

Knowledge, approach and recommendations of paediatricians for preventing early childhood caries in children

Sonal S. Gaikwad^{1,*}, Vinaya K. Kulkarni², Divya K. Agarwal³, Heta Rajawadha⁴, Gadhe D. Eknath⁵

^{1,3,4,5}PG Student, ²Professor & HOD, Dept. of Paedodontics, SMBT Dental College, Sangamner, Maharashtra, India

***Corresponding Author:**

Email: dr.gaikwadsonal@gmail.com

Abstract

Introduction: Childhood is an important stage in life and Early Childhood Caries (ECC) is the most common disease of this phase. Unlike paediatric dentists, paediatricians see the majority of children periodically during these first years of life and have the opportunity to sensitize parents to the oral health of their children and to prevent ECC.

Aim and Objectives: To assess Paediatrician's knowledge, approach and preventive care recommendations for ECC in children.

Materials and Method: A cross-sectional survey was carried out among 36 paediatricians selected randomly. A close ended validated questionnaire was solved by all the selected paediatricians. It had questions regarding the knowledge about ECC, child's first dental visit and anticipatory guidance given to parents. This study also evaluated the recommendation for patients to regular dental visits.

Results: Majority of paediatricians (83.3%) were aware of ECC and practiced regular oral screening of their patients. They recommend for the first dental visit at around 1 year of age. Among 36 Paediatricians 33 (91.7%) considered tooth brushing, regular dental check-up, control over sugary and sticky in between meal snacks as the measures for the prevention of ECC and 83.3% of the paediatricians agreed that syrupy medications containing sucrose as a potential risk factor. However, majority of them didn't recommend any fluoride supplements in their daily practice.

Conclusions: Paediatricians were well aware of ECC. They consider it to be the responsibility of the general practitioner, paediatrician, general dentist and the paediatric dentist together for the spread of awareness and prevention of ECC.

Keywords: Child Oral health, Early Childhood Caries, paediatrician, preventive measures.

Introduction

Early childhood caries (ECC) is a major threat to oral health in infants and children as reported by center for disease control and prevention and the National institute of health.¹ Early childhood caries and the more severe form of ECC (S-ECC) are particularly virulent forms of caries, beginning soon after tooth eruption; developing on smooth surfaces, progressing rapidly, and having a lasting detrimental impact on the dentition.² There occurs a sudden, rapid, and almost uncontrollable destruction of teeth.³ It is a multi-factorial disease rather than its principal etiology being feeding practices. According to the American Academy of Pediatric Dentistry (AAPD), ECC can be defined as "the presence of one or more decayed, missing (resulting from caries), or filled tooth surface in any primary tooth in a child of 71 months age or younger to it."⁴

ECC is one of the rapidly emerging oral health problems requiring anticipatory guidance to the parents. For paediatricians to address competently child oral health issues, they must have adequate knowledge of the disease process, risk factors, signs, symptoms, prevention, and intervention strategies.⁵ Nearly, all children have a medical visit by their first birthday, which when compared to the dental visit gives a ratio of 250:1. For this reason, the medical home offers an excellent setting to deliver timely preventive oral health care.⁵ Because of the frequent contact of the paediatricians with families for routine preventive visits

in the child's first few years of life, they are in an ideal and unique position to advice families about the prevention of oral diseases in their children.⁶

Regular dental visits are required to determine if there is a need for prevention or treatment of ECC.⁷ This disease can be prevented or controlled by oral health care professionals for children at very early age. Hence, it would be appropriate to have oral health education developed for the parents or guardians with the guidance of oral health care professionals. American Academy of Pediatrics (AAP) published a policy statement in May 2003 addressing the role that paediatricians can play in the oral health risk assessment of children.⁸ The policy statement suggests that "paediatricians and pediatric health care professionals should develop the knowledge base to perform oral health risk assessments on all patients beginning at 6 months of age." In addition to the AAP, the importance of oral health has been emphasized by the Surgeon General in his report Oral Health in America and the Centers for Disease Control and Prevention in Healthy People 2010.⁹

To our knowledge, there is little published literature that focuses on the extent to which paediatricians participate, specifically as to their knowledge, attitudes, and practices with regard to oral health preventive programs. Clearly, such studies seem important because the attitude and the knowledge of paediatricians may enhance or impede the implementation and eventual success of a oral health

preventive programs. Therefore, the purpose of this survey was to evaluate the paediatrician's knowledge, approach and recommendations for preventing Early Childhood Caries in children.

Materials and Method

Ethical clearance was obtained from the Institutional Review Board before commencing the study. Paediatricians were assured of confidentiality and informed consent was obtained from those who agreed to participate in the study. A cross-sectional study was carried out among 36 paediatricians. A close ended validated questionnaire containing 20 questions was solved by all the selected paediatricians.

It had questions regarding the years of experience, their daily practice of screening oral cavity, awareness regarding ECC and at which age would they recommend a child's first dental visit. Other factors such as the type of recommendations for the prevention of ECC, dietary recommendations, provision of anticipatory guidance were included. The knowledge of breast feeding duration, adverse effects of prolonged bottle or breastfeeding at night, knowledge of weaning period time, recommendation given regarding fluoride supplements and their view of sugar containing syrup as potential risk factor for ECC, the recommended age to start brushing the child's teeth, were also included. The paediatrician's view about who is responsible for spreading awareness & preventive measures for ECC were also interviewed.

Descriptive statistical analysis has been carried out in the present study. Significance is assessed at 5% level of significance. Chi square test was used for comparison of percentages of paediatricians who agreed to the asked questions and who didn't. The Statistical software, namely, Statistical package for the social sciences version 19.0 (SPSS Pvt. Ltd., Chicago, IL, USA) was used.

Results

A total of 97.2% of paediatricians screened the oral cavity of children as a routine basis. (Table 1) On evaluation it was found that 83.3% of the paediatricians were aware of ECC (Graph 1) which was statistically highly significant ($p < 0.001$). The child's first dental visit was recommended at 1 year of age by a significantly higher number of paediatricians (55.6%) (Graph 2). There was a unanimous recommendation regarding the prevention of ECC considering many factors such as tooth brushing, home oral hygiene maintenance, regular dental checkup, control over sugary and sticky food in between meals, avoidance of poor parenting practices and weaning at proper time. A total of 91.7% paediatricians agreed to all these factors collectively for preventing ECC in children (Table 2). Dietary recommendations given by the paediatricians were also evaluated. It was found that 47.1% of the paediatricians recommended 2 meals and 2 in-between

meal snacking which was statistically highly significant (Table 3).

The duration of breast feeding was upto 1 year by 44.4% of the paediatricians (Graph 3). All of the paediatricians were aware about the adverse effects of prolonged bottle or breastfeeding at night. (Table 4). Knowledge of the paediatricians about the weaning time period for the children to prevent ECC was evaluated and found that 86.1% of them stated 6 months to 1 year as the weaning time period (Graph 4). Majority of them didn't recommend night time bottle feeding (97.2%). Provision of anticipatory guidance to the parents was recommended by 61.1% of the paediatricians (Graph 5). Recommendations for fluoride supplements was also evaluated and found that 52.8% of paediatricians don't recommend any fluoride supplements or at most 33.3% of them refer the patients to a dentist (Table 5). Majority of the paediatricians were aware about the sugar content in syrupy medicines prescribed (83.3%) (Table 6).

The recommended age of starting brushing the teeth was given as 1 year of age by most of the paediatricians (72.2%) (Graph 6). Paediatricians felt that it is the responsibility of paediatrician, general practitioner, paediatric dentist and the general dentist collectively for the prevention of ECC

Discussion

Dental caries is still a major global public health problem despite the improvements in oral health in high income countries. The rate of carious lesion progression can be controlled through various caries control measures such as restricted ingestion of refined sugars, disorganization of the biofilm, application of topical fluorides, and restoration of the cavitated carious lesions. Paediatrician play a very crucial role in child's oral health, basically because of two aspects: first because the child usually visits the paediatrician before going to the pedodontist, and second because of the respect and authority that the paediatricians exercise on parents.¹⁰

It is a common agreement amongst AAPD, AAP and ADA that early dental screening is the key to improve infant oral healthcare and prevent ECC.¹¹ In the present study, the recommended age of starting brushing child's teeth, was given as 1 year of age by most of the paediatricians. However, AAPD policy recommends brushing a child's teeth soon after eruption of first primary tooth but not later than 12 months of age. The policy also focuses on the specific preventive strategies like diet counseling, optimal use of fluoride and providing anticipatory guidance.¹²

The present study found that paediatricians were knowledgeable about many aspects of ECC however, low referral rates were observed. The attitude of the paediatricians need to be readdressed so that these referral rates are raised to the pedodontists during early life of these children. The majority of paediatricians

reported that they play an important role and are involved in promoting the oral health of children in their practices; however, very few paediatricians recommended the first dental visit to be before one year of age and more than 55.6% of the paediatricians in the present study; recommended child's first dental visit at 1 year of age. Similar studies by Sodani et al.⁴, Bozorgmehr et al.⁷ and Dela Coleta et al.¹⁰ have reported that 50%, 61.7% and 96% of pediatricians agreed to recommend child's first dental visit by 1 year of age respectively.

In the present study, only one third of the paediatricians, (33.3%) actually referred to a dentist for a routine check up in absence of any dental diseases. This was in accordance to another study which stated that low referral rates for children with disease and prior to disease onset but at elevated risk, indicate interventions are needed to help physicians improve the dental referral rates.¹³ The pediatric primary care providers referred only 70% of the children they identified with evidence of dental disease.¹⁴ Reasons for low referral rates among the paediatricians and the other practical problems needs to be investigated.

Early visits to the dentist allow preventive measures, early diagnosis, and orientations regarding proper diet and oral hygiene as well as the prevention of dental trauma and nonnutritive sucking habits. For such co-ordinated events to occur, however, it is important to have an effective, efficient and mutual team work among healthcare professionals in the fields of dentistry and medicine to ensure the care of pediatric patients. Majority of paediatricians (83.3%) were aware of ECC and practiced regular oral screening of their patients. Another study done in Bangalore by Murthy et al reported that paediatricians had good attitude and practices, but had moderate knowledge and lacked proper awareness about dental caries.¹⁵

Paediatricians should inspect the oral cavity of the child while examining the oropharynx and nasopharynx. It is necessary for the diagnosis of the

pathologies affecting children, particularly oral diseases. Similar to the findings reported by **Bozorgmehr et al.**,⁷ **Soares et al.**,¹⁶ and **Balaban et al.**,¹⁷ we found that almost all of the pediatricians in the present study routinely examined the oral cavity of their patients. Pediatricians routinely examine oral cavity for identifying any signs of systemic illness rather than finding any dental problem; this might be the reason why almost all of them reported about examining the oral cavity regularly. There has been very little literature published regarding the knowledge of paediatricians and their recommendations to parents for the prevention of ECC. Therefore, more combined efforts in a leading direction with a standardized universal protocol has to be initiated taking factors such as child's first dental visit, oral hygiene maintenance, breast and bottle feeding duration, weaning habits, anticipatory guidance, etc.. into consideration. According to the present study statistics; combined efforts are needed in the form of educative healthcare programs for the paediatricians, wherein they are addressed regarding early childhood dental problems, preventive strategies, knowledge about proper weaning habits and timely referral to the pedodontists for comprehensive oral health care of children.

In this study; among 36 paediatricians, 33 (91.7%) considered tooth brushing, regular dental check-up, control over sugary and sticky in between meal snacks as the measures for the prevention of ECC. Majority of the paediatricians (83.3%) agreed that syrupy medications containing sucrose as a potential risk factor.

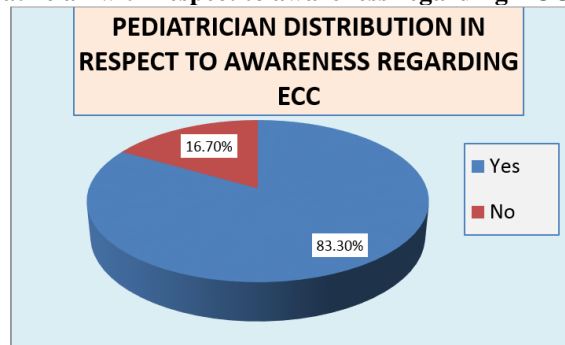
The use of fluoride dentifrices, mouth rinses, etc. is associated with the disorganization of the dental biofilm buildup.⁴ Majority of the paediatrician's had the knowledge of fluorides in the prevention of dental caries. However, majority of them (52.8%) didn't recommend any fluoride supplements in their daily practice.

Table 1: Distribution of the study population (pediatricians) according to their daily practice of screening oral cavity

Options	No.	%	Chi square value	P value, Significance
1. Yes	35	97.2	32.11	<0.001, Highly significant
2. No	1	2.8		
Total	36	100.0		

p < 0.05 – significant; p < 0.001 – highly significant

Graph 1: Distribution of pediatrician with respect to awareness regarding ECC



Graph 2: Paediatricians recommendations for age of child's first dental visit

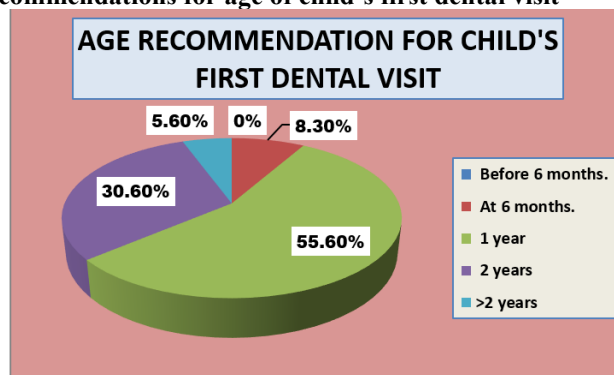


Table 2: Distribution of the study population (pediatricians) on type of recommendations provided by them for the prevention of ECC

Options	No.	%	Chi square value	P value, Significance
1. Tooth Brushing & home oral hygiene maintenance	0	0	55.167	<0.001, highly significant
2. Regular dental check up	0	0		
3. Control over sugary & sticky food in between meals.	2	5.6		
4. Avoidance of poor parenting practices.	0	0		
5. Weaning at proper time.	1	2.8		
6. All of the above with equal importance	33	91.7		
Total	36	100.0		

p < 0.05 – significant; p < 0.001 – highly significant

Table 3: Distribution of the study population (pediatricians) on the type of dietary recommendation

Options	No.	%	Chi square value	P value, Significance
1. 2 meals & 2 in between meal snacking	17	47.1	17.11	0.001, significant
2. 3 meals & 1 in between meal snacking	13	36.1		
3. Specification on consumption of meals & no specifications for in between meal snacking.	4	11.1		
4. Strict prohibition of in between meal snacking	2	5.6		
Total	36	100.0		

p < 0.05 – significant; p < 0.001 – highly significant

Graph 3: Paediatrician’s opinion regarding duration of breast feeding

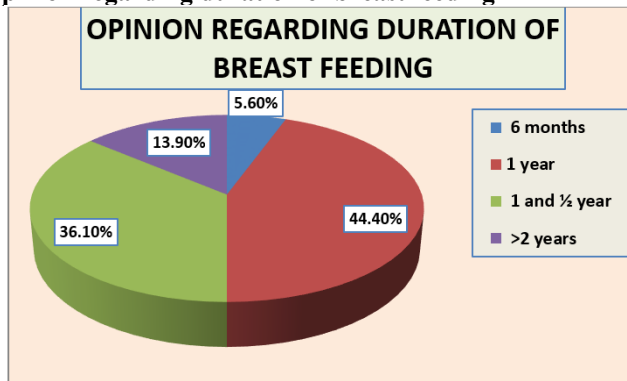


Table 4: Distribution of the study population (paediatricians) in respect to their awareness about the adverse effects of prolonged bottle or breastfeeding at night

Options	No.	%	Chi square value	P value, Significance
1. Yes	36	100	0.0	1.0
2. No	0	0		
Total	36	100.0		

p < 0.05 – significant; p < 0.001 – highly significant

Graph 4: Paediatrician knowledge of weaning period time

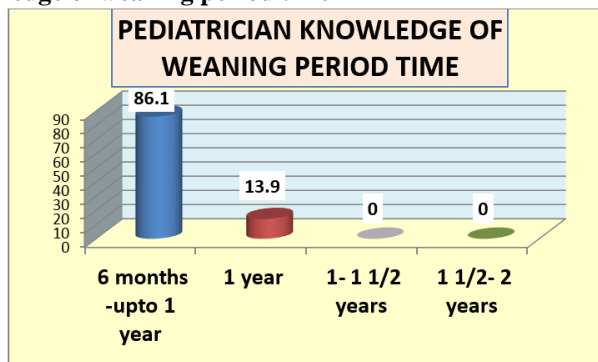


Table 5: Distribution of the study population (paediatricians) on type of recommendation given regarding fluoride supplements

Options	No.	%	Chi square value	P value, Significance
1. No, I do not recommend any fluoride supplements.	19	52.8	8.167	0.017, significant
2. Refer to a dentist	12	33.3		
3. Advise a topical or home usage in the form of toothpastes or dentrifices	5	13.9		
4. Systemic + Topical usage is advised by me	0	0		
Total	36	100.0		

p < 0.05 – significant; p < 0.001 – highly significant

Graph 5: Paediatrician’s view regarding provision of anticipatory guidance regarding ECC to the parents

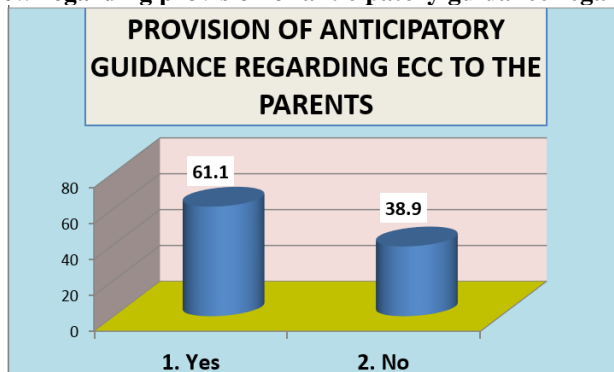
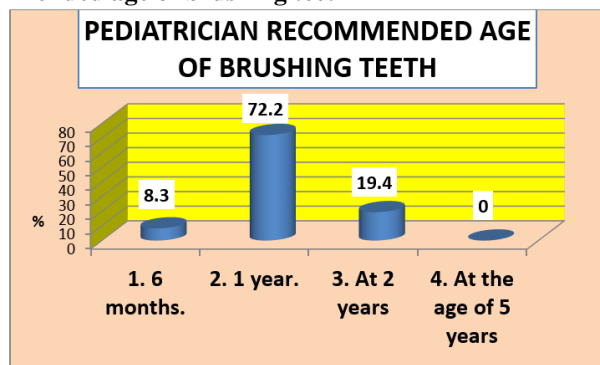


Table 6: Distribution of the study population (paediatricians) on their view of Sugar containing syrup as potential risk factor for ECC

Options	No.	%	Chi square value	P value, Significance
1. Agree	30	83.3	16.0	<0.001, highly significant
2. Disagree	6	16.7		
Total	36	100.0		

p < 0.05 – significant; p < 0.001 – highly significant

Graph 6: Paediatrician recommended age of brushing teeth



Conclusion

The paediatricians knowledge, approach and attitude regarding ECC was assessed in the present study. It was found that they were well aware about many aspects of ECC. However, low referral rates were seen in clinical practice. The paediatricians need to be readdressed regarding the prevention of ECC in children, by changing their attitude and timely referral of children for dental check up by the pedodontists. The barriers in this endeavour need to further investigated using combined efforts. The paediatricians considered it to be the combined, co-ordinated responsibility of the general practitioner, paediatrician, general dentist and the paediatric dentist together, for the spread of awareness and prevention of ECC. The sample size is small to make any definitive conclusions. Hence, further research in this perspective to improve child’s oral health and prevent ECC needs to be carried out.

References

1. US Department of Health and Human Services. Oral health in America: Report of surgeon general. NIH publication 2000;00-4713.
2. Nowak AJ, Warren JJ. Infant oral health and oral habits. *Pediatr Clin North Am* 2000;47(5):1043-1066.
3. Schroth RJ, Smith PJ, Whalen JC, Lekic C, Moffatt ME. Prevalence of caries among preschool-aged children in a Northern Manitoba community. *J Can Dent Assoc* 2005;71:27.
4. Sodani V, Sujan SG, Shah HG, Dave B. Anticipatory guidance regarding early childhood caries (ECC) among health professionals in Vadodara city, Gujarat. *J Adv Oral Res* 2011;2:77-9.
5. Long CM, Quinonez RB, Beil HA, Close K, Myers LP, Vann WF Jr., et al. Paediatricians’ assessments of caries risk and need for a dental evaluation in preschool aged children. *BMC Pediatr* 2012;12:49.
6. Di Giuseppe G, Nobile CG, Marinelli A, Angelillo IF. Knowledge, attitude and practices of paediatricians regarding the prevention of oral diseases in Italy. *BMC Public Health* 2006;6:176.
7. Bozorgmehr E, Mohammadi TM, Hajizamani A, Vahidi A, Khajoe F. Knowledge, attitude and practices of

- pediatricians about children's oral health. *J Oral Health Oral Epidemiol* 2012;1:93-8.
8. American Academy of Pediatrics. Oral health risk assessment timing and establishment of the dental home. *Pediatrics*. 2003;111:1113-1116.
 9. US Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
 10. DelaColeta KE, Pereira Neto JS, Araujo Magnani MB, Nouer DF. The role pediatrician in promoting oral health. *Braz J Oral Sci* 2005;4:904-10.
 11. American Academy of Pediatric Dentistry. Clinical guidelines. Guideline on Infant Oral Health Care. *Pediatr Dent Reference manual* 36(614/15):141-145.
 12. Section on Pediatric Dentistry Preventive Oral Health Intervention for Pediatricians. *Pediatrics* 2008;122(6):1387-1394.
 13. C Marshall Long, Rocio B Quinonez et al: Pediatricians' assessments of caries risk and need for a dental evaluation in preschool aged children: *BMC Pediatrics* 2012, 12:49.
 14. Kate M. Pierce et al: Accuracy of Pediatric Primary Care Providers' Screening and Referral for Early Childhood Caries: *PEDIATRICS* Vol. 109 No. 5 May 2002.
 15. Murthy GA, Mohandas U: The knowledge, attitude and practice in prevention of dental caries amongst pediatricians in Bangalore: A cross-sectional study: *J Indian Soc. Pedod& Prevent Dent Apr - June 2010 Issue 2 Vol 28*.
 16. Soares IM, Borges AM, Moura A, Deus M, Batista S, Marcoeli S. Conduct of pediatricians in relation to the oral health of children. *Rev Odontol UNESP* 2013;42:266-72.
 17. Balaban R, Aguiar CM, da Silva Araújo AC, Dias Filho EB. Knowledge of paediatricians regarding child oral health. *Int J Paediatr Dent* 2012;22:286-91.

Questionnaire

Early Childhood Caries: It is defined as the condition in which there is a presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces" in any primary tooth in a child 71 months of age or younger.

1. How many years practicing experience do you have?
 - a. <5 yrs
 - b. 5-10 yrs
 - c. >10 yrs
2. Do you in your daily practice screen patients oral cavity?
 - a. Yes
 - b. No
3. Are you aware of a condition known as "Early Childhood Caries" (hence forth referred as ECC) prevalent in children?
 - a. Yes
 - b. No
4. If answer to above question is Yes, then how often do you see this condition in past practicing experience? What is the age group?
 - a. Very often a. 1-3yrs
 - b. Every day b. 2-6yrs
 - c. Very rarely c. 3-5yrs
 - d. Never upto now in my practice d. 2-4 yrs
5. At what age will you recommend a child's first dental visit?
 - a. Before 6 months.
 - b. At 6 months.
 - c. 1 year
 - d. 2 years
 - e. >2 years
6. What recommendations you provide for the prevention of ECC?
 - a. Tooth Brushing & home oral hygiene maintenance
 - b. Regular dental check up
 - c. Control over sugary & sticky food in between meals.
 - d. Avoidance of poor parenting practices.
 - e. Weaning at proper time.
 - f. All of the above with equal importance.
7. Do you provide diet and nutrition counseling to the parents? If yes then:-
In dietary recommendations what do you emphasize on?
 - a. Diet
 - b. Nutritional value
 - c. Caloric value
 - d. In between meal snacking.

- e. All of them equally.
8. In your daily practice, regarding the diet what recommendations you provide?
- 2 meals & 2 in between meal snacking.
 - 3 meals & 1 in between meal snacking.
 - Specification on consumption of meals & no specifications for in between meal snacking.
 - Strict prohibition of in between meal snacking.
9. Do you in your practice discuss the importance of overall oral health of children with their parents?
- Yes
 - No
10. Do you in your practice provide the parents with anticipatory guidance regarding ECC?
- Yes
 - No
11. What is your opinion regarding the duration of breast feeding in children?
- 6 months
 - 1 year
 - 1 and ½ year
 - 2 years
12. Are you aware about the adverse effects of prolonged bottle or breastfeeding at night?
- Yes
 - No
13. Weaning time period according to should be:-
- 6 months -1 year.
 - 1 year
 - 1- 1/2 years
 - 2 years
14. Do you advise bottle feeding at night?
- Yes
 - No
15. If answer to above question is YES, then what are the advisable contents?
- Milk without sugar.
 - Milk with sugar.
 - Plain warm water.
 - Fruit Juices.
16. What recommendations you give regarding fluoride supplements?
- No I do not recommend any fluoride supplements.
 - Refer to a dentist.
 - Advise a topical or home usage in the form of toothpastes or dentrifices.
 - Systemic + Topical usage is advised by me.
17. Are you aware of the type & content of sugar in the sugary medicines you prescribe? If YES then which type of sugar you prefer among the following?
- Fermentable Sugar
 - Sugar Substitutes
 - No I don't prefer sugar.
18. Sugar syrups are considered as a potential risk factor for ECC:-
- Agree
 - Disagree
19. What age do you recommend the parents to start brushing teeth of the children?
- 6 months.
 - 1 year.
 - At 2 years.

- d. At the age of 5 years.
20. Who according to you is responsible for spreading awareness & preventive measures for ECC?
- a. Paediatrician
 - b. General Practitioner
 - c. Paediatric Dentist
 - d. General Dentist
 - e. All of them with equal importance.