

Pediatricians' view on early childhood caries and oral health in a north region of India: A cross-sectional study

Suneel Kumar Gupta¹, Sonal Gupta¹, Sushma Gojanur¹, Gurpreet Kour²,
Kuldeep Singh¹, Priya Rani¹

¹Department of Pedodontics and Preventive Dentistry, K. D. Dental College and Hospital, Mathura, Uttar Pradesh, ²Department of Pedodontics and Preventive Dentistry, Swami Devi Dyal Hospital and Dental College, Barwala, Panchkula, Haryana, India

ABSTRACT

Background: The majority of oral diseases in children are preventable. The pediatricians owing to the unique position they occupy in child care are invaluable in achieving standard oral and dental healthcare in children. This study was aimed to assess pediatrician's knowledge, attitude, and awareness toward early childhood caries (ECC), oral health, and treatment needs of their patients. **Methods:** A total of 65 pediatricians were randomly selected for the study and were requested to fill out an objective questionnaire pertaining to individual details, approach toward pediatric dentistry, and knowledge level of oral health, without providing any oral health information. **Results:** About 58.5% of pediatricians acknowledged the importance of pediatric dentistry. About 72.7% of pediatricians perform oral examination regularly. Around 17% of pediatricians have knowledge of the ECC. Only 32.3% of pediatricians acknowledged the cariogenicity of medicated syrups. **Conclusion:** This study shows those pediatricians who were surveyed had poor knowledge regarding ECC, oral health, and dental treatment need in children. Pediatricians need to update themselves on recent recommendations.

Keywords: Early childhood caries, first dental visit, oral health, pediatricians, pediatric dentistry

Introduction

Pediatricians examine infants several times during the first and second years of life. These visits are considered “well-baby” or “check-up” examinations to note the developmental progress of the baby, provide necessary immunisations, give the parents guidance concerning nutrition, and discuss cognitive development.^[1] “Dental caries” is an important public health problem and it is the most prevalent oral disease among children.^[2] which is five times more common than asthma and seven times more common than fever.^[3] This disease not only causes damage to the tooth but also is responsible for several morbid conditions of the oral cavity.^[2] Early childhood caries (ECC) is a particularly virulent form of dental caries with

early involvement of pulp affecting the primary teeth of infants and toddlers.^[4]

The pediatricians owing to the unique position they occupy in child care should be able to diagnose ECC and oral disease and refer them to pediatric dentist. Pediatrician can assess risks for dental problems and counsel parents and their children about the prevention of these problems.^[5,6] If proper counsel regarding the child's development and eruption of teeth as well as guidance for prevention of various oral diseases is rendered at this age, better oral health can be attained for these children.^[1] An important aspect of the child's general care should involve the first dental visit. The quality of preventive healthcare and future oral health is determined by the first dental visit. Recommendations for early dental visits for children suggest its completion by 12 months of age.^[6] The role of pediatricians in oral health was formalized in a

Address for correspondence: Dr. Suneel Kumar Gupta,
Sidhi Road Hanumana Disst, Rewa - 486 335,
Madhya Pradesh, India.
E-mail: dr.suneelgupta88@gmail.com

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policy issued by the American Academy of Pediatrics (AAP) in 2003 and reinforced by another policy issued in 2008.^[7]

Early intervention provides the opportunity to educate parents in many areas, such as good oral hygiene, prevention of dental injuries, and prevention of nursing caries by establishing proper feeding habits.^[8] However, some authors have felt that the most important factor affecting preventive dentistry performance is the knowledge and function of pediatricians concerning the issue.^[9] The majority of the oral diseases in children have been shown to be preventable. And many professional bodies including the American Academy of Pediatric Dentistry (AAPD) have continued to highlight the need for prevention, diagnosis, and treatment as key to the restoration and maintenance of oral health of all children.^[10]

There was no literature on dental screening and referrals by pediatricians or the effectiveness of their dental caries preventive activities. The absence of exact statistics on the pediatrician awareness concerning children's caries prevention in India led us to conduct this study. Thus, the aim of this study is to assess pediatrician's knowledge, attitude, and awareness toward ECC, oral health, and treatment needs of their child patients.

Methods

Pediatricians practicing in Varanasi (India) were randomly selected for the study. A total of 65 pediatricians participated in the study. The list of pediatricians was obtained from various hospitals and associations in the year 2017. All the selected pediatricians had either a postgraduate diploma (DCH) or a master's degree (MD) or both in pediatrics. They were requested to fill out an objective questionnaire without providing any oral health information.

A comprehensive questionnaire was prepared based on studies done by Shetty and Dixit,^[1] Murthy and Mohandas,^[2] Subramaniam *et al.*,^[3] Eke *et al.*,^[5] Nammalwar and Rangeeth,^[6] and Balaban *et al.*^[7]

The questionnaire was divided into the following four sections:

1. Demographic characteristics of pediatrician (including gender, year in practice, no. of patients seen per day, type of practice)
2. Knowledge of the specialty of pediatric dentistry, importance of primary dentition, and referral
3. Practice guidelines and opinions about dental caries and oral health
4. Attitude assessment of pediatrician toward ECC and oral health.

Scores were given to each question in the knowledge, practice, and attitude section. The maximum score was given to correct answer and minimum was given to incorrect answer. *Scoring criteria:* The scores are assessed as follows:

- <50%: poor
- 50–75%: moderate
- 75%: good.

Results

Demographic characteristics [Table 1]

The study was performed on 65 pediatricians. The majority of pediatricians were male (75.3%) who had between 10 and 20 years of practice experience, respectively, seeing 25–50 patients a day with a solo private practice.

Knowledge of the specialty of pediatric dentistry, importance of primary dentition, and referral [Table 2]

About 58.5% of pediatricians acknowledged the importance of pediatric dentistry, 93.85% pediatricians knew the importance of primary teeth, 89.2% examined them, 70.8% of pediatricians reported that children should be referred to dentist when caregivers/patients report dental problems, and 70.8% of pediatricians felt that 1 year would be ideal for the first dental visit.

Practice guidelines and opinions about dental caries and oral health [Table 3]

Only 50.7% of pediatricians perform oral examination regularly, 17% of pediatricians have knowledge of ECC, 89.2% of pediatricians restricted sugary food, 26.15% of pediatricians knew that cavity causing bacteria can be transmitted from the mother, and only 32.3% of pediatricians acknowledged the cariogenicity of medicated syrups. All pediatricians who participated in this study did not advise bottle feeding, nearly 73.8% of the pediatricians could relate the importance of breastfeeding and oral health, 52.3% of pediatricians reported that health education should be given

Table 1: Demographic characteristics of pediatricians

Characteristics	Number of Pediatricians (%)
Gender of pediatricians	
Male	49 (75.3)
Female	16 (24.7)
Years in practice (years)	
<5	9 (13.8)
5-10	10 (15.4)
10-20	29 (44.6)
>25	17 (26.2)
Number of patients seen per day	
<10	4 (6.15)
10-25	28 (43.08)
25-50	30 (46.15)
>50	3 (4.62)
Type of practice	
Solo private	28 (43.08)
Group	10 (15.38)
Teaching	12 (18.46)
General hospital	15 (23.08)

Table 2: Knowledge of the specialty of pediatric dentistry, importance of primary dentition, and referral

Questions	Number of pediatricians (%)
Aware of pediatric dental specialty	
No	27 (41.5)
Yes	38 (58.5)
Importance of primary teeth/milk teeth	
No	4 (6.15)
Yes	61 (93.85)
Examining primary teeth	
No	7 (10.8)
Yes	58 (89.2)
Referral to dentist for pain	
Referred	46 (70.8)
Self-treated	10 (15.4)
Both	9 (13.8)
First dental visit	
6 months	11 (17)
1 year	46 (70.8)
Dental caries	7 (10.7)
Pain present	1 (1.5)

to mothers about nursing caries starting early in life, 73.9% of pediatricians recommended the use of dentifrices routinely, only 9.2% recommended brushing between age 6 and 12 months, and 77% of pediatricians provided diet counseling to every patient.

Attitude assessment of pediatrician toward ECC and oral health [Table 4]

About 97% of pediatricians agreed to have a role in promoting oral health and felt that assessment of dental caries should be a part of routine child care.

Discussion

The AAPD recognizes that infant oral health is the foundation upon which preventive education and dental care must be made to enhance the opportunity for a lifetime free from preventable oral disease.^[3] The allied health professionals including pediatricians and other medical fraternity and community organizations must be involved as partners to achieve this goal. Dental awareness of qualified medical practitioners including pediatricians may be insufficient with regard to knowledge about ECC, oral health, oral hygiene practice, and speciality treatment rendered by pediatric dentist. There are very few studies reported in literature on oral health awareness of medical practitioners particularly pediatricians.

The result of our study showed that 58.5% of pediatricians knew the existence of pediatric dental specialty. Other previous studies by Shetty RM,^[1] Subramaniam *et al.*,^[3] and Nammalwar and Rangeeth^[6] showed that 86%, 91.3%, and 80.3% of pediatricians knew the existence of pediatric dental specialty. In this study, the majority of pediatricians reported routinely examining the oral cavity of their patients and included anticipatory guidance on

oral health in their well-child care visits; the results are similar to the studies by Balaban *et al.*^[7] and Lewis *et al.*^[11] More than 80% of pediatricians knew the existence the importance of primary dentition and examining primary teeth. An American study showed that only 54% of pediatricians examined the oral cavity of more than half of the 0- to 3-year-olds.^[12] Certain craniofacial abnormalities can be diagnosed soon after birth, such as Pierre Robin syndrome with characteristics of glossoptosis and cleft lip and/or palate, lesions such as “Bohn’s nodules” and “Esptein’s pearls” being embryonic remnants and neonatal teeth that can make nursing difficult along with a risk of aspiration making examination of the oral cavity soon after birth a necessity.^[13]

We found that 70.8% of pediatricians make referrals to a dentist for pain. This survey was done with the need to emphasize on the fact that there is a need to improve the pediatrician and the pediatric dentist’s relationship, as well as to study on the lacunae on the areas where the pediatricians need to improve the knowledge of ECC and oral health and to recognize the importance of pediatric dentistry. It was interesting to note that there is a diverse opinion of pediatricians regarding the ideal age for the first dental visit and the importance of a first dental examination after birth. These different opinions could be because many pediatricians are not well known with AAPD recommendations for pediatric preventive dental care. In this study, 70.8% of pediatricians felt that before 1 year of age would be ideal for the first dental visit. This is in accordance with the AAPD guidelines and AAP which say that the first dental visit should be within 6 months of eruption of the first teeth. Half of the pediatricians were not aware of the biannual dental visit that is recommended by AAPD.^[2]

According to our study, 17% of pediatricians have knowledge on ECC. ECC can be prevented and managed if proper information and skills are implemented. Health professionals, especially pediatricians, can engage parents in motivational interviewing and help them prevent ECC and promote oral health practice.^[14] As known, *Mutans streptococci* is the most important bacteria responsible for dental caries.^[15] In our study, 26.15% of pediatricians knew that cavity causing bacteria can be transmitted from the mother to child as described by Murthy and Mohandas^[2] and Sezer *et al.*^[16]

Mainly pediatricians are responsible for pediatric medicated syrup prescriptions and to inform parents of the same. Pediatric formulations are frequently sweetened to make them more acceptable to be taken in the form of “syrup.” Sweetened nature of medicated syrup contributes to development of dental caries mainly because of the frequency of oral prescription. In our study, only 32.3% of pediatricians acknowledged the importance of the cariogenicity of sugar in medicated syrups and did not prescribe them as a routine. However, it is of concern as the oral route was the preferred choice of administration. Whereas Nammalwar and Rangeeth^[6] showed that only 27% of pediatricians acknowledged the importance of the cariogenicity of medicated syrups.

Table 3: Practice guidelines and opinions about dental caries

Questions	Number of pediatricians (%)
Knowledge of early childhood caries	
Yes	11 (17)
No	54 (83)
Do you restrict sugary food?	
Yes	58 (89.2)
No	7 (10.8)
Cavity causing bacteria can be transmitted between mother and child	
Yes	17 (26.15)
No	48 (73.85)
Cariogenicity of medicated syrups	
Yes	21 (32.3)
No	44 (67.7)
Advising bottle feeding	
Yes	0
No	65 (100)
Relation between breastfeeding and oral health	
Yes	48 (73.8)
No	17 (26.2)
Health education to mother on prevention of dental caries	
Yes	34 (52.3)
No	31 (47.7)
Recommendation of use of dentifrices	
Routinely	48 (73.9)
Occasionally	6 (9.2)
Never	2 (3.1)
Depending on age	9 (13.8)
Age at which brushing recommended	
6-12 months	6 (9.2)
12-18 months	36 (55.4)
18-24 months	12 (18.4)
>2 years	11 (17)
Diet counseling	
No	0
Yes every patient	50 (50.7)
Yes sometimes	15 (23)

Table 4: Attitude assessment of pediatrician toward early childhood caries and oral health

Questions	Number of pediatricians (%)
Do pediatricians have a role in promoting oral health	
Yes	63 (97)
No	2 (3)
Should assessment of dental caries be a part of routine well child care	
Yes	63 (97)
No	2 (3)

According to Indira *et al.*,^[17] 95% of the pediatricians say no to bottle feeding. Guidelines prepared by AAP suggest that pediatricians should advise parents to begin bottle or breast weaning when

their child is approximately 9 months of age and accomplish it soon after the first birthday.^[3] Koranyi *et al.*^[18] found that most pediatricians tended to recommend later dates for beginning and accomplishment of weaning and were not completely in accordance with AAP guidelines. This was similar to our study where weaning beyond the age of 1 year was highly recommended.

In our study, knowledge and understanding of the healthcare providers showed that nearly 73.8% of pediatricians could relate the importance of breastfeeding and oral health. During breastfeeding, the infants' oral muscles are exercised strenuously in suckling, an important influence on the thrust and growth of the mandible, in addition to imparting maternal immunological components. Appropriate health-promoting practices, such as breastfeeding, should be encouraged by healthcare professionals.^[6] We observed that most of the pediatricians believe diet counseling to be effective in reducing caries. Most of the pediatricians advised mothers/care givers to limit the sugar intake in diet. Few of them prescribed vitamin intake for better oral health. There is a need for these specialists to be informed on other dietary factors and nutritional counseling.

This study indicates that 97% of pediatricians agree that they are extremely valuable resource in promoting the oral health of children and accessing dental caries in routine well child care, because many pediatricians will see children who dentist do not see. Other studies have documented similar limitations in dental knowledge among pediatricians.^[2,3,5,11]

Herndon *et al.* demonstrated that oral health training indirectly influences physicians' pediatric oral health practices by increasing their confidence in activities such as advising parents and performing oral health screening and risk assessment. Efforts to engage physicians in oral health training will promote physicians' confidence and increase the likelihood of their performing preventive oral healthcare practices.^[19]

The recommendations for improving primary oral healthcare in India are as follows:

- Compulsory dental screening and counseling for beneficiaries of Janani Sureksha Yojana scheme
- Dental examination/fitness form at the time of preschool admission forms
- Compulsory postings during internship in orphanage; home for screening and treating mentally and physically disabled children
- Government-aided oral health camps for children with special healthcare needs quarterly.

Conclusion

Pediatricians who were surveyed for this study had poor knowledge regarding ECC and oral health. Many of the dental diseases of childhood can be prevented by proper education of the parents. The following measures may be taken to improve the pediatricians' knowledge about ECC and oral health:

1. Better understanding and communication between medical and dental societies
2. Referral of cases to pediatric dentist regularly
3. Promoting oral examination of neonates by a pediatric dentist soon after birth
4. Updating literature regarding preventive dentistry articles to be published in medical journals
5. Continued dental education programs for pediatricians regarding ECC and oral health.

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Conflicts of interest

There are no conflicts of interest.

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