

RESEARCH AND REVIEWS: JOURNAL OF DENTAL SCIENCES

Knowledge, Attitude and Awareness amongst Pediatricians from Bangalore Regarding Various Preventive Dental Aids in Children: A Cross Sectional Study.

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Research Article

Received: 07/07/2014

Revised : 24/07/2014

Accepted: 28/07/2014

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Keywords: Pediatricians, Pit and Fissure Sealants, Topical fluorides, Xylitol chewing gums, Tooth mousse

ABSTRACT

Children suffer from dental caries and if left untreated, this leads to problems with eating, speaking, etc. In dentistry, the clinical practice is directed towards attitude that promotes oral health; and it is here that Pediatricians occupy a privileged position, since they are the first people to check and monitor the child's health at a very early age. To assess Knowledge, Attitude, and Awareness of Pediatricians regarding the use of various preventive dental aids in children. A cross sectional study was carried out involving 205 Pediatricians across Bangalore participated by filling out a specially designed questionnaire. All the Pediatricians, 100% responded positively regarding the use of tongue cleaners, 98.5% regarding the use of xylitol chewing gums, 91.2% regarding the use of dental floss, whereas only 69.8% were aware of the use of tooth gauze, 65.9% corresponded to the use of breath strips, 64.9% responded to the use of fluoride mouthwashes and only 57.1% were aware of the use of modified tooth brushes. It is important to develop oral health information programmes to Pediatricians as they are in a unique position to contribute to dental health of young patients since the children are brought to their offices at an early age as well as parents accept their recommendations easily. Therefore it is imperative that the Pediatricians need to update themselves on various dental aids for use in children.

INTRODUCTION

Contemporary guidelines for oral disease management recommend early professional intervention so that effects of oral diseases can be reduced or eliminated [1,2]. The specialists in child care such as Pediatricians examine children many times during the first two years of life; and it is during these visits the child's developmental progress including cognitive development as well as necessary immunization and guidance regarding proper nutrition is advised by Pediatricians [3]. Preventive counselling from dental view point is rarely included as part of these visits [4].

Pediatricians are considered to be in a unique position to contribute towards the dental health of young patients as it is during this period that children are brought to their offices as well as parents easily accept their recommendations [5]; several studies have indicated the important role of Pediatricians in preventing oral diseases [6,7].

Many a times the Pediatricians are at cross roads regarding various dental information and treatment modalities in the young population. The Pediatricians play an important role in seeing the children at young age and it is here that they can play a much bigger role towards caries prevention and preventive dental care in children other than fluoride supplementation.

The American Academy Pediatric Dentistry [AAPD] [8] recommends that infant oral health care should begin with oral health counselling for the new born's parents and should include oral examination and preventive health education within six months of eruption of 1st primary tooth [not later than 12 months of age]. Recommendations regarding periodicity of examination among preventive dental services and oral treatment for children have been established [8]; but there is scant information regarding the knowledge that Pediatricians have regarding these recommendations. It is further hypothesized that Pediatricians who are involved in direct child primary care are not well informed about some aspects of preventive dental care and one of the reasons attributed is the lack of information they receive during their speciality training. Therefore the present study was aimed at assessing the Knowledge, Attitude and Practises of Pediatricians from Bangalore regarding the use of various dental aids in children.

METHODS

A randomized cross sectional questionnaire study was conducted among Pediatricians from Bangalore city. Our study comprised of 205 Pediatricians from both teaching hospitals and also private practitioners.

The Pediatricians were randomly selected, and the participant ones who were attached to teaching hospitals were prioritized, followed by private practitioners and also prior permission was obtained from concerned teaching hospitals so that these Pediatricians could answer the questionnaires. The questionnaires (table1) were related to child oral preventive dental aids which included Pit and Fissure Sealants Restorations, Topical Fluoride applications, Tooth Gauze, Modified Tooth Brushes, use of Tongue Cleaners, Flossing Aids, Fluoride Mouthwashes, Breath Strips, Xylitol Chewing Gums and Tooth Mousse.

The questionnaire was approved by the ethical committee of Krishnadevaraya College of Dental Sciences Bangalore; and a letter explaining the purpose of study accompanied each questionnaire. Further, confidentiality was maintained throughout the study.

RESULTS

Our study comprised of 205 Pediatricians across Bangalore; who were randomly selected and all participated in study questionnaires.(Table 1)

Question 1: Awareness of pit and fissure restoration in children

All the Pediatricians were unaware regarding the use of pit and fissure sealants use in children. Generally they had limited knowledge regarding various restorative materials for use in pediatric population.

Question 2: Awareness about topical fluoride application in children

98.5% of the Pediatricians were aware of topical fluoride application in children; and further 99% of the Pediatricians were not aware as to when a child has to be subjected for use of topical fluorides. Only 1% of the Pediatricians thought that repeated application of fluoride was beneficial to patients; and all were negative in their views on beneficial effects of fluorides for patients with reduced salivary flow.

Question 3: Awareness about use of tooth gauze in children

30.2% of the Pediatricians were aware about the beneficial use of tooth gauze in children and 69.8% of the Pediatricians were not aware about the use of tooth gauze.18% agreed that the tooth gauze can be used for both massaging the gums, cleaning buccal mucosa and tongue, where as 8.3% agreed that tooth gauze can be used for cleaning only buccal mucosa and tongue and 3.9% for massaging only the gums.

Question 4: Awareness of modified tooth brush

57.1% the Pediatricians were not aware of modified tooth brushes and 33.7% agreed with use of either sonic tooth brush or tooth brush with modified handles.

Question 5: Awareness about use of tongue cleaners

All the Pediatricians recommended tongue cleaning routinely for their patients. Amongst all the Pediatricians, 85.4% recommended the stainless steel type; and 14.6% recommended either the plastic or stainless steel type.

Question 6: Awareness about use of dental floss

91.2% of the Pediatricians were aware of fluoridated dental floss; 78% of them recommended its use twice daily, and 16.6% of them felt it should be used at least once daily.

Question 7: Awareness about use of fluoride mouthwashes

All the Pediatricians were aware about the use of fluoride mouthwashes for children. 64.9% of them recommended its use for children above 6yrs, whereas 28.3% felt it can be used for children below 6yrs. Further 79% of them felt these mouthwashes can be used for patients with dry mouth, patients undergoing radiation therapy and chemotherapy. As many as 55.6% of the Pediatricians did not recommend mouthwashes for children with dental fluorosis.

Question 8: Awareness about breath strips:

65.9% of the Pediatricians were aware about breath strips but were not sure as to whether it could be used as a preventive aid in children

Question 9: Awareness about xylitol chewing gums

98.5 % of the Pediatricians were well aware about the use of xylitol chewing gums and also the fact that xylitol chewing gums were recommended for children above the age of 4yrs and 81% of them were aware of the fact that the use of these chewing gums helped in the prevention of dental caries.

Question 10: Awareness about use of tooth mousse

Most of the Pediatricians (95.1%) were not aware about the use of tooth mousse in children and only 1.5% corresponded to its cost.

Table 1: Questionnaire of Awareness regarding various preventive dental aids in children

1. Awareness of pit and fissure sealants restorations in children

- a) Are you aware of pit and fissure sealants in children? Y/ N
- b) If your choice is yes for the above question please proceed to answer the following sub- question.
 - i) At what age do you recommend pit and fissure sealants for primary dentition?
a) 1-2yrs b) < 3yrs c) 3-4yr
 - ii) At what age do you recommend pit and fissure sealants for permanent dentition
a) 6yrs b) 8yrs c) 10yr

2. Awareness about topical fluoride application [Colgate -Duraphat®] in children

- a) Are you aware of topical fluoride application in children? Y/ N
- b) If your choice is yes for the above question please proceed to answer the following sub-question
 - i) At what age do you recommend the use of topical fluorides in children?
a) 3yrs b) 4yrs c) 5yrs
 - ii) Do you think repeated application is beneficial to patients ? Y/N
 - iii) Do you think fluoride application is beneficial for patients with reduced salivary flow Y /N

3. Awareness about use of tooth gauze in children

- a) Are you aware of tooth gauze? Y/N
- b) If your choice is yes for the above question please proceed to answer the following sub- question.

- i) Where do you recommend its use?
- a) For massaging gums
- b) For cleaning buccal mucosa, tongue
- c) Both

4. Awareness of modified tooth brush [ORAL –B electronic tooth brush®]

- a) Are you aware of modified tooth brush? Y/N
- b) If your choice is yes for the above question please proceed to answer the following sub- question.
 - i) Which type of modified tooth brush do you recommend?
 - a) Tooth brush with modified handles
 - b) Sonic tooth brush
 - c) Both

5. Awareness about use of tongue cleaners

- a) Do you recommend tongue cleaning routinely for your patients? Y/N
- b) Which type do you recommend?
 - i) plastic ii) stainless steel iii) any

6. Awareness about use of flossing aids

- a) Are you aware of fluoridated dental floss?Y/N
- b) How many times in a day do you recommend?
 - i) At least once
 - ii) Twice daily

7. Awareness about use of fluoride mouthwashes [Fluorigard – Colgate ®]

- a.) At what age do you recommend fluoride mouthwash?
 - i)<6yrs ii) > 6yrs iii) does not depend on age
- b.) Do you recommend fluoride mouthwash in-
 - i)Patients with dry mouth
 - ii)Patients undergoing radiation therapy, chemotherapy
 - iii) Both
- c.) Do you think fluoride mouthwash are advisable for children with dental fluorosis Y/N

8. Awareness about breath strips[Listerine – breath strips®]

- a) Are you aware of breath strips? Y/N

9. Awareness about xylitol chewing gums [ORBIT, XYLITOL, WRIGLEYS]

- a)Are aware of xylitol chewing gums? Y/N
- b)At what age do you recommend xylitol chewing gums?
 - i)< 5yrs ii) > 5yrs
- c)Are you aware about reduction of dental caries by using xylitol chewing gums? Y/N

10. Awareness about tooth mousse [GC Tooth mousse ®]

- a)Are you aware of tooth mousse paste for children?Y/N
- b)Are you aware of cost of tooth mousse?Y/N

Table 2: Awareness regarding various preventive dental aids in children

Question 1 Awareness of pit and fissure sealants restorations in children	Number of patients (n=205)	%
Are you aware of pit and fissure sealants in children.		
• Yes	0	0.0
• No	205	100.0
If your choice is yes for the above question please proceed to answer the following sub- question.		
At what age do you recommend pit and fissure sealants for primary dentition?		
• 1-2yrs	0	0.0
• <3yrs	0	0.0
• 3-4yrs	0	0.0
At what age do you recommend pit and fissure sealants for permanent dentition?		
• 6yrs	0	0.0
• 8yrs	0	0.0
Question 2 Awareness about topical fluoride application [Colgate - Duraphat®] in children	No. of patients (n=205)	%
Are you aware of topical fluoride application in children		
• Yes	202	98.5
• No	3	1.5
If your choice is yes for the above question please proceed to answer the following sub-question		
At what age do you recommend the use of topical fluorides in children?		
• Nil	203	99.0
• 3yrs	2	1.0
• 4yrs	1	0.5
• 5yrs	1	0.5
Do you think repeated application is beneficial to patients ?		
• Yes	2	1.0
• No	204	99.5
Do you think fluoride application is beneficial for patients with reduced salivary flow		
• Yes	2	1.0
Question 3 Awareness about use of tooth gauze in children	No. of patients (n=205)	%
Are you aware of tooth gauze?		
• Yes	62	30.2
• No	143	69.8
If your choice is yes for the above question please proceed to answer the following sub- question.		
• For massaging gums	8	3.9
• For cleaning buccal mucosa, tongue	17	8.3
• Both	37	18.0
Question 4 Awareness of modified tooth brush [ORAL -B electronic tooth brush®]	No. of patients (n=205)	%

Are you aware of modified tooth brush?		
• Yes	88	42.9
• No	117	57.1
Which type of modified tooth brush do you recommend?		
• Tooth brush with modified handles	2	1.0
• Sonic tooth brush	17	8.3
• Both	69	33.7
Question 5 Awareness about use of tongue cleaners	No. of patients (n=205)	%
Do you recommend tongue cleaning routinely for your patients?		
• Yes	205	100.0
• No	205	100.0
Which type do you recommend?		
• Plastic	0	0.0
• Stainless steel	175	85.4
• Any	30	14.6
Question 6 Awareness about use of flossing aids	No. of patients (n=205)	%
Are you aware of fluoridated dental floss?		
• Yes	187	91.2
• No	17	8.3
How many times in a day do you recommend?		
• Atleast once	34	16.6
• Twice daily	160	78.0
Question 7 Awareness about use of fluoride mouthwashes [Fluorigard – Colgate®]	No. of patients (n=205)	%
At what age do you recommend fluoride mouthwash?		
• <6yrs	58	28.3
• >6yrs	133	64.9
• does not depend on age	13	6.3
Do you recommend fluoride mouthwash in-		
• Patients with dry mouth	13	6.3
• Patients undergoing radiation therapy ,chemotherapy	29	14.1
• Both	162	79.0
Do you think fluoride mouthwash are advisable for children with dental fluorosis		
• Yes	91	44.4
• No	114	55.6
Question 8 Awareness about breath strips [Listerine – breath strips®]	No. of patients (n=205)	%
Are you aware of breath strips?		
• Yes	69	33.7
• No	135	65.9
Question 9 Awareness about xylitol chewing gums [ORBIT, XYLITOL, WRIGLEYS]	No. of patients (n=205)	%
Are aware of xylitol chewing gums?		
• Yes	202	98.5
• No	3	1.5
At what age do you recommend xylitol chewing gums?		
• <4yrs	2	1.0
• >4yrs	203	99.0

Are you aware about reduction of dental caries by using xylitol chewing gums?		
• Yes	166	81.0
• No	39	19.0
Question 10 Awareness about tooth mousse [GC Tooth mousse ®]	No. of patients (n=205)	%
Are you aware of tooth mousse paste for children?		
• Yes	10	4.9
• No	195	95.1
Are you aware of cost of tooth mousse?		
• Yes	3	1.5
• No	202	98.5

DISCUSSION

Infant oral health is the foundation on which both preventive education as well as dental care can be provided to enhance and improve the patient free from all preventable oral diseases [7]. The allied health professionals as well as various community organizations must be involved for achieving this goal as the dental awareness of medical practitioners many a times will be inadequate regarding the knowledge of the dental diseases, oral hygiene practices as well as various speciality treatment which is rendered by Pediatric dentist [8].

Therefore the present study was undertaken to know the awareness and attitude of Pediatricians towards preventive dental aids used in children, with help of a specially designed questionnaire; the preliminary advantage of questionnaire study being ease of collection of information and also understand the perceptions of health professionals on oral health care.

In the present study, the questionnaire was designed towards the Pediatricians keeping in mind the following.

- Awareness and use of tooth gauze in children, modified tooth brushes, as well as relative uses of tongue cleaners, flossing aids.
- Awareness of commercially available fluoride mouthwashes such as Colgate FluoriGard, Listerine breath strips, xylitol chewing gums and GC tooth mousse.
- To make the questionnaire easy and understanding few commercially available names have been used.

In our study it was observed that all the Pediatricians [n=205] were not aware of the use of pit and fissure sealants in children as well as they had limited knowledge regarding the use of various restorative materials in the pediatric population [Table 2, Question 1].

In a review of literature by Robert J. Figel [9], the author has highlighted the key issue of sealant use and also its methodology after a discussion and consensus statement by participants. The author has taken into consideration regarding previous guidelines, its use in context of contemporary caries, epidemiology, sealing of enamel caries and most importantly use of sealant on primary and permanent teeth other than molars. Critically speaking, sealants are a must to ensure the reduction of dental caries in caries susceptible individuals and it was on these lines our questionnaire involved the use of sealants in children.

Regarding the awareness of topical fluoride application in children, 98.5% of the Pediatricians were aware of its use in children; 99% of them were not aware regarding its subjective use and only 1% of them corresponded for its beneficial effect through repeated application. All the Pediatricians were not forthcoming in their views regarding the beneficial effects of fluorides for patients with reduced salivary flow. In a study done by Olga M Sanchez et al [10], the author has subjectively exposed the paediatricians on a questionnaire as well as oral health education scenario for children, and after receiving the information the author reported a significant P value of 0.001 in patients who were prescribed with fluoride. (Table 2, Question2)

In a special JADA [11] insert on professionally applied topical fluoride, ADA council on scientific affairs (CSA), on May 2006; The recommendation were intended to assist dentists in clinical decision

making as well as “Professionally Applied Topical Fluoride –Evidence Based Clinical Recommendations” Topical Fluoride such as Colgate-Duraphat is known to be effective in reducing dental caries in school children and can be applied biannually in preventing caries. The reason for choosing Colgate Duraphat was, it takes less chair side time, less patient discomfort and has greater patient acceptability when compared with any other fluoride gels. Therefore, it was for this particular reason, a known readily available commercial product Colgate Duraphat was involved in our questionnaire study.

Tooth gauze is one of the easiest and most effective ways to clean the baby’s mouth. The gauze can be used during the eruption of teeth, and also in conjunction with a small amount of fluoride tooth paste. Since tooth gauze is primarily used by parents/caregivers to clean children’s mouth, it is for this precise reason; this question was included in our study. Regarding the awareness of tooth gauzes [Table 2, Question 3], 30.2% were aware of its specific usage be it for massaging gums [3.9%], cleaning buccal mucosa and tongue [8.3%] and as many as 18% corresponded to its dual use of both massaging gums and cleaning both buccal mucosa as well as tongue.

Modified tooth brushes [Table 2, Question 4] makes teeth brushing easier and more importantly well tolerated by the child; and a slight modification for better adaptation and makes the task easier for the child. Commercially available modified tooth brush such as Oral B electronic tooth brush was involved in our study for the same reason. Only 42.9% of the Pediatricians were aware of modified tooth brushes and 33.7% corresponded to the various types of modified brushes.

Tooth brushing does not completely remove the bacteria that can be present on the surface of tongue and it is these bacteria which are source of oral malodour in children. One of effective ways of neutralizing bacteria is to scrap them off, this can be achieved by using brush or spoon or commercially available tongue cleaners. Therefore this question regarding tongue cleaners was included in our study. All the Pediatricians responded positively [100%] [Table 2, Question 5] regarding the use of tongue cleaners in pediatric patients. As many as 85.4% recommended the use of stainless steel tongue cleaners for pediatric use and 14.6% were ambiguous regarding the use of either stainless steel or plastic tongue cleaners.

Dental flossing removes food particles in areas that are not accessible to tooth brushes. When advising flossing for children, care should be taken to monitor them initially since, flossing may induce gum bleeding if not checked. Therefore older children are preferred and dental floss is available in different sizes, coatings and flavour. Children can be trained to use dental floss for effective oral health. Most of the Pediatricians [91.2%] were aware of fluoridated dental floss [Table 2, Question 6] and as many as 78% recommended the use of dental floss twice daily in their Pediatric patients.

Mouthwashes ^[12] [Table 2, Question 7] are designed to reduce the oral bacteria, remove food particles, reduce bad breath and also provide pleasant taste. Mouthwashes can be of various type, cosmetic, therapeutic or combination. Therapeutic mouthwashes usually have fluoride incorporated in them to reduce dental caries. These mouthwashes are recommended usually for patients undergoing radiation and chemotherapy as well as patients undergoing fixed orthodontic treatment. Therefore for this precise reason we incorporated the use of fluoride mouthwash, e.g. Colgate FluoriGard. 28.3% of the Pediatricians recommended its use below 6 years and 64.9% for children above 6yrs. As many as 6.3% were not clear regarding the age. The Pediatricians were also aware regarding the application of these mouth washes in patients with dry mouth [6.3%], patients undergoing radiotherapy/ chemotherapy [14.1%] and in both conditions [79%].

Breath strips are relatively new oral hygiene aids which effectively kills germs and making the breath fresher. A commercially available Listerine breath strips not only kills germs but also truly cleans and freshens the breath. Therefore for this precise advantage we involved the use of Listerine breath strip in our study. Regarding the awareness of Listerine breath strips [Table 2, Question 8] 33.7% were aware of this commercially available product.

Xylitol chewing gums ^[13] has been predominantly a source for all clinical studies where they have shown the reduction of early childhood caries by 35-60% in children who are aged 10years. However, American Academy of Pediatrics [AAP] does not recommend use of chewing, mint, candy for children less than 4yrs due to risk of choking. Therefore keeping in mind, the added beneficial advantage of xylitol towards reduction of caries we incorporated same in our study. Most of Pediatricians 98.5% was aware of xylitol chewing gums [Table 2, Question 9] and almost 99% agreed for its usage for children above 4yrs. further, the Pediatricians were also aware [81%] regarding the beneficial effect of these chewing gums in reducing dental caries.

Tooth mousse ^[14] [Table2, Question 10] is a commercially available paste formula based on Nano complex of milk protein(Casein Phospho Peptide- Amorphous Calcium Phosphate).It is commercially available in various forms and one such readily available product is GC Tooth Mousse. Tooth Mousse is one of the revolutionary products which has substantially reduced the incidence of dental caries. It is very easy to apply, it can be used either at night or morning after brushing using finger, cotton bud or preformed tray for 2-5 minutes. Therefore for this precise reason we involved the use of this product as an example in our present study. In the present study 4.9% of the Pediatricians were aware and only 1.5% knew the cost of tooth mousse.

CONCLUSION

Our study concluded that most of the Pediatricians had limited knowledge regarding the newer preventive aids in children. Since prevention forms one of the basic pre requisites for a good oral as well as general dental health, It is imperative that these Pediatricians and in general the allied medical fraternity be exposed to the newer and vast preventive aids for children.

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