

Original Article**Knowledge, attitude, and practices of pediatricians about children's oral health**

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Abstract

BACKGROUND AND AIM: Many pediatric oral diseases are preventable if physicians recognize and encourage preventive care and refer patients to dentists whenever necessary. Parents usually visit pediatricians for routine care during the first few years of a child's life. Therefore, pediatricians have can assist dental professionals by educating parents to maintain their children's oral health. The main objective of this study was to determine knowledge, attitude, and practices of pediatricians about the oral disease prevention.

METHODS: A piloted questionnaire was completed by volunteer pediatricians and pediatric residents in Kerman, Iran. It comprised a series of questions including sociodemographic and practice characteristics, knowledge about the risk factors for oral diseases, attitude toward oral disease prevention, practicing preventive care for oral diseases, and information about oral diseases.

RESULTS: Overall, 60 subjects participated in the study. Less than half of the respondents knew all the main risk factors of dental caries, gingivitis, and malocclusion. There was also a positive attitude that caries can be prevented (100%). Less than 10% of the participants prescribed dietary fluoride supplements for their patients.

CONCLUSIONS: Although we found inadequate knowledge about oral and dental diseases among pediatricians, the majority of our subjects believed that they had an important responsibility in preventing oral diseases.

KEY WORDS: Oral Health, Children, Pediatrician, Preventive Care

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Primary preventive strategies for oral health are an essential public health priority since dental caries is the most common chronic disease among children worldwide. Experts have recommended to begin initiatives with very young children to promote positive outcomes during childhood and subsequent adulthood.^{1,2} Dental care should start at approximately six months of age with the eruption of the first tooth. Regular annual visits are then required to determine if there is a need for prevention or treatment.³⁻⁵

Dental decay may show its effects at three years of age. Because pediatricians and other

pediatric health care professionals are more likely to encounter children at this age than are dentists, it is necessary for them to be aware of pathophysiology and associated risk factors of early childhood dental caries. They will then be able to make appropriate decisions about referring children to a dentist for effective interventions.⁴

The important role of pediatricians in preventive programs including oral health has been neglected in many countries like Iran. Moreover, little published literature has focused on the extent to which pediatricians participate in preventive oral health programs. Nevertheless, many efforts has

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been started recently to encourage collaboration between various child health care services. The American Academy of Pediatric Dentistry has prepared a guideline on oral health screening and examination for pediatricians. The basic theme of the guideline is the knowledge of physicians' about oral health.³ Several researchers have reported different levels of background knowledge among physicians.⁶⁻⁹ Inadequate dental knowledge of physicians has suggested that some oral and dental health instructions should be included in medical curricula.⁶

Precise knowledge and attitude can affect oral health practices. Surveys on subjects are clearly the most important part of the implementation and eventual success of a preventive program. Therefore, the purpose of this study was to assess the oral health-related knowledge, attitude, and current practices of pediatricians in Kerman (southeast of Iran).

Methods

This cross-sectional study was conducted on pediatricians and pediatric residents in Kerman, Iran. The list of this group of doctors (60 pediatricians and 15 residents) was provided by the Kerman Medical Council. A piloted questionnaire and an informed consent form that explained about the objectives of the study and ensured data confidentiality were distributed among eligible subjects in three places. Some questionnaires were distributed in a continuing education seminar and collected at the end of the session. The others were distributed in the private offices of the pediatricians or the medical school where the residents were studying. These questionnaires were collected on the next day. The participants who had received the questionnaire twice were asked to mark the relevant option on the questionnaire. Their second form was then excluded from the analysis.

The questionnaire comprised five sections. The first section evaluated sociodemographic and practice characteristics of the participants

and included questions about age, gender, year of graduation, years in practice as a pediatrician, working hours per week, and number of patients visited on a typical workday. The second section assessed knowledge through questions pertaining to the main risk factors of dental caries, gingivitis, and malocclusion. This part was scored as low (14-18), medium (19-23), or high (24-28).

In the third section which surveyed the subjects' attitudes toward the prevention of oral diseases, the respondents had to use a three-point Likert scale (1 = agree, 2 = no idea, and 3 = disagree) to answer the questions. The items in this part asked if the subjects agreed that dental caries, gingivitis, and malocclusion are preventable, the pediatricians can have an important role in the prevention of oral diseases, pediatricians should do oral examinations, oral hygiene is effective in prevention of dental caries, and regular dental checkups are important in preventing oral diseases.

In order to identify the participants' practices to prevent oral diseases, the fourth section asked if they assessed dietary habits, performed oral health examination, and recommended regular dental visits and fluoride supplements to patients and local fluoride therapy to parents. They were also questioned if they recommended parents to brush their children's teeth, use fluoridated water, and other ways to prevent oral diseases and if they gave educational or hygiene tools (such as books, pamphlets, tooth brushes, and dental floss) to parents/caregivers. These items were closed-ended with binary (yes/no) or categorical answers. Some questions were answered on a five-point Likert scale that ranged from never to always.

In the fifth section, the subjects were asked about their sources of information about oral disease prevention and if they were interested in having more information on oral health. The final item requested the

individuals to report if they had filled the same questionnaire before.

For data analysis, right answers were

scored as 1 and wrong answers or unanswered questions were scored as zero. The sum of scores was categorized as low, medium, and high knowledge. Attitude was considered as positive or negative. The frequency of subjects who practiced different measures was also calculated.

Results

As 60 subjects returned the questionnaires, the response rate was good (80%). The mean age of the participants was 40 years old and females constituted 55% (n = 33) of the whole population. Table 1 shows the sociodemographic and practice characteristics of the participants. Low, medium, and high levels of knowledge about oral disease prevention were detected in 15.0%, 48.3%, and 36.7% of the participants, respectively.

Figure 1 shows the pediatricians' attitude toward oral disease prevention. All subjects believed that oral hygiene and regular dental checkups are important in preventing oral

diseases. While most participants were positive that dental caries and gingivitis are preventable (93.3% and 98.3%, respectively), 46.7% were uncertain or disagreed about the preventability of malocclusion. Moreover, the majority of subjects (86.7%) considered the role of pediatricians to be important in prevention of oral diseases. They (88.3%) thus thought that pediatricians should conduct oral examinations.

Most participants (83.3%) reported that they assessed children's dietary habits. Oral

examination was performed by 88.3% of the pediatricians when a patient had a problem. In addition, 61.7% of the subjects recommended their patients to have dental examinations every six months, 71.7% recommended parents to brush their children's teeth, and 78.3% recommended some ways except fluoride to prevent oral diseases (Table 2).

In the fifth section, 16.7% of the subjects declared that they had no special source of

Table 1. Demographic and practice characteristics of the participants

	Sex (%)		Age (years)		Number of years after graduation		Experience as a pediatrician (years)		Working hours per week		Patients visited each workday	
	Male	Female	< 40	> 40	< 17	> 17	< 16	> 16	< 30	> 30	< 46	> 46
Number	45	55	26	34	48	12	46	14	20	40	55	5
Mean			40		17		16		30		46	

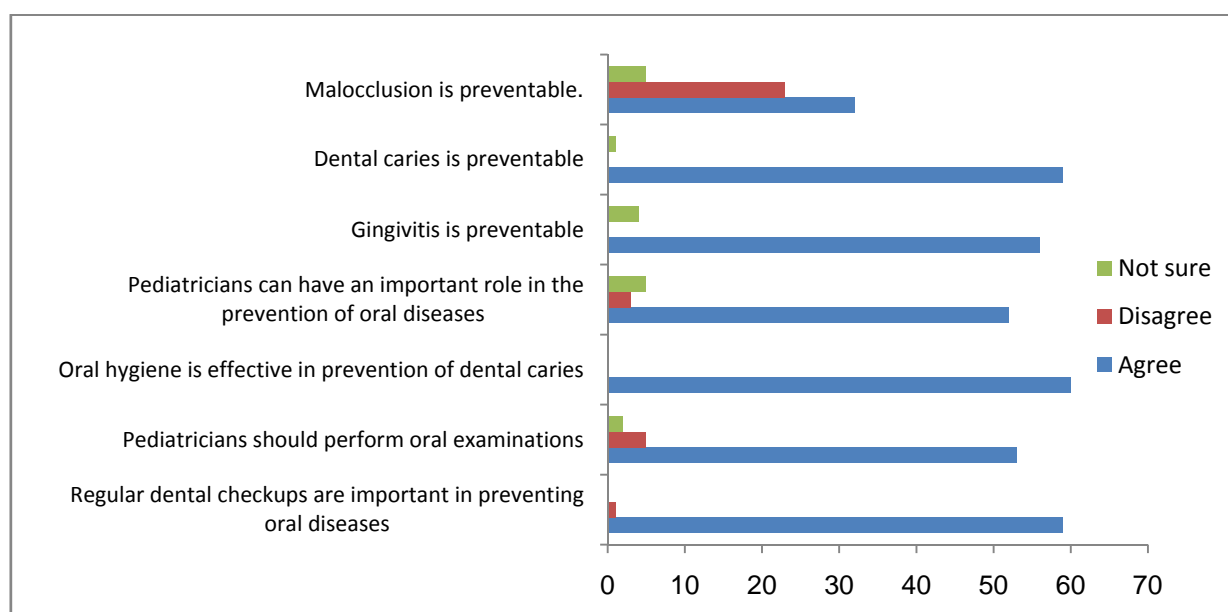


Figure 1. Frequency distribution of the participants based on their attitude toward oral disease prevention

Table 2. Frequency of oral diseases preventive practices among pediatricians and pediatric residents

	N	%
Assessment of dietary habits		
Yes	50	83.3
No	10	16.7
Recommendation for dietary fluoride supplement		
Yes	16	26.7
No	44	73.3
Oral health examination		
Not at all	5	8.4
In case of problems	53	88.3
On the request of the parent	2	3.3
Recommended time for dental examinations		

Once a month	2	3.3
Every four months	13	21.4
Every six months	37	61.7
Once a year	8	13.3
Recommendation of topical fluoride therapy		
Yes	23	38.3
No	37	61.7
Recommending parents to brush their children's teeth		
Yes	43	71.7
No	17	28.3
Recommendation on using fluoridated water		
Yes	29	48.3
No	31	51.7
Recommending other ways to prevent oral diseases		
Yes	47	78.3
No	13	21.7
Providing the parents with educational or oral hygiene tools such as books, pamphlets, tooth brushes, and dental floss		
Yes	2	3.3
Sometimes	14	23.3
Rarely	3	5.0
No	41	68.3

information on oral disease prevention. However, 31.7% obtained their information from scientific journals. Approximately all participants (96.7%) stated that they were interested in having more information about oral disease prevention (Table 3).

Table 3. The participants' sources of information on preventive oral care

Information resources	N	%
No special resource	10	16.7
Pediatric association	10	16.7
Scientific journals	19	31.7
Colleagues	16	26.7
Continuing education programs	4	6.7
Other sources	1	1.7
Need for more information		
Yes	58	96.7
No	2	3.3

Discussion

This study tried to explore knowledge, attitude, and practice of a group of potential oral health care providers to children whose role has been neglected in this regard. As we warmly welcomed the target group, we could include a representative and unbiased sample. Therefore, our findings can provide a generalizable picture of the study context in Kerman.

We found undesirable levels of knowledge among the studied pediatricians which may

have affected their practice of oral health. Although only 36.8% of participants had high levels of knowledge about oral health, there was a positive attitude toward the preventability of dental caries and gingivitis. Since these problems are common,¹⁰ it is very important for the pediatricians to know about

their preventability.

All subjects in the present study believed that oral hygiene is important in preventing dental caries. Similarly, Di et al. emphasized the significance of regular dental checkups (routine dental visits) in oral disease prevention.¹ High rates reported by Di et al.¹ (88.7%) and Balaban et al.¹¹ (72.2%) along with our findings suggest that almost all pediatricians are aware of the consequence of oral hygiene and routine dental visits.

It is essential to know the attitudes of pediatricians about their role in preventing oral diseases. According to our findings and those of previous studies,^{1,12} many pediatricians consider their role in oral disease prevention as critical. Moreover, there was a positive attitude toward performing oral examination by pediatricians among 88.3% of our participants and 96.6% of Italian subjects.¹

The majority of individuals in our study and a similar study by Di et al.¹ (83.3% and 88.4%, respectively) reported that they assessed children's dietary habits. Since dietary counseling is necessary for optimal oral health in children, it should be included in pediatricians' routines as a part of general health counseling.

Oral health examinations were conducted by 88.3% of our participants only when a patient had a problem. Apparently, almost all pediatricians know about the necessity of oral health examination and their ability to perform it. They should only be trained to incorporate such examinations in their regular procedures. In the United States, 98.9% of pediatric care providers performed occasional or frequent examination of a child's teeth.¹³ As a result, 47% detected early childhood caries in their examination at least once a month.¹²

Although all pediatrician and pediatric residents in the present study stated that regular dental visits are important in preventing oral diseases, only 61.7% of them recommended their patients to have dental examinations every six months. Therefore, despite having adequate knowledge, absence

of positive attitudes among parents or their time limitations prevented our participants from further recommendations. In addition, the frequency of hygiene advices, such as advising parents to brush their children's teeth (71.7%) and employ ways other than fluoride to prevent oral diseases (78.3%), was relatively low in our study.

Most of our participants did not prescribe fluoride supplements, i.e. pills or drops, for children. Balaban et al. reported the same issue in about 98.9% of their study subjects.¹¹ The absence if special guidelines in Iran may justify these high rates. However, supplements are necessary in places with low levels of fluoride in water.

In this study, almost all subjects stated they needed more information about oral health. It can thus be concluded that pediatricians do not receive adequate training during their education. Therefore, their curricula require to be revised to include courses on oral health. Holding seminars on oral health and discussions between general and oral health professionals can also improve their knowledge and motivation after graduation.

We collected data based on self-reports. Social desirability may force respondents to over- or under-report their attitudes and practices. However, in order to obtain valid results, we ensured the participants' anonymity.

Overall, knowledge and practice of pediatricians in Iran was not in favor of a preventive approach toward oral health in children. A number of barriers might have resulted in such a situation. One of the problems is short appointments which force the pediatricians to exclude preventive measures such as oral health. Moreover, inadequate partnership between health professionals and oral health professionals to solve existing problems is another issue. There is a need to resolve these problems through an evidence-based and collaborative approach.

Conclusion

The results of this study showed that the

pediatricians' awareness about oral health needs to be improved. Clinical guidelines, continuing education programs, and including oral health preventive programs in pediatric residency could help to fill the gap between dental and child health care professionals. Consequently, pediatricians may act as a potential partner group in oral health promotion of children and their families.

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Conflict of Interest

Authors have no conflict of interest.

References

1. Di GG, Nobile CG, Marinelli A, Angelillo IF. Knowledge, attitude and practices of pediatricians regarding the prevention of oral diseases in Italy. *BMC Public Health* 2006; 6: 176.
2. Pine CM, Harris R. *Community oral health*. London, UK: Quintessence Pub; 2007.
3. Originating Committee Clinical Affairs Committee - Infant Oral Health Subcommittee. Guideline on Infant Oral Health Care [Online]. 2005; Available from: URL: http://www.aapd.org/media/Policies_Guidelines/G_infantOralHealthCare.pdf/
4. Hale KJ. Oral health risk assessment timing and establishment of the dental home. *Pediatrics* 2003; 111(5 Pt 1): 1113-6.
5. Levine RS, Stillman-Lowe CR. The scientific basis of oral health education. In: Kay EJ, Levine RS, Stillman-Lowe CR, Editors. *A guide to prevention in dentistry: including Prevention and The scientific basis of oral health education*. London, UK: BDJ Books; 2004. p. 89.
6. Schaff-Blass E, Rozier RG, Chattopadhyay A, Quinonez R, Vann WF, Jr. Effectiveness of an educational intervention in oral health for pediatric residents. *Ambul Pediatr* 2006; 6(3): 157-64.
7. Formicola A, Valachovic RW, Chmar JE, Mouradian W, Bertolami CN, Tedesco L, et al. Curriculum and clinical training in oral health for physicians and dentists: report of panel 2 of the Macy study. *J Dent Educ* 2008; 72(2 Suppl): 73-85.
8. Crall JJ, Davidson PL, Nakazono TT, Gutierrez JJ, Bai J, Andersen RM. Involvement in health policy regarding oral health and dental education: effects of the Pipeline program. *J Dent Educ* 2009; 73(2 Suppl): S308-S318.
9. Prakash P, Lawrence HP, Harvey BJ, McIsaac WJ, Limeback H, Leake JL. Early childhood caries and infant oral health: Paediatricians' and family physicians' knowledge, practices and training. *Paediatr Child Health* 2006; 11(3): 151-7.
10. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. *Bull World Health Organ* 2005; 83(9): 661-9.
11. Balaban R, Aguiar CM, da Silva Araujo AC, Dias Filho EB. Knowledge of paediatricians regarding child oral health. *Int J Paediatr Dent* 2012; 22(4): 286-91.
12. Lewis CW, Grossman DC, Domoto PK, Deyo RA. The role of the pediatrician in the oral health of children: A national survey. *Pediatrics* 2000; 106(6): E84.
13. Dela Cruz GG, Rozier RG, Slade G. Dental screening and referral of young children by pediatric primary care providers. *Pediatrics* 2004; 114(5): e642-e652.