

## ORIGINAL RESEARCH ARTICLE

# Assessing The Knowledge Levels Of Pediatricians And Family Physicians Regarding The Eruption Period Of Primary Teeth And Oral Health Of Children: A Cross-Sectional Study

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## Abstract

**Purpose:** The research aimed to assess the knowledge level of pediatricians and family physicians regarding the eruption period of primary teeth and oral health of pediatric patients.

**Materials and Methods:** Pediatricians, pediatric research assistants, and family physicians were reached via e-mail and a mobile application. The demographic characteristics and knowledge level regarding primary teeth eruption period and oral health of children were assessed. The questions were formed following the current guidelines and previous studies. The Pearson Chi-Square test was used to determine the differences between groups. A p-value < 0.05 was accepted for statistical significance.

**Results:** 251 physicians, 67.3%–female, participated in the study. Nearly 40% of the participants were in the first three years of their profession. A statistically significant difference was detected between the answers to the Questions 2, 8, 9 and professionalism (p < 0.05). A statistical difference was also detected between the daily examined patient number and the answers for the Questions 2, 3, 8, 9 and experience in profession and the answers given by the participants to the Questions 5, 7, 8, 9 (p < 0.05).

**Conclusions:** The knowledge level of pediatricians and family physicians was found to be insufficient regarding the essential issues of infants' oral health (Early Childhood Caries, Bohn nodules, eruption cysts and fever-eruption process relation). It is essential to provide the accurate oral health instructions in early childhood to create caries-free generations and pediatricians-family physicians take a great part in these attempts considering the influence of them on maintaining both the general and oral health of children.

**Key words:** teething symptoms; pediatric dentistry; children oral health; knowledge level; pediatricians

## Introduction

Dental caries is known as the most common chronic disease of childhood. In cases of delayed diagnosis, more severe problems that require additional treatment may occur. Therefore, prevention, early detection, and managing dental caries are essential for pediatric patients' oral, dental, and general health.<sup>1</sup>

Pediatricians and family physicians are critically positioned to improve children's oral health. Infants and young children often could see these professionals in the first years of their lives, and habitual behaviors on oral health are known to be initiated in this

period.<sup>2</sup> According to the American Academy of Pediatrics (AAP), 89% of infants have the opportunity to visit a pediatrician each year, while only 1.5% are examined by pediatric dentists. Visits to pediatricians in these ages have been found to exceed visits to pediatric dentists by 250:1.<sup>3</sup> Pediatricians are responsible for leading the oral health of infants by the period of newborn. Therefore, they need to be well-qualified in the subjects regarding children's oral health.<sup>4</sup>

The deciduous dentition period is defined as the eruption of the first tooth into the oral cavity. This period starts nearly by the first six months following birth and continues until the age of three. It

**Table 1.** Questions

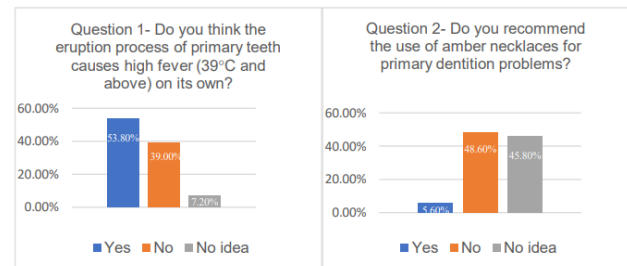
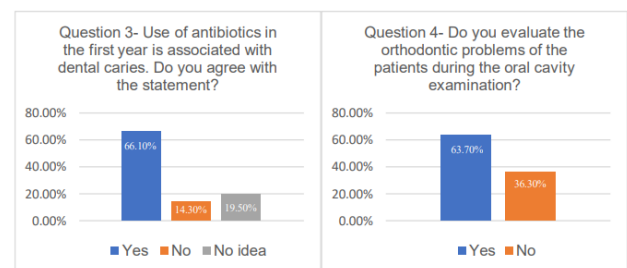
Question	
1	Do you think the eruption process of primary teeth alone causes high fever (39°C and above)?
2	Do you recommend the use of amber necklaces for primary dentition problems?
3	Use of antibiotics in the first year is associated with dental caries. Do you agree with the statement?
4	Do you evaluate the orthodontic problems of the patients during the oral cavity examination?
5	Do you know the term Early Childhood Caries?
6	Do you recommend fluoride gel-varnish applications to your patients?
7	Bohn's nodules are benign formations that generally do not require treatment. Do you agree with the statement?
8	Do you have any information about eruption cyst (eruption hematoma) and its treatment?
9	Deciduous teeth will change after a certain period, so they do not need to be treated. What do you think about the statement?
10	Do you recommend fluoride toothpaste to your patients?

is unclear whether the most mentioned teething complaints, such as pain, loss of appetite, sleeping disorders, diarrhea, and fever, can be matched with the eruption period of the primary teeth. As the parents' first referrals in this period are medical practitioners, these professionals need to be educated regarding the teeth eruption periods to provide reliable guidance for their patients.<sup>5</sup>

Previously, similar studies were conducted to assess the knowledge and awareness of pediatricians on oral health-related issues, caries detection, and prevention in different regions of the world. Knowledge levels on fluoride and fissure sealant applications and dental trauma were also examined.<sup>6–11</sup> These previous studies were conducted in different regions and at various times. Furthermore, these surveys did not adequately assess the familiarity of medical professionals with oral lesions and symptoms associated with the eruption of deciduous teeth. Considering the beforementioned data, the recent study aimed to investigate the current knowledge level of a group of pediatricians and family physicians working in Ankara regarding eruption periods of primary teeth and health of children. The knowledge levels of pediatricians and family physicians on the eruption period of primary teeth and pediatric oral health were hypothesized to be found insufficient according to the content of the questions developed regarding American Association of Pediatric Dentistry (AAPD) guidelines and previous studies.

## Material and Methods

Pediatricians, research assistants in the pediatric department, and family physicians working in Training and Research Hospitals in Ankara were reached via institutional e-mails and a mobile application (WhatsApp). The institutional e-mail addresses were reached by the official websites of the hospitals and the forms were sent by mobile applications by reaching the department manager who was responsible of transferring the related posts. The approval of the relevant institutions and City Local Health Authority were ensured and University of Health Sciences Gülhane Scientific Research Ethics Committee approved the study (Decision No: 2021/85, Date: 08/04/2021). The study was conducted in line with the Helsinki Declaration with all amendments. Informed consent was obtained from all participants. The questionnaire was composed of two sections. While the demographic characteristics of the participants were questioned in the first section, the knowledge levels on primary teething period and pediatric oral health were targeted in the following area. The questions were formed following current guidelines of AAPD in pediatric oral health and in accordance with the previous studies. Moreover, a pilot application was performed in a selected group of participants comprised of ten pediatricians (Table 1).<sup>6,9,12–19</sup> 566 forms were sent, and 251 participants answered the questionnaire. The data were evaluated using the SPSS (Social Sciences Software Package for Windows 24.0, SPSS, Chicago, USA) program. In statistical analysis, demographic features of individuals participating in the survey were given as Frequency (n) and Percentage (%). The Pearson Chi-Square test was used to determine the differences between groups according to demographic

**Figure 1.** Responses of the participants to Question 1 and 2**Figure 2.** Responses of the participants to Question 3 and 4

characteristics. A p value <0.05 was accepted for statistical significance.

## Results

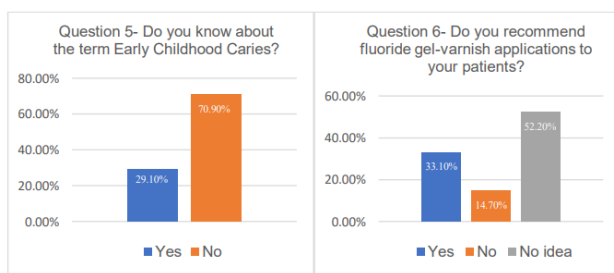
The frequencies according to the demographic characteristics of the participants are given in Table 2. Accordingly, 251 physicians participated in the study. 67.3% of them were female (n=169), and 32.7% were male (n=82). 41.4% of the participants were assistant pediatricians. It was determined that nearly 40% of the participants were in the first three years of their profession. The number of participants with experience of 10 years and more was 62 (24.7%). A considerable number of the participants (68.1%) stated that they examined 20 or more patients daily.

The answers to Question 1 and 2 were shown in Figure 1. Accordingly, 53.8% (n=135) of the participants stated that eruption period can cause a fever of 39°C and above. 48.6% (n=122) of the physicians stated not to recommend the use of amber necklaces for primary dentition problems. (Figure 1). 66.1% of the physicians agreed with the statement that the use of antibiotics in the first year is associated with dental caries. 63.7% of the physicians stated that they have evaluated the orthodontic problems of the patients during the oral cavity examination (Figure 2). Most physicians (70.9%) stated having no idea regarding the term: "Early Childhood Caries" (ECC) and 52.2% of them also stated having no idea regarding the need to recommend professional fluoride applications (Figure 3).

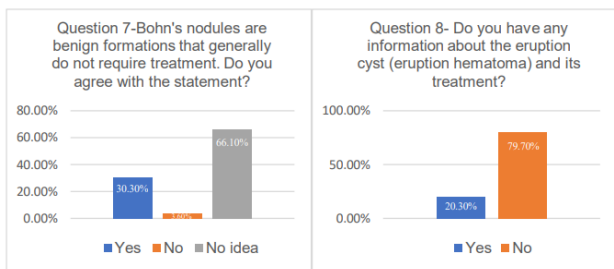
Most of the participants declared having no idea on the question

**Table 2.** Demographic Characteristics of the Participants

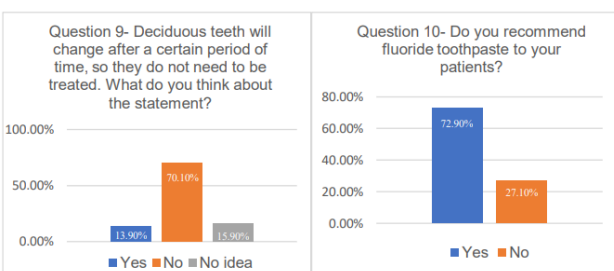
Variable	Category	Frequency (n)	%
Gender	Female	169	67.3
	Male	82	32.7
Professional Title	Family Physician	94	37.5
	Assistant Pediatricians	104	41.4
	Specialist Pediatricians	53	21.1
Do you have children?	Yes	95	37.8
	No	156	62.2
Experience	0-3 Years	100	39.9
	3-6 Years	52	20.7
	6-10 Years	37	14.7
	10 Years and above	62	24.7
Number of Patients Examined Daily	0-5	13	5.2
	5-10	25	10.0
	10-20	42	16.7
	20 and above	171	68.1
<b>Total</b>		<b>251</b>	<b>100</b>



**Figure 3.** Responses of the participants to Question 5 and 6



**Figure 4.** Responses of the participants to Question 7 and 8



**Figure 5.** Responses of the participants to Question 9 and 10

regarding Bohn's nodules (66.1%), and 79.7% of them answered the Question 8 as "No" (Figure 4). Question 9 was answered as "No" by 70.1% of the participants and 72.9% of the physicians stated that they have recommended fluoride-toothpaste (Figure 5).

The results regarding professionalization of the participants were given in Table 3. The results determined a statistically significant difference regarding the professionalization of the participants and the Questions 2, 8, 9 ( $p < 0.05$ ). Accordingly, the percentage of family physicians answering "Yes" to Question 2 was statistically

significantly higher than the other professionals (8.5%) ( $p < 0.05$ ), and 59.6% of them stated having no idea in this regard. 39.6% of the specialist pediatricians answered Question 8 as "Yes". Accordingly, it was determined that the knowledge of the specialist pediatricians on the eruption cyst (eruption hematoma) and its treatment was statistically significantly higher than that of the family physicians and assistant pediatricians ( $p < 0.05$ ). The percentage of answering "No idea" (5.7%) by specialist pediatricians was statistically significantly lower than assistant pediatricians and family physicians to Question 9 ( $p < 0.05$ ).

The relation between the number of patients examined daily and the answers of the participants were shown in Table 4. Accordingly, a statistical difference was detected between the daily examined patient number of the participants and the answers for the Questions 2, 3, 8, 9 ( $p < 0.05$ ). The participants that examined more than 20 patients in a day answered the Question 2 and 9 as "No" with a percentage of 55.6 and 76.6, respectively; while they answered Question 3 as "Yes" with a percentage of 70.2. The participants that examined less than 20 patients daily have given the answer "No" for Question 8 with a percentage of 88.8.

The statistical difference between the experience in profession and the answers given by the participants to the questions were displayed in Table 5. Accordingly, a statistical difference was detected between the answers to the Questions 5, 7, 8, 9 ( $p < 0.05$ ). Among the participants with an experience less than six years, the percentage of the answer of "No" for Question 5 was 75.7%. They also chose the statement "having no idea" for Question 7 with a percentage of 73.0. The participants with an experience more than 6 years have answered the Question 9 as "No" with a percentage of 76.8.

## Discussion

Previously, studies have been performed to assess the awareness of physicians on oral health-related issues in different regions of the world, at various times. Although, variety of questionnaires were conducted, it was detected that the familiarity of medical professionals with oral lesions such as Bohn nodules and eruption cysts were not assessed. The recent study aimed to assess the knowledge level of pediatricians and family physicians regarding the teething period and oral-dental health of pediatric patients. Accordingly, it was revealed that the knowledge of pediatric specialists and family physicians were found to be low in percentage regarding essential issues on infants' oral health, such as ECC, the differences in oral mucosa in newborn and eruption period (Bohn nodules, eruption cysts), and the term of fever in eruption process.

In the recent study, 53.8% of the participants stated that a high fever above 39°C was expected to be seen during primary teeth eruption, and only 39% disagreed with Question 1. The teething

**Table 3.** The distributions of answers according to the title of professionality

Questions	Family Physi- cians	Specialist Pedia- tri- cians	Assistant Pedia- tri- cians	$\chi^2$	p-value
	(n=94) n (%)	(n=53) n (%)	(n=104) n (%)		
<b>Question1</b>					
Yes	48 (51.1)	28 (52.8)	59 (56.7)	2.115	0.715
No	41 (43.6)	21 (39.6)	36 (34.6)		
No idea	5 (5.3)	4 (7.5)	9 (8.7)		
<b>Question2</b>					
Yes	8(8.5)	2(3.8)	4(3.8)	20.074	0.001
No	30(31.9)	36(67.9)	56(53.8)		
No idea	56(59.6)	15(22.6)	44(42.3)		
<b>Question3</b>					
Yes	62(66)	34(64.2)	70(67.3)	4.297	0.372
No	18(19.1)	7(13.2)	11(10.6)		
No idea	14(14.9)	12(22.6)	23(22.1)		
<b>Question4</b>					
Yes	53(56.4)	37(69.8)	70(67.3)	3.620	0.164
No	41(43.6)	16(30.2)	34(32.7)		
No idea	-	-	-		
<b>Question5</b>					
Yes	25(26.6)	21(39.6)	27(26)	3.628	0.163
No	69(73.4)	32(60.4)	77(74)		
No idea	-	-	-		
<b>Question6</b>					
Yes	31(33)	23(43.4)	29(27.9)	7.116	0.130
No	10(10.6)	10(18.9)	17(16.3)		
No idea	53(56.4)	20(37.7)	58(55.8)		
<b>Question7</b>					
Yes	24(25.5)	22(41.5)	30(28.8)	4.655	0.314
No	4(4.3)	2(3.8)	3(2.9)		
No idea	66(70.2)	29(54.7)	71(68.3)		
<b>Question8</b>					
Yes	16(17)	21(39.6)	14(13.5)	15.850	0.001
No	78(83)	32(60.4)	90(86.5)		
No idea	-	-	-		
<b>Question9</b>					
Yes	11(11.7)	8(15.1)	16(15.4)	11.305	0.023
No	71(75.5)	42(79.2)	63(60.6)		
No idea	12(12.8)	3(5.7)	25(24)		
<b>Question10</b>					
Yes	66(70.2)	41(77.4)	76(73.1)	0.879	0.644
No	28(29.8)	12(22.6)	28(26.9)		
No idea	-	-	-		

period can be considered the most troubling time for infants and families in the first years of life. Researchers declared that the deciduous dentition intersects with the period that passive immunity terminates, and active immunity starts to form. Accordingly, infectious diseases may interfere with dentition disorders. However, mild inflammation may be detected in this period.<sup>20</sup> According to the literature reviews, although a low-grade fever might be seen during the eruption period, a fever above 38.9°C is not expected.<sup>5,20</sup> In a previous questionnaire held by Barlow et al., of among 100 pediatricians, 13.3% of them have stated that teething was associated with fever.<sup>21</sup> Sarrell et al. have also similarly assessed the knowledge and belief of 55 pediatricians working in Israel, on teething symptoms and they indicated that 46.7% of them have associated the teething symptoms and fever.<sup>22</sup> However, Kahan and Adesman concluded that only 4% of the pediatricians (n=998) had the belief that teething and high fever were associated.<sup>23</sup> In the literature, general pediatricians and family physicians revealed a tendency to

**Table 4.** The distributions of the answers according to the number of the patients examined daily

Questions	The Number of Patients Examined Daily		$\chi^2$	p-value
	Less than 20 patients n (%)	More than 20 patients n (%)		
<b>Question1</b>				
Yes	42(52.5)	93(53.4)	5.177	0.075
No	28(35)	70(40.9)		
No idea	10(12.5)	8(4.7)		
<b>Question2</b>				
Yes	5(6.3)	9(5.3)	10.583	0.005
No	27(33.8)	95(55.6)		
No idea	48(60)	67(39.2)		
<b>Question3</b>				
Yes	46(57.5)	120(70.2)	12.999	0.002
No	8(10)	28(16.4)		
No idea	26(32.5)	23(13.5)		
<b>Question4</b>				
Yes	49(61.3)	111(64.9)	0.316	0.574
No	31(38.8)	60(35.1)		
No idea	-	-		
<b>Question5</b>				
Yes	22(27.5)	51(29.8)	0.143	0.706
No	58(75.5)	120(70.2)		
No idea	-	-		
<b>Question6</b>				
Yes	22(27.5)	61(35.7)	3.306	0.191
No	16(20)	21(12.3)		
No idea	42(52.5)	89(52)		
<b>Question7</b>				
Yes	18(22.5)	58(33.9)	3.721	0.156
No	4(5)	5(2.9)		
No idea	58(72.5)	108(63.2)		
<b>Question8</b>				
Yes	9(11.2)	42(24.6)	5.965	0.015
No	71(88.8)	129(75.4)		
No idea	-	-		
<b>Question9</b>				
Yes	15(18.8)	20(11.7)	11.22	0.004
No	45(56.3)	131(76.6)		
No idea	20(25)	20(11.7)		
<b>Question10</b>				
Yes	56(70)	127(74.3)	0.503	0.478
No	24(30)	44(25.7)		
No idea	-	-		

associate the findings of infectious diseases with dentition symptoms. Since the patients in the tooth eruption period refer to the clinics with the symptoms related to infection, pediatricians and family physicians tend to believe that the symptoms are caused by the period of dentition.<sup>24</sup> The surveys have revealed various results regarding the belief of pediatricians on fever and teething period relation and these differences might be associated to the cultural differences of parents and the varieties in medical education of pediatricians.

How families and physicians overcome the symptoms seen in the dentition period varies. The methods preferred by the families may differ due to the family's social knowledge, culture, and education level. Today, a popular method with the influence of advertising and user suggestions on social media is amber necklaces and accessories, called dental necklaces in the market. The best-recommended properties of amber necklaces are attributed to succinic acid, which is believed to have anti-inflammatory properties. However, previous studies have revealed that the amount of released succinic acid was inadequate to form an antibacterial effect. It is also not recommended considering the risk of choking

**Table 5.** The distributions of the answers according to the experience in profession

Questions	The Experience in Profession		$\chi^2$	p-value
	Less than 6 years n (%)	More than 6 years n (%)		
<b>Question1</b>				
Yes	81(53.3)	54(54.5)	0.038	0.981
No	60(39.5)	38(38.4)		
No idea	11(7.2)	7(7.1)		
<b>Question2</b>				
Yes	9(5.9)	5(5.1)	0.569	0.752
No	71(46.7)	51(51.5)		
No idea	72(47.4)	43(43.4)		
<b>Question3</b>				
Yes	99(65.1)	67(67.7)	4.163	0.125
No	18(11.8)	18(18.2)		
No idea	35(23)	14(14.1)		
<b>Question4</b>				
Yes	95(62.5)	65(65.7)	0.258	0.611
No	57(37.5)	34(34.3)		
No idea	-	-		
<b>Question5</b>				
Yes	37(24.3)	36(36.4)	4.201	0.04
No	115(75.7)	63(63.6)		
No idea	-	-		
<b>Question6</b>				
Yes	45(29.6)	38(38.4)	2.115	0.347
No	24(15.8)	13(13.1)		
No idea	83(54.6)	48(48.5)		
<b>Question7</b>				
Yes	36(23.7)	40(40.4)	8.396	0.015
No	5(3.3)	4(4)		
No idea	111(73)	55(55.6)		
<b>Question8</b>				
Yes	10(6.6)	41(41.4)	44.935	<0.001
No	142(93.4)	58(58.6)		
No idea	-	-		
<b>Question9</b>				
Yes	20(13.2)	15(15.2)	7.532	0.023
No	100(65.8)	76(76.8)		
No idea	32(21.1)	8(8.1)		
<b>Question10</b>				
Yes	110(72.4)	73(73.7)	0.057	0.811
No	42(27.6)	26(26.3)		
No idea	-	-		

and aspiration of the beads.<sup>25</sup> The results of the recent study revealed that the physicians recommending these remedies were a small part of the participants (5.6%, n=14), and family physicians recommending these necklaces were statistically higher than the other participants. However, nearly half of the participants (45.8%, n=115) stated having no idea about the amber necklaces' features. The participants that examined more than 20 patients in a day answered this question as "No" with a percentage of 55.6. Accordingly, it can be concluded that the specialist pediatricians and the participants that have seen more patients daily, have the appropriate knowledge regarding the use of amber necklaces. In a previous study held by Thompson and Huntington, the recommendations of family physicians and pediatricians on relief of teething symptoms were aimed to be assessed. Accordingly, only 5 questionnaires of those of 99 participants recommended the use of amber teething necklaces which was similar with the results we detected.<sup>26</sup> However, considering the high percentage of the participants of the current study that indicated having no idea on this aspect, it is essential to inform them of this issue, considering the hazardous effects of using this accessory, so they can also inform their consultants.

It has been shown that children who have been exposed to an-

tibiotics have a significantly higher risk of ECC than children who do not use these medicines and similar to the literature, most of the participants answered that there is a relationship between antibiotic use and the risk of dental caries in the first years of life.<sup>27</sup> The results of the present study also revealed that 70.2% of the participants examining more than 20 patients in a day have indicated the relation between the use of antibiotics and caries progression. Valinoti et al. have performed a study, in which they have examined the sugar concentrations (sucrose, fructose, glucose) of various liquid antibiotic formulations. The researchers have detected that many antibiotics presents high sugar concentrations and viscosity with a low pH which can be indicated as risk factors for caries progression.<sup>28</sup> In the literature, it has been stated that pediatricians should perform initial orthodontic examinations to detect abnormal conditions and guide patients.<sup>29</sup> Most of the physicians (more than 50% in all groups) participating in our study stated that they also evaluated the orthodontic problems of the patients while performing routine oral cavity examinations. In a similar survey conducted with 96 pediatricians in Greece, although the majority were aware of the importance of the oral examinations, they indicated having no appropriate knowledge to be able to screen the patients in regard of orthodontic malocclusions. Moreover, 54% and 51% of the participants declared assessing the position of teeth and jaws, respectively, similar to the results of the present study.<sup>29</sup> However, a previous study detected that only 28.9% of the participants (pediatricians) tended to examine the patients regarding dental malocclusions.<sup>30</sup>

ECC is defined as one or more caries, missing (due to caries), or filled tooth surfaces in any primary tooth in a child aged 71 months or younger.<sup>31</sup> As mentioned before, a child's contact with a family physician and pediatrician usually occurs before their first dental visit and pediatricians/family physicians are primary care providers who usually have the chance of seeing children with the risk of ECC.<sup>32</sup> Therefore, early detection of ECC can prevent pain and the need for restorative treatment, usually performed under sedation in young children.<sup>33</sup> The present study revealed that 75.7 of the participants with an experience less than 6 years indicated having no idea regarding the term of ECC. A previous study showed that pediatricians and family physicians do not regularly examine early signs of dental caries.<sup>33</sup> Alshunaiber et al. showed that the level of knowledge of family physicians and pediatricians on ECC is insufficient, and they also declared that that 70% of participants did not know the term ECC.<sup>34</sup> Therefore, it is essential to educate physicians regarding the diagnosis of ECC and make them refer these patients to a pediatric dentist before the progression of the disease. The effectiveness of fluoride gel and varnish applications in preventing caries in primary teeth has been proven. Fluoride gel and varnish applications are recommended in children with high caries risk.<sup>35</sup> Pediatricians and family physicians should be informed of the importance of preventive dentistry practices and topical fluoride as the most preferred procedure of these applications. However, in the recent study, more than half of the physicians did not have information regarding fluoride gel and varnish applications. Physicians that recommended these practices were only 33.1% of the participants. Previously, Emmi et al. have conducted a similar survey study and they concluded that 90% of the participants (70 pediatricians) had outdated knowledge in the area of fluoride applications.<sup>36</sup> Other similar studies have also detected that the pediatricians have the knowledge of the importance of fluoride applications, however, they were not aware of the correct dosage of the fluoride needs.<sup>37</sup> These results were contrary to the findings of the current study in which we detected a doubt among participants regarding the recommending of fluoride applications.

Bohn's nodules are self-healing, benign, single or multiple, whitish-yellowish nodules that occur in newborns' maxillary or mandibular gingiva and alveolar crest.<sup>38</sup> The present questionnaire determined that most physicians (66.1%) did not have information about Bohn's nodule. An eruption cyst is a benign, developmental

odontogenic cyst accompanying erupting of a primary or permanent tooth.<sup>39</sup> In cases where it is asymptomatic, no treatment is required as it disappears spontaneously. Surgery may be considered in symptomatic cases where the eruption cyst is painful, bleeding, or infected.<sup>40</sup> In a previous study, it was concluded that pediatricians did not refer their patients between 6 and 24 months to a dentist in regard of the abnormalities seen in gingiva.<sup>37</sup> Similarly, in the present study, 93.4% of the participants with an experience less than 6 years and 88.8% of the participants examining less than 20 patients in a day have declared having no information regarding eruption cysts. Moreover, only 20.3% of the participants were detected to have information on eruption cysts and their treatment. The knowledge level of specialist pediatricians on this aspect was statistically significantly higher than other participants which can be related to the educational aspects of these two different medical professionals.

Protection of primary teeth is vital for the nutrition and growth of children, phonation, and the jaws' development. Dental caries and early loss of primary teeth can lead to severe problems in permanent dentition.<sup>41</sup> Most of the physicians participating in the recent questionnaire stated that the early treatment of decayed primary teeth was an essential issue, and the correct answer percentage of specialist pediatricians was statistically significantly higher than that of other professionals. The acceptable answers percentage on this aspect was 76.6% among the participants examining more than 20 patients in a day and 76.8% among the physicians with an experience more than 6 years. 72.9% of the physicians participating in the present questionnaire also stated the importance of recommending fluoridated toothpaste. Similarly, in a recent study held by Geiken et al., 696 participants were questioned in regard of oral health protecting and caries preventing effort of pediatricians and the results revealed that nearly half of the participants (n = 337/48.8%) indicated the importance of using fluoridated toothpaste by the time following the first tooth eruption.<sup>37</sup> Fluoridated toothpaste is an ideal and widespread public health prevention method, as it is convenient, inexpensive, and easy to access. Although systemic fluoridation has caused discussions worldwide, and a concept has been raised as antifuoridation similar to antivaccination, fluoride toothpaste is known as the most practical reason for the decrease in dental caries in the last 40 years.<sup>42</sup> Accordingly, The European Academy of Pediatric Dentistry recommends fluoridated toothpaste after the first tooth eruption.<sup>43</sup>

This study was conducted in a restricted area in Turkey and limited participants have attended the questionnaire. Different results might be obtained in case the study was widely disseminated in a larger area and more physicians and pediatricians were to participate in the questionnaire in various specialties. The knowledge level of pediatric dentist and other dental professionals regarding the oral health related issues in pediatric patients might also have been assessed and the findings could be compared with the outcomes obtained from other health professionals. In the present study the survey questions were determined following the current guidelines and previous studies. However, a reference questionnaire can be provided by international authorities regarding the oral health related issues of pediatric patients and these consistent tools may be used in future studies established in various regions of the world. These issues can be listed as the limitations of the current study.

## Conclusion

Considering the results of this cross-sectional study, it can be concluded that the knowledge levels of pediatricians and family physicians regarding the essential issues on infants' oral health, especially; ECC, Bohn nodules, eruption cysts, and the term of fever in eruption process. These professionals are usually the first medical authors that families refer to, and they have the chance to examine children's oral health in their regular control sessions starting with

the newborn period. It is possible to lead good oral care habits by managing infants, children, and families by the earliest medical examination and to detect dental-oral diseases with a precise examination. Other medical professionals should also be aware of the timing of when a pediatric patient should be referred to a dentist. Oral health problems and dental caries are global problems, and it is essential to make all medical professionals work together to provide a caries-free generation. Further observational studies may also be performed to examine the attitudes of physicians regarding oral health of pediatric patients in their daily medical practices.

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## Author Contributions

Study design: MA, MBDS; Data collection: MBDS, ES; Writing the main text: MA, MBDS; Editing and supervising: MA, CB.

## Conflict of Interest

Authors declare that they have no conflict of interest.

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