

Comparison of knowledge, attitude and practice toward oral health between pediatricians and family doctors

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Abstract

Aim: Pediatricians and family doctors are at the first step in the education of parents about oral health, as well as the prevention of oral diseases and the provision of oral health in children. The aim of this study is to evaluate the knowledge, attitudes, and practices of pediatricians and family doctors about oral health in children.

Methodology: A questionnaire consisting of 50 items was sent to pediatrician and family doctors via mail. Descriptive analysis and t-tests were done to analyze the data. Participation in the survey, with a total of 240 participants (58 pediatricians, 182 family doctors), was 100%.

Results: It was found that pediatricians believe that they have more important role in the development of oral health and prevention of oral diseases and they are more interested in participating in the oral health program than are the family doctors.

Conclusions: Pediatricians and family doctors should work with dentists to improve the quality of oral hygiene in all young children.

Keywords: Children, family doctor, oral health, pediatrician

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Introduction

Prevention of oral diseases and provision of oral health are the main difficulties for dentistry. For this reason, early intervention by health professionals is required, as an eruption of first teeth, colonization of the mouth by bacteria and emergence of healthy and harmful habits occur in the first years of life (1). Prevention and early dental examinations give pediatric dentists the opportunity to provide risk-based

predictive guidance to their patients. They are also a source of preventive care during childhood and reduce invasive restorative interventions when the disease is present (2).

Health professionals involved in dentistry, medicine, and other such areas play a crucial role in raising awareness about oral health and protection (3–5). Many health workers are involved with child health care. As primary care providers, pediatricians have the opportunity to make a significant contribution to the general health of their patients by improving their

knowledge of oral diseases and oral health and by adding good child care to their daily routine (6). In addition to pediatricians, family doctors treat their enrolled persons as a whole and provide first-step diagnosis, treatment, rehabilitation and counseling services for preventive health services (e.g., pregnancy, postpartum period, infant, child monitoring, and vaccination services). They also offer health promotion and preventive services, and maternal and child health and family planning services (7). If pediatricians and family doctors know and encourage preventive approaches, and if they are properly conscious of the patients' needs, maintenance of oral health and/or prevention of oral diseases can be provided.

To our knowledge, there have been a few studies about dental screening and recommendation, or about preventive and oral hygiene care activities of pediatricians and family doctors. Nevertheless, such studies are important because the attitudes and knowledge of health professionals can increase or prevent the implementation and ultimately the success of a preventive program (8–10). For this reason, the aim of the present study is the comparison of awareness amongst pediatricians and family doctors about the knowledge, attitudes and current practices of oral disease prevention.

Materials and Methods

This was carried out by a cross-sectional survey using self-administered, structured questionnaires distributed at hospitals, comprehensive centers, and maternity care centers in Konya City, Turkey. The eligibility criteria were non-retired pediatricians or family doctors currently practicing in Konya City. The questionnaire was made up of 50 items divided into five parts: 1) demographic data consisting of age and gender; 2) knowledge; 3) attitude, 4) practice and 5) ways of getting information about protection from oral diseases. All physicians entered the study voluntarily, following an explanation of its purpose and objectives.

Participants were requested to fill in the questionnaire by e-mail. The questions of the questionnaire were prepared with an assessment of the literature. The self-administered, structured questionnaires were completed from September 2016 to December 2016.

Statistical Analysis

The data were analyzed by means of the SPSS statistical package (SPSS Inc., Chicago, IL, USA). Independent samples t-test was used to compare the difference in knowledge and practice related to oral and dental health care between pediatricians and family doctors. p-values <0.05 were considered statistically significant.

Results

A total of 240 participants, 58 pediatricians (35 female, 23 male) and 182 family doctors (79 female, 103 male), participated in this study and they were divided into two groups: pediatrician and family doctors. The response rate was 100%. Demographic information including participants' gender and age ranges and percentages are shown in Table 1.

The answer rates of the respondents for all parts of the questionnaire are shown in Table 2-5.

Significant differences between first- and second-year students were detected in family histories of HBV positivity (13.2% vs. 24.5%), serological testing (11.4% vs. 30.6%), HBV carrier status (14% vs. 56.9%), HBV immunization (36.7% vs. 47.7%), and development of a protective response (3.2% vs. 19%; all p<0.05). No significant relationship was observed between students' year in school and responses to other items (all p>0.05; Table 2).

No significant relationship was detected between survey responses and parents' educational levels or the presence of a healthcare worker in the family (both p>0.05; Tables 3, 4 and 5).

Table 1. Characteristics of the participants (n=240)

	Family Doctor (n=182)		Pediatrician (n=58)	
	n	%	n	%
Gender				
Male	103	56,5	23	39,6
Female	79	43,5	35	60,4
Age				
≤40	45	24,7	22	37,9
41-45	66	36,2	18	31,1
46-50	32	17,6	8	13,8
51-55	35	19,3	7	12,1
>55	4	2,2	3	5,1

Table 2. Participants' knowledge about risk factors of oral diseases

	Dental Caries							Gingivitis							Malocclusion						
	Yes (%)		No (%)		Don't know (%)		P value	Yes (%)		No (%)		Don't know (%)		P value	Yes (%)		No (%)		Don't know (%)		P value
	FD	P	FD	P	FD	P		FD	P	FD	P	FD	P		FD	P	FD	P	FD	P	
Gender	1,1	13,8	86,8	69,0	12,1	17,2	0,000	8,8	12,1	73,6	77,6	17,6	10,3	0,360	2,7	19,0	88,5	63,8	8,8	17,2	0,000
Anatomy of oral cavity	31,3	58,6	32,4	19,0	36,3	22,4	0,001	34,6	65,5	28,6	17,2	36,8	17,2	0,000	51,1	87,9	12,1	12,1	36,8	0	0,000
Family Tendency	87,4	96,6	7,1	0	5,5	3,4	0,085	78,0	87,9	8,8	6,9	13,2	5,2	0,198	89,6	91,4	4,9	3,4	5,5	5,2	0,887
Frequency of sugar consumption	100	100	0	0	0	0	.(a)	80,8	63,8	7,1	12,1	12,1	24,1	0,027	2,7	15,5	93,4	69,0	3,8	15,5	0,000
Bottle feeding	84,1	65,5	6,6	27,6	9,3	6,9	0,000	34,1	53,4	37,4	37,9	28,6	8,6	0,003	43,4	60,3	28,6	17,2	28,0	22,4	0,069
Mother's milk feeding	19,8	25,9	72,5	55,2	7,7	19,0	0,018	7,0	15,5	89,0	70,7	4,1	13,8	0,003	4,9	22,4	91,8	65,5	3,3	12,1	0,000
Non-nutritive sucking habits	61,5	62,1	19,8	22,4	18,7	15,5	0,820	14,8	22,4	65,4	50,0	19,8	27,6	0,109	45,1	56,9	29,1	19,0	25,8	24,1	0,219
Poor oral hygiene	100	100	0	0	0	0	.(a)	90,7	100	2,7	0	6,6	0	0,054	4,4	36,2	87,9	56,9	7,7	6,9	0,000
Inadequate tooth brushing	100	100	0	0	0	0	.(a)	97,8	100	0	0	2,2	0	0,255	6,1	39,7	84,5	50,0	9,4	10,3	0,000
Malpositioned teeth	45,6	70,7	31,3	8,6	23,1	20,7	0,001	43,4	65,5	23,6	22,4	33,0	12,1	0,003	65,9	75,9	23,6	5,2	10,4	19,0	0,004

FD: Family Doctors
P: Pediatricians

Table 3. Respondents' attitudes toward the prevention of oral diseases.

Survey questions	Response options									
	Agree (%)		Disagree (%)		No idea (%)		No response (%)		p value	
	FD	P	FD	P	FD	P	FD	P		
Dental caries may be prevented.	100	100	0	0	0	0	0	0	0	0,(a)
Oral hygiene is important in preventing dental caries.	100	100	0	0	0	0	0	0	0	0,(a)
Fluoride supplement is important in preventing dental caries.	86,8	79,3	4,4	20,7	8,8	0	0	0	0	0,000
Family doctors should provide an oral health examination.	39,6	50,0	31,3	32,8	29,1	17,2	0	0	0	0,171
Family doctors have an important role in the prevention oral diseases.	61,5	39,7	34,6	29,3	3,8	31,0	0	0	0	0,000
Routine dental visit is important in preventing oral diseases.	100	100	0	0	0	0	0	0	0	0,(a)
Early childhood caries is only observed in bottle fed babies.	52,4	36,2	17,3	31,0	30,3	32,8	0	0	0	0,038
Untreated early childhood caries may affect the general health of the child.	90,7	58,6	7,1	17,2	2,2	24,1	0	0	0	0,000
Bacteria causing dental caries may be transferred from mother to baby.	31,9	87,9	39,6	3,4	28,6	8,6	0	0	0	0,000
White stains on the teeth may be the first symptom of dental caries.	28,6	31,0	45,1	22,4	26,4	46,6	0	0	0	0,003
Fruit juice and carbonated drinks are harmful to the teeth.	33,5	41,4	50,5	44,8	15,9	13,8	0	0	0	0,551
It is suitable to use bottle in night sleep.	67,6	65,5	25,8	17,2	6,6	17,2	0	0	0	0,033
Children should be weaned using bottle when they are 1 year old.	30,8	62,1	52,2	10,3	17,0	27,6	0	0	0	0,000
Prenatal dietary habits of the mother may affect the dental health of the child.	24,7	100	45,6	0	29,7	0	0	0	0	0,000
Gingivitis may be prevented.	17,6	63,8	14,8	5,2	67,6	31,0	0	0	0	0,000
Malocclusion may be prevented.	26,4	53,4	32,4	19,0	41,2	27,6	0	0	0	0,001
Oral health is a part of prenatal care.	56,6	100	15,9	0	27,5	0	0	0	0	0,000
Pregnant women should be directed to the dentist for comprehensive dental examinations.	88,5	70,7	4,4	5,2	7,1	24,1	0	0	0	0,002
Factors such as hormonal and immunological changes during pregnancy increase the susceptibility to periodontal disease.	68,1	63,8	6,0	8,6	25,8	27,6	0	0	0	0,736
Untreated oral infection may become a systemic problem during pregnancy and lead to premature and / or low birth weight.	28,6	84,5	56,6	3,4	14,8	12,1	0	0	0	0,000
The patient evaluation form should include questions about oral health (e.g. name and contact information of the dentist, reason and history of the last dental procedure, previous dental procedures).	100	100	0	0	0	0	0	0	0	0,(a)

FD: Family Doctors
P: Pediatricians

Table 4. Respondents' practices toward the prevention of oral diseases.

	FD (%)	P (%)	<i>p</i> value
Do you assess dietary habits of your patients?			0,000
Yes	31,3	100	
No	68,7	0	
Do you perform an oral health examination?			0,000
No	85,7	15,5	
Always	0	8,6	
On mother request	3,8	31,0	
In presence of a problem	10,4	44,8	
At what age do you advise the first oral examination?			0,034
When the first teeth erupted	73,1	53,4	
Immediately after birth	11,5	19,0	
Age 3-6	6,0	10,3	
Age >6	7,7	17,2	
Don't recommend	1,6	0	
How often do you recommend oral health examinations?			0,608
Once a year	9,9	6,9	
Every 6 months	85,7	89,7	
Every month	0,5	1,7	
In presence of a problem	3,8	1,7	
Do you prescribe systemic fluoride to your patients?			0,000
No	78,6	55,2	
Always	0	10,3	
On mother request	21,4	34,5	
Do you ask parents what source of water their child is drinking?			0,000
Yes	97,8	20,7	
No	2,2	79,3	
Do you change your fluoride prescription in relation to the fluoride level of drinking			0,012
Yes	0	3,4	
No	100	96,6	
Do you recommend parents to use fluoride toothpaste for their children?			0,010
Yes	89,6	100	
No	10,4	0	
Do you recommend parents topical fluoride application for their children?			0,890
Yes	96,2	96,6	
No	3,8	3,4	
Do you recommend parents any other ways of fluoride supplementations?			0,000
Yes	0	46,6	
No	100	53,4	
Do you prescribe vitamin D for your child patients?			0,134
Yes	79,1	87,9	
No	20,9	12,1	
Do you recommend parents to brush their children's teeth?			0,012
Yes	100	96,6	
No	0	3,4	
Do you suggest parents other ways of protecting oral health of their children?			0,003
Yes	48,4	70,7	
No	51,6	29,3	
Do you inform parents about the importance of oral hygiene?			0,000
Yes	50,5	79,3	
No	49,5	20,7	
Do you provide educational materials to parents about interventions to prevent or control oral diseases?			0,000
Yes	12,6	44,8	
No	87,4	55,2	

FD: Family Doctors
P: Pediatrician

Table 5. Sources of information about prevention of oral diseases.

	FD (%)	P (%)	p value
Where do you get information about prevention of oral diseases?			
None	10,4	3,4	0,000
Scientific journals	3,8	20,7	
Associations	0	13,8	
Colleagues	17,6	10,3	
Continuing courses	8,2	8,6	
Internet	59,9	43,1	
Do you think that you need further information about prevention of oral disease?			
Yes	64,3	81,0	0,017
No	35,7	19,0	

FD: Family Doctors
P: Pediatricians

Discussion

In this study, it is emphasized that pediatricians and family doctors, the first doctors that children meet, play an important role in the maintenance of oral health and prevention of oral diseases. Caries management protocols for children further refine decisions about individualized treatment and treatment thresholds based on a particular patient's risk level, age, and compliance with preventive strategies. Such protocols should produce a greater likelihood of success and better cost-effectiveness than less standardized treatment. In addition, caries management protocols eliminate practitioners' need for recurrent high-level treatment decisions, standardize decision-making and treatment strategies (11–13), eliminate treatment uncertainties and ensure more accurate strategies (14).

In the present study, 53.4% of pediatricians suggested that the first oral examination was made when the first teeth erupted, whereas this was 73.1% amongst family doctors. In addition, pediatricians (89.7%) and family doctors (85.7%) were found to recommend oral health examinations every six months thereafter. These findings are consistent with the American Academy of Pediatric Dentistry guidelines (2).

According to the literature, children under three months of age have been shown to have acquired *Streptococcus mutans*, causing decay in their oral cavity, despite the absence of tooth eruption (15). The most studied factors against dental caries are systemic and topical fluoride, sugar substitutes and brushing with fluoride toothpaste (2). Both pre- and post-eruption fluoride applications increase the caries-inhibiting effects (16). Bubna et al. (17) stated that many parents were not informed about proper oral hygiene techniques, a proper diet to prevent dental caries, correct fluoride amounts, or good nutritional practices for the child. In this study, pediatricians and family doctors thought that routine dental visits are important in preventing oral diseases (100% and 100%, respectively) as well as Singhal et al. (18) stated in

their survey. In addition, doctors in both the pediatrician and family doctor groups recommend parents using fluoride toothpaste for their children (100% and 89.6%, respectively) and topical fluoride application (96.6% and 96.2%, respectively).

In a study conducted by Poornima et al. more than half of participants (54%) pointed out that major risk factors of dental caries inadequate brushing and poor oral hygiene might cause early childhood caries (ECC) (19). In addition, the authors stated that 49% of the participants' thought that family tendency could lead to ECC, and 23% of the participants thought that malposition of the teeth could not cause ECC. Similarly, in the present study, it was observed that inadequate tooth brushing, poor oral hygiene, and frequent sugar intake will cause dental caries, according to 100% of participants in both groups. Besides, 96.6% of the pediatrician group thought that family tendency could cause dental caries, though this rate was 87.4% in the family doctor group ($p > 0.05$).

In most studies, significant correlations have been shown between ECC and feeding with a bottle and sleeping with a bottle (20, 21). On the other hand, some authors found a positive relationship between sugar intake and the incidence of dental caries in cases where fluoridation is minimal and dental hygiene is poor (22, 23). According to the results obtained from the present study, more than half of the pediatricians and family doctors are aware of the harmful effects of the frequent sugar intake and feeding with a bottle. However, it was found that 65.5% of the pediatricians and 67.6% of the family doctors thought that it was appropriate to use the bottle in the night-time sleep. Although these rates were close by percentage, showed statistically significant difference ($p < 0.05$).

Mother-child transmission, also known as vertical transmission, is the transmission of infection or other diseases from the caregiver to the child. The main reservoir from which infants receive *Streptococcus mutans* is the mother. Early evidence of this concept emerged from bacteriocin-type studies in which *Streptococcus mutans* were isolated from mothers and their infants (24–26). According to this work, mothers and babies present similar bacteriocin-

type models. In addition in the present study, 87.9% of the pediatricians agreed that the bacteria causing dental caries could pass from mother to baby, whereas this rate was 31.9% in family doctors ($p < 0.05$).

Lachat et al. stated that oral health information can be given to women before or during the prenatal period at the first appointment and that pregnant women can be informed about the expected physiological changes in their mouth and can participate in the prevention and alleviation of these conditions (27). The authors also stated that preventive oral health information could be included in the birth class. Women with gingivitis were found to have a higher risk of premature/low birth weight compared to women who received routine periodontal treatment during pregnancy (28). Pediatricians and family doctors found that oral health is a part of prenatal care (100% and 56.6%, respectively) ($p < 0.05$), that hormonal and immunological changes during pregnancy increased the susceptibility to periodontal disease (63.8% and 68.1%, respectively) ($p > 0.05$) and that pregnancies should be directed to the dentist for comprehensive dental examinations (70.7% and 88.5%, respectively) ($p < 0.05$). However, while 84.5% of pediatricians agree that untreated oral infection can become a systemic problem during pregnancy and cause premature and/or low weight birth, in the family doctor group, this participation rate is 28.6% ($p < 0.05$). In addition, 63.8% of pediatricians though gingivitis is preventable, while for family doctors this rate was 17.6% ($p < 0.05$). Also, while 100% of pediatricians agree that maternal prenatal dietary habits can affect dental health of the child; this figure is only 24.7% for family doctors ($p < 0.05$).

Educational efforts to increase oral health knowledge and skills play an important role in the maintenance of oral health. It has been noted that there is a significant difference between pre- and post-test knowledge levels in a study conducted by family doctors in a 60-minute presentation of oral health education (29). After the study, 92% of the participants reported that they were very likely to incorporate the knowledge gained into their daily practice.

Within the limitations of the present study, it was observed that pediatricians play a more important role in improving oral health and prevention of oral diseases when they were compared with family doctors, and they were interested in participating in the oral health program. While 61.5% of family doctors thought that they have an important role in preventing oral diseases, the participation rate is 39.6% in the questionnaire, which states that family doctors should be able to perform oral health examinations. On the other hand, 81.0% of the pediatrician group thought that they need more information about prevention of oral diseases, and this rate was 64.3% in the family doctors group. In addition, the percentage of family doctors who do not receive information on this issue is 10.4%, while it is 3.4% for pediatricians ($p < 0.05$).

Oral health is an integral part of general health and child health. Oral health cannot be and should not be ignored in routine health screenings, prospective guidance and physical examinations of all children, especially children with special health care needs. Pediatricians can increase their knowledge and skills on

oral health and include oral health in first step primary care in their daily practice (7, 30). It is believed that similar practice will strengthen family doctors' knowledge and attitude about oral health.

This study has a bias because it is based on self-reported data. In addition, since a limited number of participants were used, these findings may not be sufficient to generalize to all pediatricians and family doctors in Turkey. There is a possibility that the obtained values may differ depending on the experiences and opinions of other doctors. For this reason, it is necessary to carry out future studies with a broader and larger set of participants in order to exhibit the knowledge and attitude about oral health of the related branches.

Conclusions

It is concluded that, as a first step, both family doctors and pediatricians have important responsibilities in terms of the protection of children's oral health. However, they should act in coordination with dentists. Finally, it can be stated that a single guideline for all health professionals needs to be developed to raise awareness and improve oral health knowledge.

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