupt?		
6 months-1 year*	397	99.3
2 years	2	.5
3 years	1	.3
Do not know	0	0.0
Q2. When is the eruption of primary teeth completed?		
1 year	4	1.0
2 years	129	32.3
3 years*	129	32.3
4 years	33	8.3
5 years	16	4.0
6 years	58	14.5
Do not know	31	7.8
Q3. When does the first permanent tooth erupt?		
4 years	21	5.3
5 years	27	6.8
6 years*	171	42.8
7 years	121	30.3
8 years	30	7.5
Do not know	30	7.5
Q4. When should tooth brushing start in children?		
when the first tooth begins to appear in the mouth (~ 6th month)*	193	48.3
1 year old	44	11.0
2 years old	66	16.5
3 years old	50	12.5
4 years old	21	5.3
Do not know	26	6.5
Q5. When should the first dental appointment be made?		
After the eruption of the first tooth (~ 6th month)*	99	24.8
1 year old (his/her first birthday)*	69	17.3
2 years old	63	15.8
3 years old	42	10.5
4 years old	15	3.8
When permanent teeth begin to erupt	53	13.3
When he/she has any dental problems	14	3.5
Do not know	45	11.3
Q6. How often should children visit the dentist?		
once in six months*	183	45.8
Once a year	186	46.5
Once in two years	15	3.8
When he/she has any dental problems	3	.8
Do not know	13	3.3
Q7. Should primary teeth be treated?		
Yes*	300	75.0
No	57	14.2
Do not know	43	10.8
Q8. Does the missing of primary teeth before the age of physiological falling out cause any dental / jaw problems?		
Yes	291	72.8
No	41	10.3
Do not know	68	17.0
Q9. Do you find the topical application of fluoride gel / varnish by dentists safe?		
Yes*	187	46.8
No	81	20.3
I used to think that fluoride was safe, but now I don't find it safe	45	11.3
Do not know	87	21.8
Q10. Do the mother's medical problems during pregnancy affect the child's primary teeth?		
Yes*	222	55.5
No	70	17.5
Do not know	108	27.0
Q11. Is there a transmission of tooth decay bacteria from mother to child in postnatal period?		
Yes*	338	84.5
No	25	6.3
Do not know	37	9.3
Q12. Is there a relationship between bottle feeding at night and ECC?		
Yes*	373	93.3
No	4	1.0
Do not know	23	5.8
Q13. Is there a relationship between night-time breastfeeding and/or frequent breastfeeding and ECC after the age of 1 year?		
Yes*	205	51.2
No	144	36.0
Do not know	51	12.8
Q14. Is it enough to prescribe antibiotics or painkillers for a patient with toothache, swelling in the gums or jaw?		
Yes	82	20.5
No*	298	74.5
Do not know	20	5.0
Q15. Does frequent use of antibiotics in childhood cause tooth decay?		
Yes*	266	66.5
No	66	16.5
Do not know	68	17.0
Q16. Is there a relationship between tooth decay and opaque staining on teeth?		
Yes*	128	32.0
No	151	37.8
Do not know	121	30.3

ECC. Early Childhood Caries, *Correct answer

study, 99.3% of the family physicians correctly answered the question on the age of the first primary tooth eruption, 32.3% correctly answered the question on the age when the primary tooth eruption is completed, and 42.8%

Table 3. The mean (SD) and median (min-max) values of the correct answer scores in relation to the physicians' sociodemographic characteristics and experience in oral health

	Mean (SD)	Median (min-max)	Test statistic	*P* value
Gender				
Female	9.81 (2.46)	10 (3-15)	$U=15.902$	0.060
Male	9.26 (2.84)	9 (3-15)		
Title				
Family physician	9.66 (2.53)	10 (5-14)		
Research assistant	9.40 (2.67)	9 (3-15)	$\chi^2=7.494$	0.058
Specialist	10.05 (2.53)	10 (4-15)		
Faculty member	10.82 (1.94)	11 (7-14)		
Institution				
State hospital	9.80 (2.61)	10 (3-15)		
University	9.44 (2.56)	9 (3-15)	$\chi^2=2.843$	0.241
Private hospital	7.75 (3.40)	7 (5-12)		
Years of experience				
<3 years	8.72 (2.39)	9 (3-15)[a]		
3-5 years	9.56 (2.64)	10 (3-14)[b]	$\chi^2=22.455$	<0.001*
>5 years	10.15 (2.60)	10 (4-15)[b]		
Where you work?				
City center	9.55 (2.56)	10 (3-15)		
District	10.04 (2.67)	10 (3-15)	$\chi^2=1.570$	0.456
Town	9.71 (3.32)	10 (5-14)		
Geographic regions where you work				
Marmara	9.37 (2.62)	9 (3-15)		
Aegean	9.49 (2.64)	9 (4-14)		
Mediterranean	9.27 (3.09)	9 (3-15)		
Central Anatolia	10.08 (2.29)	10 (5-15)	$\chi^2=6.557$	0.364
Southeastern Anatolia	10.02 (2.47)	10 (6-15)		
Eastern Anatolia	9.42 (2.55)	10 (4-14)		
Black Sea	10.05 (2.42)	11 (3-14)		
Do you have children?				
Yes	10.39 (2.52)	11 (3-15)[a]	$U=27.007$	<0.001*
No	8.84 (2.45)	9 (3-15)[b]		
Whether or not receiving education on child's oral health				
Yes	10.11 (2.46)	10 (3-15)[a]	$U=24.430$	<0.001*
No	8.89 (2.64)	9 (3-15)[b]		
Have you been to schools for an oral health screening?				
Yes	10.03 (2.60)	10 (5-15)	$U=11.899$	0.233
No	9.54 (2.60)	10 (3-15)		
Total	9.62 (2.60)	10 (3-15)		

* Significant. U Mann Whitney U test statistic; χ^2 Kruskal-Wallis test statistic.

correctly answered the question on the age when the first permanent teeth erupt. In a study conducted in Turkey,[11] 51.9%, which was higher than our result, of the family physician assistants correctly answered the question on the age of primary tooth eruption. To the best of our knowledge, there is no other study in the literature that reports the awareness of family physicians about the ages of tooth eruption except Duygu Efeoğlu and colleagues'[11] study. Family physicians' knowledge on the subject is important so that they may provide counseling to parents during both primary and permanent dentition.

Oral hygiene habits should be taught to children as early as possible in their lives. The AAPD recommends that parents brush their infants' teeth as soon as the first tooth erupts with a soft toothbrush suitable to the baby's age.[14] In this study, 48.3% of the family physicians stated that brushing should begin when the first tooth starts to appear in the baby's mouth. Both AAP and AAPD recommend that the first dental visit be made before the child's first birthday.[18,19] In our study, 42.1% of the family physicians observed that the first dental appointment should be in the first year of a baby's life. Twice-a-year dental visits are extremely important for taking early precautions for dental problems that may occur, and 45.8% of the family physicians gave the correct answer to this question. In a previous study conducted in Turkey, 88.1% of the family physician assistants correctly answered the question on the age of the first dental examination, 48.1% correctly answered the question on when to start brushing teeth in babies, and 23.1% correctly answered the question on how often to see a dentist.[11]

Primary teeth have functions in chewing, phonation, and aesthetics, and as guides for the eruption of the underlying permanent teeth. The loss of primary teeth before the physiological age of primary tooth loss will cause important physical and psychological problems in children and decrease their quality of life.[20] In pediatric dentistry, conservative treatment of primary teeth is preferred to extractions to keep the primary teeth in the mouth until they fall out. In this study, 72.8% of the family physicians stated that primary teeth should be treated. In a study conducted on 300 Canadian family physicians, 97.6% agreed with the statement "Baby teeth are important even though they fall out," 1.7% were unsure, and 0.7% did not agree.[6]

The formation of primary teeth starts in the 3rd week of intrauterine (IU) life, the formation of permanent teeth starts in the 3rd month of IU life, and their development continues throughout IU life. During the IU period, a febrile illnesses of the mother, medications, exposure to X-ray, etc. can cause structural disorders and eruption problems in teeth.[21] In this study, approximately half of the family physicians (55.5%) reported that the medical problems faced by the mother during pregnancy could affect the baby's teeth.

It is known that bacteria that cause tooth decay pass from mother to baby through the window of infectivity formed by direct contact such as kissing the children on their mouth or indirect contact such as sharing a fork or spoon, increasing their susceptibility to ECC.[22] In this

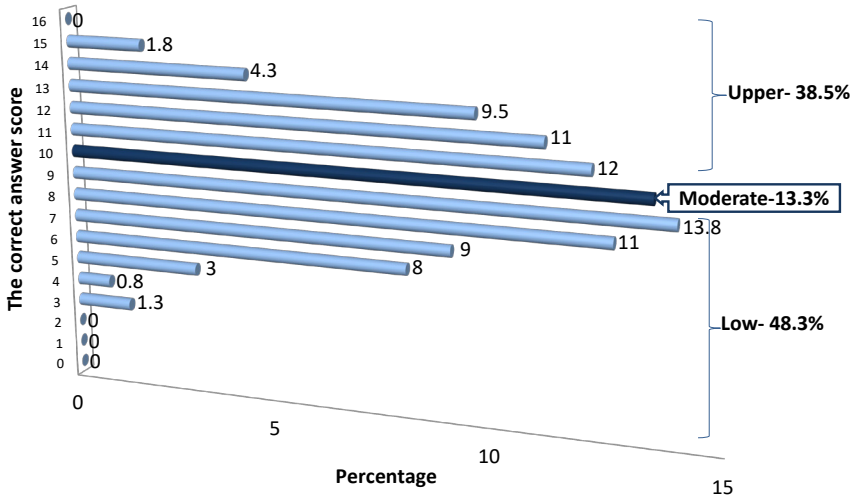

Figure 1. The percentage column chart of physicians' low (correct answer score < 10), moderate (correct answer score = 10), and high (correct answer score > 10) knowledge levels according to the median value of the correct answer score (range 0 to 16)

Table 4. Multivariate linear regression model assessing the relationship between the correct answer score and associated variables

	B	SE B	95% CI B	Estimate (β)	t	*P* value
(Constant)	8.214	1.055	6.139 - 10.289		7.783	<0.001
Age	-0.028	0.024	-0.074 - 0.018	-0.082	-1.188	0.236
Gender (0:male. 1:female)	0.685	0.280	0.135 - 1.235	0.125	2.449	0.015
Title	0.125	0.180	-0.228 - 0.478	0.036	0.697	0.486
Institution	-0.259	0.275	-0.800 - 0.281	-0.052	-0.943	0.346
Years of experience	0.359	0.212	-0.059 - 0.776	0.119	1.687	0.092
Workplace	-0.105	0.283	-0.661 - .452	-0.020	-0.370	0.712
Geographic area	0.030	0.063	-0.093 - 0.153	0.023	0.474	0.636
Having children (0:no. 1:yes)	1.244	0.331	0.593 - 1.896	0.239	3.754	<0.001
Whether or not receiving education (0:no. 1:yes)	0.959	0.255	0.459 - 1.460	0.181	3.767	<0.001
Involving in the screening	0.289	0.332	-0.362 - 0.941	0.041	0.873	0.383
Model Summary	**R**	**R^2**	**Adjusted R^2**	**SEE**		***P* value**
	0.391[a]	0.153	0.131	2.425		<.001

SEE, Standard error of estimate
R^2 = total variance disclosure rate. Significant results highlighted in bold.
Dependent variable = Correct answer score.
Independent (predictor) variables = Age, gender, title, institution, years of experience, workplace, geographic area, having children, whether or not receiving education, involving in the screening.

study, most of the family physicians (84.5%) were aware of the transmission of oral bacteria from mothers to babies. In a study conducted on 157 Florida family physicians,[23] 61%, and in another study conducted on 250 Indian family physicians,[9] 26% thought that the bacteria causing dental caries were transmitted from mothers to babies.

Since the production of saliva decreases during sleep and since saliva fails to cleanse the teeth physiologically, sugary foods will sit on the teeth and remain in the mouth long enough for acid formation, which leads to acid attacks. Therefore, going to sleep while drinking milk or sugary drinks increases the susceptibility to ECC.[24] In this study, 93.3% of the family physicians reported that bottle feeding at night was associated with ECC. While 10.9% of the Canadian family physicians found the statement "Only bottle-fed babies are affected by ECC" true, 72.8% found it false, and 16.3% were undecided.[6]

It has been reported that breastfeeding causes a decrease in the prevalence of many diseases.[24] The risk of tooth decay is lower in breast-fed babies than in bottle-fed babies.[25] The AAPD suggests breastfeeding infants up until 12 months of age to ensure the best possible health, developmental, and psychosocial outcomes.[15] However, nighttime breastfeeding and frequent breastfeeding throughout the day in babies older than 12 months increase their susceptibility to ECC.[26-31] In this study, 51.2% of the family physicians agreed that nighttime breastfeeding and/or frequent breastfeeding throughout the day after the age of one were associated with ECC. In a previous study conducted on Turkish pediatricians, this

rate was 46.9%.[16] However, although this issue is a matter of controversy among both pediatricians and family physicians, it is accepted that frequent breastfeeding (approximately seven or more times per day) after 12 months of age may increase the risk of ECC.[26-32] In a meta-analysis of 73,401 children aged zero to 71 months from 35 studies, a reduction is indicated in the number of carious lesions among those who were breastfed.[32] However, the risk of ECC increased in infants who were breastfed for at least 12 months compared to those who were breastfed for less than 12 months. It has been shown in Nirunsittirat and colleagues' study[33] that there might be a link between breastfeeding from 6 to 11 months and the protective effect against caries, whereas breastfeeding or bottle feeding during the night is associated with an increase in the risk of ECC.

Antibiotics and painkillers are not used in the treatment of many pulp-related dental complaints in dentistry. Most of the time, patients' complaints end with the removal of the necrotic pulp.[34] Having this knowledge will pave the way for rational drug use in pediatric patients with dental problems. Instead of seeking interventional treatment for tooth complaints from dental clinics, the number of patients admitted to family health centers to receive only medical treatment is very high in Turkey. The use of medication to reduce toothache and oral/facial swelling due to dental infection is not a permanent solution by itself, and an intervention by a dentist is necessary. In addition, the frequent use of antibiotics can cause intrinsic/extrinsic stains on teeth,[35,36] and a higher risk of erosion and caries can be seen due to the antibiotics' sugar content and low pH.[37] In this study, 74.5% of the family physicians stated that the use of drugs was insufficient to relieve dental complaints, and 66.5% of them reported that frequent use of antibiotics triggers tooth decay.

White spot lesions, which are indications of demineralization, are the earliest stage of dental caries, and these lesions are most frequently seen on the vestibular surfaces of teeth.[38] In this study, 37.8% of the family physicians reported that white spots on baby teeth were not linked to tooth decay, while 17% stated that they had no idea about it. According to Lewis et al,[39] who conducted their research on pediatricians, the reason for this lack of knowledge is that only 25% of pediatricians study oral and dental health at medical schools. In Prakash and colleagues' study,[6] 62% of family physicians reported that they were not sure that opaque (white) stains or marks on the tooth surface were the first signs of tooth decay. In the study by Herndon et al,[23] 43% of the family physicians agreed that white spots on teeth could indicate early tooth decay. The best method for the treatment of white spot lesions is to treat these lesions with remineralizing agents such as fluoride before they turn into cavitation. Fluoride application has an important place among the methods of preventing caries development.[40] Despite the proven positive impact of topical fluoride applications in the fight against tooth decay, there are objections to fluoridation not only in Turkey but also in many countries. In a previous study conducted on 130 Turkish pediatricians,[16] 4.6% of the pediatricians believed that fluoride applications used to be safe before but not anymore. Similarly, in this study, 11.3% of Turkish family physicians stated that they used to find topical fluoride applications safe but not anymore, 17.5% did not find them safe, and 21.8% remained undecided. These proportions should not be underestimated. Due to the opposition to fluoride, the "fluoride status report" was first prepared in 2016 by the Turkish Society of Pediatric Dentistry (TSPD) and the Turkish Dental Association (TDA) and was updated by the TSPD in 2019. The TSPD and TDA made a press release on the subject on October 20, 2016, and finally made a public statement on a national TV channel on January 20, 2020. Despite all these measures, opposition to fluoride is an ongoing problem in Turkey. Therefore, family physicians should be informed urgently by experts.

This study measured the level of knowledge of Turkish family physicians on a scale of 0 to 16. The median value was 10, and the knowledge level of nearly half of the family physicians (48.3%) was below this median value. It has been observed that the family physicians who had children had a 0.24 times higher level of knowledge on the subject than the family physicians who did not ($\beta = 0.239$; $P < 0.001$). The oral health conditions of their own children, may have made them more experienced in this subject. The high level of knowledge of the family physicians who were trained on the subject highlights the importance of education. Professional experience is also an effective factor in the knowledge level of family physicians.

Although children's first point of contact with the health care system is family physicians, who play an essential strategic role in preventive medicine, it is impressive that 40% of Turkish family physicians had received no information about children's oral health before. Unfortunately, Turkey is far behind the WHO's goal,[41] which is to increase the proportion of decay-free teeth in children under the age of 6 to 80% in the 21st century.[42] However, we believe that the proportion of decay-free teeth will increase with the support of family physicians trained in oral and dental health.

Adding lessons on pediatric oral health to the medical faculty's pre-graduate education curriculum or family medicine residency training curriculum will strengthen the health care system in family medicine, which is the first referral point for patients and, consequently, the first opportunity for preventive medicine.

Since participation was voluntary, the possibility that physicians interested in the subject may have participated in the survey before can be considered as a limitation of this study, as in all studies conducted through surveys.

However, the number of participants, which reflects the demography of Turkey, speaks to the power of the study, so the results obtained can be attributed to Turkish family physicians.

Conclusion

Approximately half of Turkish family physicians did not have sufficient knowledge about pediatric dental health. Family physicians need training on the subject. Education on the subject will help reduce the prevalence of caries with the help of family physicians, who are located at a key position in pediatric oral health.

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Competing Interests

The authors have no conflict of interest.

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