Oral Health Care of Children: Gynecologists and Pediatricians' Perspective

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Gynecologists, pediatricians and other medical professionals are more likely to see expecting mothers and infants much earlier than dentists. Thus, it is essential for these specialists to be aware of the infectious nature of dental caries and its associated risk factors and make appropriate decisions regarding timely and effective intervention. ***Objective:*** *To know the perception of gynecologists and pediatricians towards oral health care of children.* ***Methods:*** *A cross sectional questionnaire survey was conducted.* ***Results:*** *The present study shows that the pediatrician is more actively involved in the oral health care of children as compared to gynecologists in Bangalore city, India.* ***Conclusion:*** *Pediatricians and gynecologists need to update themselves on recent recommendations, regarding infant oral health so as to ensure that all their patients receive timely preventive and restorative dental care.*

Keywords: *Gynecologists, Pediatricians, infant oral health, diet counseling, pre-natal exposure*
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INTRODUCTION

Gynecologists and pediatricians are specialists who enter a child's life at an early stage. They counsel mothers on nutrition, feeding practices and immunization. They also evaluate the overall health of pregnant mothers and developmental progress of children. However, the influence of maternal oral health on the unborn child and that of the children per se is frequently overlooked. Since 1986, the American Academy of Pediatric Dentistry (AAPD) recommends that the first dental visit should occur within six months of the eruption of the first tooth and no later than twelve months of age. In contrast, the American Academy of Pediatrics (AAP) previously recommended the first dental visit to be by age three, but changed the guideline in 2006 as to establish a "dental home" by age one for children. Both recommend weaning by the age of 12 months.[1] When the weaning period is prolonged it will lead to the single most common chronic childhood disease – dental caries, which is five times more common than asthma and seven times more common than fever.[1]

Early childhood caries (ECC) can be a particularly virulent form of caries, beginning soon after tooth eruption, developing as smooth surface caries, progressing rapidly, and having a lasting detrimental impact on the dentition. This disease affects the general population but is 32 times more likely to occur in infants who are of low socioeconomic status, whose mothers have low education levels, and who consume cariogenic foods.[2] Dental caries in primary teeth can affect children's growth, causing significant pain and potentially life threatening infection and diminish overall quality of life.[2] Gynecologists, pediatricians, and other medical professionals are more likely to see expecting mothers and infants much earlier than dentists. Thus, it is essential for these specialists to be aware of the infectious nature of dental caries and its associated risk factors and make appropriate decisions regarding timely and effective intervention.

Hence, the present study was conducted to know the awareness and attitude of gynecologists and pediatricians in Bangalore city, South India, towards oral health care of children.

MATERIALS AND METHOD

A cross sectional questionnaire survey was conducted among gynecologists and pediatricians of Bangalore city, South India. The sample comprised of 91 gynecologists and 92 pediatricians, including private practitioners and doctors from government hospitals. Both sexes were adequately represented and their ages ranged from 30 to 65 years. After

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obtaining prior permission from the concerned hospital authorities, the doctors were asked to answer a questionnaire designed to their particular speciality. All answers were treated with utmost confidentiality. The questionnaire pertained to both maternal and infant/child oral health care and included questions on prenatal counseling, feeding practices, dietary habits, oral hygiene practices and importance of primary dentition.

RESULTS

Table 1: Although 72.5% of gynecologists were aware of the existence of pediatric dentistry, only 9.8% of them referred the expecting mothers to pediatric dentists. Whereas, 91.3% of pediatricians were aware of pediatric dentists and all of them referred their child patients for routine dental checkup.

Attitude and awareness of Pediatricians

Table A1: Fifty two percent of pediatricians considered a child's visit to a dentist at an early age to be very important, whereas 41.3% believed it to be important. Almost 36% of pediatricians felt this initial visit should be at 6-12 months of age. Only 7.6% of them considered 36 months and above to be appropriate. Regarding the primary dentition, 99% of pediatricians knew that they are 20 teeth in number and 98% of them were of the opinion that 6 to 8 months is the initial eruption time.

Table A2: Teething was frequently observed by 77% of pediatricians and only 46.7% of them referred these children to a pediatric dentist. Eighty eight percent had rarely seen natal and neonatal teeth and very few pediatricians (6.5%) had never seen children with such teeth.

Table A3: About forty seven percent of pediatricians thought it necessary to clean a child's teeth as soon as the first tooth erupts, 24% of them thought it necessary to wait until all the teeth erupt where as 13.1% suggested to wait till the baby is 3 months old. According to 72.8% of pediatricians, brushing twice daily, i.e., once in the morning and once at night, was necessary. Around 22% felt the importance of brushing after every meal. Regarding the usage of tooth pastes, almost all pediatricians (96.7%) advised children to use tooth pastes and 81.6% were aware that the amount of tooth paste to be used should be of "pea size". While 46.7 % of them recommended regular tooth pastes, 39.1% and 11.9% of pediatricians preferred fluoride and calcium containing toothpastes, respectively.

Table A4: It was observed that 91.4% of pediatricians advised mothers to continue breast feeding beyond 12 months of age. Almost all of them (98.9%) did not advise bottle feeding, and none of the pediatricians advised night time bottle feeding. A cup of milk prior to bed time was recommended by 30% of pediatricians. Also, 94.5% of pediatricians did not advise any intake of infant formula.

Table A5: With regard to diet counseling, 79.3% of pediatricians advised it for all children and 16.3% recommended diet counseling only for children of 6 to 12 years age group. Sixty eight percent of pediatricians thought that diet counseling is very effective in reducing dental caries and 45.6%

Table 1. Awareness and referral to pediatric dentist by gynecologists & pediatricians.

Speciality	Awareness of pediatric dentist.	Referral to pediatric dentist.
Pediatrician	91.3%	100%
Gynecologist	72.5%	9.8%

Table A1. Knowledge of pediatricians regarding primary dentition.

No. of milk teeth	16 (0%)	18 (1.1%)	20 (98.9%)	32 (0%)
Age of first tooth eruption	3-5 mon (0%)	6-8 mon (97.8%)	10-12 mon (2.2%)	>12mo 0%
Age for first dental visit	6-12 months 35.8%	18 months 25.5%	24 months 31.5%	36 months 7.2%
Importance of early dental examination	Very important 52.1%	Important 41.3%	Not at all 0%	No opinion 6.5%

Table A2: Observation of teething and natal teeth by pediatricians.

Frequency of teething seen	Never (0%)	Rarely (15.2%)	Frequently (77.1%)	Often (7.7%)
Management of teething	Extraction (0%)	Do nothing (43.4%)	Refer to pediatric dentist (46.7%)	Medication (9.7%)
Frequency of observing teeth at birth.	Never (6.5%)	Rarely (88%)	Often (5.5%)	

Table A3. Recommendation of oral hygiene practice by pediatricians.

Initiation of cleaning milk teeth	When first tooth erupts (46.7%)	When all primary teeth erupt (23.9%)	Anytime (16.3%)	3 months (13.1%)
Time at which brushing should be performed	Daytime (5.5%)	Nighttime (0%)	Both (72.8%)	After every meal (21.7%)
Advising toothpaste to children	Yes (96.7%)	No (3.3%)		
Quantity of toothpaste to be used	Pea size (81.6%)	Full ribbon (8.6%)	Not answered (9.8%)	Any amount (0%)
Type of toothpaste advised	Fluoridated (39.1%)	Calcium (11.9%)	Regular (46.7%)	Never advise (2.3%)

Table A4. Recommendation of feeding practices by pediatricians.

Age for stopping breast feeding	3 months (0%)	6 months (0%)	12 months (8.6%)	>12months (91.4%)
Advising bottle feeding	Yes 1.1%	No 98.9%		
Age recommended for stopping bottle feeding	12 mo 0%	24 mo 0%	36 mo 0%	No bottle 100%
Night time bottle recommendation	Yes 0%	No 100%		
Contents advised to be given in a cup before going to sleep.	Water (58%)	Milk (30%)	Fruit juice 0%)	Soft drinks (0%)
Advising infant formula	Yes 5.5%	No 94.5%		

Table A5. Diet counseling by pediatricians.

Appropriate age for diet counseling	0-3 yrs (4.3%)	6-12yrs (16.3%)	13-18yrs (0%)	All of the above (79.3%)
Effectiveness of diet counseling in caries reduction	Very effective (68.4%)	Moderately effective (27.1%)	No effect (0%)	No opinion (4.5%)
Type of counseling offered	Limiting high sugar snacks (58.7%)	Limiting high sugar drinks (19.3%)	Recommending vitamins (9.1%)	Others (12.8%)

Table A6. Awareness of pediatricians about medicated syrups and their influence on dentition.

Purpose of prescribing medicated syrups	Nutritional supplements (26.8%)	Ill patients (69%)	Routine (0%)	None (4.2%)	
Do syrups contain Sugar?	Yes (90.2%)	No (9.8%)			
Preferred route of administration of antibiotics	Oral (92.8%)	IM 0%	IV 7.2%	Rectal 0%	
Do antibiotics affect the dentition?	Yes (85.8%)	No (14.2%)			
If yes, what are the effects	Increase in decay 1%	Decrease in decay 2.1%	Defects and Discoloration 46.1%	All of the above 30%	Not answered 20.8%

Table A7. Awareness of pediatricians about specialized treatment for children.

Is there any specialized treatment for milk teeth?	Yes 60.8%	No 39.2%
Can denture be given for children?	Yes 39.2%	No 60.8%

of them strongly agreed that diet counseling is an important aspect of oral health.

As part of diet counseling nearly sixty percent of pediatricians recommended limiting the intake of high sugar snacks, 19.3% recommended limiting drinking of high sugar liquids and 9% recommended the intake of vitamins.

Table A6: Sixty nine percent of pediatricians recommended medicated syrups only for ill children and 26.8% prescribed them as nutritional supplements. Although a large number of pediatricians (90.2%) were aware of the hidden sugars in medicated syrups, the oral route was the most preferred choice of administration for antibiotics. Forty-six percent of pediatricians were aware that these syrups cause defects and discoloration of teeth.

Table A7: Only 60.8% of pediatricians were aware of specialized treatments for milk teeth and 39.2% were aware that dentures could be given for children.

Attitude and awareness of Gynecologists

Table B1: Ninety two percent of gynecologists believed that a relationship exists between the oral health status of mother and child. The association of mother's oral health to that of her child was thought to be related to malpositioned teeth by 47.2%, to decayed teeth by 13.4% and to periodontal problems by 9.8% of gynecologists. A high percentage of gynecologists (89%) were aware that prenatal diet counseling reduces the occurrence of dental caries.

Table B1. Knowledge of gynecologists about infant oral health.

Is a mother's oral health status related to that of her child?	Yes 92.3%	No 7.7%		
If yes, how?	Decayed 13.4%	Periodontal 9.8%	Malpositioned teeth 47.2%	Not answered 29.6%
Does prenatal counseling reduce dental caries?	Yes 89%	No 7.6%	Not answered 3.4%	

Table B2: Awareness of gynecologists regarding the influence of type of delivery on child's oral health & dental affects of prenatal exposure to various agents.

Forceps delivery and relation to orofacial defects	Yes 69.2%			No 30.8%	
Mode of delivery and its relation to dental caries	Yes 6.5%	No 76.9%		Not answered 16.6%	
Will low birth weight of child affect the teeth?	Yes 42.8%	No 37.3%		No answered 19.7%	
Whether radiation has the ill effects on unborn child's oral health?	Yes 80.2%			No 14.2%	
If any drugs prescribed to pregnant mother's affects the child's teeth	Yes 100%			No 0%	
If maternal alcohol consumption and smoking affects the child's oral health	Yes 90.1%			No 9.9%	
Do nutritional supplements given to the pregnant mother have an effect on the child's teeth?	Yes 98.9%			No 1.1%	
Type of nutritional supplements prescribed	Fluorides 05	Calcium 100%	Iron 83.5%	Folic acid 68%	All of the above 48%
Does prenatal exposure of fluoride have an effect on child's teeth?	Yes 83.5%			No 15.4%	
What type of effect?	Decay 23.6%	Fluorosis 35.5%	Both 14.4?%	Not answered 26.3%	

Table B 2: Sixty nine percent of gynecologists were aware of the relation between forceps delivery and orofacial defects, but only 6.5% were aware that the mode of delivery is related to dental caries. Almost 43% knew that low birth

weight can affect child's teeth. With regard to prenatal fluoride exposure 83.5% knew it had an affect on the child's teeth, which could either be fluorosis (35.5%), decay (23.6%) or both (14.4%). The ill effects of radiation exposure, drugs, maternal alcohol consumption, and/or smoking, was known by almost all gynecologists to have an effect on the unborn's oral health. Since 99% of gynecologist knew that the intake of nutritional supplements during pregnancy affects the child's teeth, all of them prescribed calcium, 83.5% prescribed iron and 68% prescribed folic acid to the pregnant mother. A combination of these nutritional elements was prescribed by 48% of gynecologists. Only 5% prescribed prenatal fluoride supplements.

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.[2] The allied health professionals and community organizations must be involved as partners to achieve this goal.

Dental awareness of qualified medical practitioners may be inadequate with regard to knowledge about dental diseases, oral hygiene practice and speciality treatment rendered by the pediatric dentist. There are very few studies reported in literature on the oral health awareness of medical practitioners particularly, gynecologists and pediatricians. It is unclear to what degree these specialists are knowledgeable about oral health and the extent to which they may already be participating in prevention and assessment. Also, little is known about the incidence of dental problems in their practice.

Hence this study was undertaken to know the awareness and attitude of pediatricians and gynecologists towards oral health care of children, with the help of a specially designed questionnaire. The advantages of a questionnaire study are that, it allows information to be collected and analyzed easily. It also allows the concerned specialist to express freely their perception on oral health care.

In our study it was observed that most pediatricians and gynecologists are aware of pediatric dentistry as a specialty. All pediatricians make referrals to a pediatric dentist whereas, only a small number of gynecologists refer pregnant mothers to a pediatric dentist. A study by Sanchez *et al* also reported that most pediatricians recommended a pediatric dentist.[3]

In this study most pediatricians were observed to have adequate knowledge regarding number of primary teeth and age of first tooth eruption. But it was interesting to note that there is a diverse opinion among them regarding the ideal age for the first dental visit and the importance of an early dental examination. These differences could be because many of them are not familiar with AAPD recommendations for pediatric preventive dental care. Even if they are aware, they may not, because this represents a change from that which they are accustomed to. Also some pediatricians may question whether such referral for very young children is necessary because AAP has identified pediatricians as capable of providing "basic dental care for children under the age of three."[4] With an increasing number of infants and young children with special health care needs and early childhood caries it is absolutely necessary for the first dental visit to be during the first year.

Pediatricians are considered to be in a unique position to contribute to dental health of their young patients because of the early age at which children are brought to their offices and because parents accept their recommendations.[3] Although most pediatricians in this study observed teething frequently in their practice many of them did not render any treatment probably because of limited knowledge in this aspect. As expected, natal and neonatal teeth were rarely observed.

Several guidelines on health supervision for children advise pediatricians to counsel families on basic oral hygiene practices.[2] The importance of initiating oral hygiene practices before and/or during the eruption of the first tooth was not seen to be prevalent among all pediatricians. A high number (72.8%) of them give the routine advice of brushing twice a day, while only 21.7% pediatricians suggested brushing after every meal. This is similar to observations made in children and adolescents in China.[5]

In our study more number of pediatricians recommended regular tooth paste rather than a fluoridated paste. This is of concern considering the beneficial effects of fluoridated dentifrice usage. This could be due to a belief that such pastes need to be recommended by a dentist. Alternatively, some pediatricians may avoid addressing fluoride out of concern that current recommendations are no longer appropriate, given increasing exposure to fluoride from other sources.[4] It is interesting to observe that a high percentage advise using pea sized tooth paste. A study of 450 British preschool children found that regular twice daily brushing with fluoride toothpaste may do more to prevent caries than restricting sugary foods.[6]

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* found that most pediatricians tended to recommend later dates for beginning and accomplishment of weaning and were not completely in accordance with AAP guidelines.[7] This was similar to our study where weaning beyond the age of one year was highly recommended. Feeding practices vary with culture and social environment. As in many Asian countries, emphasis is given to breast feeding even in Indian families and also by health professionals, considering the multiple benefits of mother's milk.

Putting a child to bed with a bottle containing anything other than water or giving the child a sippy cup as a pacifier with milk during sleep or waking hours will lead to early

childhood caries.[8] Feeding practices go hand in hand with dietary considerations. As reported in an earlier study,[8] we observed that a large percentage of pediatricians believe diet counseling to be effective in reducing caries. Most of them advised mothers/care givers to limit the sugar intake, both in the form of snacks and drinks. Few of them prescribed vitamin intake for better oral health. There is a need for these specialists to be informed on other dietary factors.

Considering the fact that pediatricians are mainly responsible for pediatric prescriptions and to inform parents of the same, this study evaluated their perception about the use of medicated syrups. Pediatric formulations are frequently sweetened to make them more palatable and are preferred to be taken in the 'syrup' form. This could contribute to development of dental caries mainly because of the frequency of oral prescription.[9] In our study, majority of the pediatricians knew about the presence of sugar in medicated syrups and did not prescribe them as a routine. They were prescribed only when children were ill and when nutritional supplementation was necessary. However, it is of concern as the oral route was the preferred choice of administration.

The occurrence of tooth structure defects and discolorations was reported to be the most common effect of antibiotic intake in children by a considerable number of pediatricians in this study. It is important to emphasize that tetracycline represents the only group of antibiotics capable of producing dental effects, when used during the tooth formation period. These alterations are characterized by intrinsic staining of the clinical crowns and do not make teeth more susceptible to dental caries.

Some recommendations regarding oral health give emphasis to risk assessment, fluoride use and antibacterial therapy, rather than diet counseling.[6] However the increased understanding of caries etiology, its prevention and management have resulted in continued integration of dietary recommendation and nutritional counseling as part of a comprehensive program.[6] According to Holloway and Clarkson, only 58% of pediatricians perceived that offering nutritional counseling to parents is beneficial to the child.[10]

In spite of being aware of specialized treatment available for the primary teeth, a large number of pediatricians did not know that dentures could be given to children. This is important because they may come across edentulous patients (as in syndromes and certain anomalies) in their practice and may oversee the need to make referrals at the appropriate time.

From this study it appears that gynecologists do not understand how the oral health of the mother affects the oral health of the child. Although this relationship is specifically observed with regard to maternal and infant caries levels, very few gynecologists were aware of it. Almost 50% of the gynecologists were of the opinion that the mother's oral health affects only the position of the child's teeth.

Although many gynecologists felt that forceps delivery does cause orofacial defects, it is matter of concern that about 30% of them were not of the same opinion. There exists an urgent need to make gynecologist aware of the significance of mode of delivery not only on oro-facial development but also on risk of microbial inoculation into the oral cavity of the newborn.

The birth weight of an infant /newborn is always recorded and is considered for development, feeding, nutritional requirements and so on. But the effects of low birth weight on the dental health of a child are not known by a considerable percentage of gynecologists.

As expected, a large number of gynecologists were aware of the ill effects of radiation, drugs, maternal consumption of alcohol and smoking on the unborn child. Although they routinely prescribed nutritional supplements, none of them prescribed prenatal fluoride supplements. This could probably be due to unavailability of fluoride supplements per se or even due to their limited knowledge in this regard.

Also, in a country like India, where there are alternative sources available for drinking water, the estimation of individual fluoride intake becomes difficult. Gynecologists need to keep themselves regularly informed on recent protocols and guidelines concerning fluoride supplementation and dental health.

From this study there seems to be a difference between pediatricians and gynecologists with regard to referrals of their patients to a pediatric dentist. This finding elicits concern, because both specialties provide primary care for children.

This study indicates that pediatricians do firmly believe that they have an important role in the promotion of oral health and are already involved in providing anticipatory guidance on oral health issues.

Although the majority of pediatricians encounter dental problems on a regular basis and are involved in the prevention of dental problems, this survey identified some barriers that may restrict their effectiveness in the promotion of oral health in their practice. Firstly knowledge of basic oral health –related issues are limited. Secondly, recent recommendations may not be strictly followed by all pediatricians. Other studies have documented similar limitations in dental knowledge among pediatricians.[3,4] Few gynecologists were aware that caries is a transmissible infectious disease from mother to child, although this information has been disseminated in the dental literature for more than 10 years.

There are certain limitations to this study. As, with any questionnaire survey, there is the potential for responder bias. Although the response rate of 60% is consistent with other surveys, it is possible that the non respondents had different experiences and opinions regarding oral health in their practice. In an effort to give a more appropriate response, there is a possibility of these specialists having overestimated their participation in pediatric oral health activities. Moreover this survey was kept as short as possible, limiting the use of open-ended questions that could have enabled us to obtain further details regarding their awareness of child oral health. Further studies with more questions structured to

elicit in depth information need to be undertaken.

By increasing their involvement in oral health care, during prenatal counseling and child care visits, both gynecologists and pediatricians can play an important role in improving the dental health of their patients. This is particularly important in developing countries with semi-urban and rural populations, where access to professional dental care is difficult to obtain. Pediatricians and gynecologists must ensure that all their patients receive timely preventive and restorative dental care. However, they can never replace the care provided by the pediatric dentists.

There is a need for more active participation and involvement of the allied medical specialists: namely pediatricians and gynecologists, in continuing education programs and forums on pediatric dentistry.

CONCLUSIONS

From this study, it was seen that the attitude and awareness of gynecologists and pediatricians towards oral health care of children was not satisfactory and needs to be addressed.

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