



Prevention of Dental Caries: Knowledge, Practice and Opinion of Paediatricians in Lagos

Prévention des Caries Dentaires: Connaissance, Pratique et Opinion des Pédiatres à Lagos

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ABSTRACT

BACKGROUND: Dental caries is the most prevalent oral disease in children and this is preventable. Paediatricians are the first professionals whom children visit and are in good position to begin the process of prevention of dental caries if they recognize and encourage good preventive habits.

OBJECTIVE: To determine the knowledge, practice and opinion of paediatricians in prevention of dental caries.

MATERIALS AND METHODS: A cross sectional survey was undertaken among paediatricians in Lagos. Questionnaires were administered to paediatricians practicing in Teaching hospitals, general and private hospitals in Lagos. The questionnaire assessed their personal details, knowledge about caries, practice guidelines and opinion towards its prevention.

RESULTS: Less than one-third (27.7%) of the paediatricians knew that bacteria causing caries can be transmitted from mother to child. Only about one-third (30.8 %) of the paediatricians examine children's teeth for dental caries. Majority (87.7%) were of the opinion that paediatricians have a role in promoting oral health. A total of 59% of the paediatricians had moderate knowledge, while (71%) of them had poor practice and their opinion for prevention of dental caries was positive in more than two-thirds of them (71%).

CONCLUSION: We concluded that most paediatricians in Lagos had moderate knowledge, poor practice and lacked proper awareness about prevention of dental caries.

Recommendation: We recommend that preventive dentistry topics in oral health promotion and prevention of dental caries be part of their postgraduate curriculum, continued dental health education programme for paediatricians, referral of related cases to paediatric dentists and oral health related topics be published in paediatric medical journals. *WAJM* 2013; 32(1): 52–56.

Keywords: Dental Caries, Paediatricians, Lagos.

RÉSUMÉ

CONTEXTE: La carie dentaire est l'affection orale la plus prévalente chez les enfants et cette affection peut être prévenue. Les pédiatres sont les premiers professionnels à être consultés par les enfants et ils sont en bonne position pour initier la prévention de la carie dentaire s'ils reconnaissent et encouragent les bonnes habitudes de prévention.

OBJECTIF: Déterminer les connaissances, la pratique et les opinions des pédiatres sur la prévention des caries.

MATÉRIELS ET MÉTHODES: Une enquête transversale a été conduite chez les pédiatres de Lagos. Un questionnaire a été administré à des pédiatres exerçant dans des hôpitaux universitaires et des hôpitaux généraux et privés de Lagos. Le questionnaire évaluait les informations personnelles, les connaissances sur la carie, les recommandations pratiques et les opinions sur la prévention.

RÉSULTATS: Moins du tiers (27,7%) des pédiatres savaient que les bactéries causant la carie peuvent être transmises de mère à enfant. Seul le tiers environ (30,8 %) des pédiatres examinaient les dents des enfants à la recherche de carie. L'opinion de la majorité (87,7%) était que les pédiatres ont un rôle dans la promotion de la santé buccale. Au total 59% des pédiatres avaient un niveau moyen de connaissances, tandis que 71 % d'entre eux avait un niveau faible de pratique et leur opinion sur la prévention des caries dentaires était positive pour plus des 2/3 d'entre eux (71%).

CONCLUSION: Nous concluons que la plus part des pédiatres à Lagos avaient une connaissance moyenne, un faible niveau de pratique et manquaient de conscience claire sur la prévention des caries dentaires.

RECOMMANDATION: Nous recommandons que les thèmes d'odontologie préventive dans la promotion de la santé orale et la prévention des caries dentaires fassent partie du curriculum de formation post doctorale et du programme de formation continue en santé dentaire pour les pédiatres. Les thèmes en rapport avec la référence des cas de carie aux dentistes pédiatres et ceux en rapport avec la santé buccale devraient être publiés dans les journaux de Pédiatrie. *WAJM* 2013; 32(1): 52–56.

Mots clés: Caries Dentaires, Pédiatres, Lagos.

INTRODUCTION

Dental caries comprise the single most chronic disease affecting children globally.¹ Although dental caries is a completely preventable disease, there are alerts to deaths of children as a result of complications of dental caries.^{2,3} There are reports that preventive interaction must begin within the first year of life for successful prevention of dental caries.^{4,5} Prevention should begin within the first year of life. Paediatricians have the responsibility of taking care of children from birth to adolescent and are often the first health professionals whom children visit. They are therefore well positioned to begin this process if they recognise and encourage good preventive habits and refer patients appropriately.⁶⁻⁸

There are few studies on the role of the paediatrician and the prevention of dental caries. The absence of exact statistics on the awareness of Nigerian paediatricians on the prevention of dental caries is absent.

Therefore the aim of this study was to determine the knowledge, practice and opinion of paediatricians in Lagos on the prevention of dental caries.

SUBJECTS, MATERIALS AND METHODS

A cross sectional survey was undertaken among paediatricians in Lagos. The list of paediatricians practicing in Lagos was obtained from the Nigerian association of paediatricians. The study protocol was approved by the Lagos University Teaching Hospital ethics committee. Data acquisition was performed between April and July 2012 through questionnaire delivered personally to the respondents. Questionnaires were given to paediatricians working in private, general and teaching hospitals after obtaining their consent. The questionnaire had questions to assess their personal details, knowledge about dental caries, practice guidelines and opinions towards the prevention of dental caries in children. The queries about their personal details included questions on number of years in practice, number of patients seen per day and the type of practice. Knowledge was assessed based on questions on

early childhood caries, fluoride supplement, spread of caries and dental sealants. Their opinion towards the prevention of dental caries was assessed based on queries about their role in promoting oral health, assessment of dental caries during routine well child care, first dental visit, counseling in prevention of dental caries during well child care and curriculum in pediatric post graduation to promote oral health. Their practice was assessed depending on response to queries on examination of child's teeth for caries, recommendation of dental visit and referral to paediatric dentists and counseling on the importance of tooth brushing. The following were the inclusion criteria: specialisation in paediatrics; care restricted exclusively to paediatric population; and currently undergoing a postgraduate course in paediatrics (residency). Scores were given to each question on knowledge, practice and opinion. The maximum score was given to the correct answer and the minimum to the incorrect. The scores were assessed as follows:⁵

>75%	–	good
50–75%	–	moderate
<50%	–	poor

RESULTS

Table 1 shows the personal details of the paediatricians. Of the 65 paediatricians who responded to the questionnaires Three-quarter 48 (73.8%) of them had spent less than five years in practice. More than half of the paediatricians 39 (60%) see between 10

to 25 patients per day. Majority of the respondents 47 (72.3%) were involved in teaching hospital practice. About two-third of them 40 (61.5%) received their last formal training in oral health in medical school.

In Table 2, the knowledge of the paediatricians on the prevention of dental caries is presented. Majority of the respondents 59 (90.8%) knew that not only bottle fed patients can have dental caries. Half of the physicians 34 (52.3%) agree that 3 month old baby do not require fluoride supplements. Less than one-third 18 (27.7%) of the respondents knew that cavity-causing bacteria can be transmitted from mother to child. Most of them 56 (86.1%) agreed that fluoride supplement and dental sealants will help prevent caries.

In Table 3, the practice guidelines of the paediatricians are seen. Only one-third 20 (30.8%) of the paediatricians examine children's teeth for cavity. Also, about one-fifth 12 (18.5%) of the paediatricians recommend routine dental visit. About two-thirds of respondents 39 (60.0%) counsel patients and their guardians on importance of regular tooth brushing.

The opinion of the paediatricians on the prevention of dental caries is shown in Table 4. Larger percentage 31 (47.7%) of the respondents were of the opinion that the first dental visit of a child should be at 1 year. About seventy percent of the paediatricians 45 (69.2%) agreed that a child should visit the dentist twice a year. Only 27 (41.5%) of the respondents knew that commencement of tooth

Table 1: Personal Details of Respondents

Year in practice			
<5	5 to 10	10 to 20	
73.8%	13.8%	12.3%	
Number of Patients seen			
<10	10–25	25–50	Above 50
9.2%	60.0%	24.6%	6.2%
Type of Practice (Hospital)			
Private	General	Teaching	Military
9.2%	13.8%	72.3%	4.6%
Last Formal Training on Oral Health			
Medical School	Residency	Post Residency	Never
61.5%	15.4	1.5	21.5%

Table 2: Knowledge about Dental Caries

	Yes n(%)	No n(%)	Don't know n(%)
Only bottle fed patients can have dental caries	3(4.6)	59(90.8)	3(4.6)
3 month old baby from a non fluoridated area needs fluoride supplement	34(52.3)	14(21.5)	17(26.2)
Cavity-causing bacteria can be transmitted from mother to child	18(27.7)	19(29.2)	28(43.1)
Fluoride supplement and dental sealants will help prevent caries	56(86.1)	2(3.1)	7(10.8)

Table 3: Practice Guidelines about Dental Caries

	Yes n(%)	No n(%)
Do you examine children's teeth for cavities?	20(30.8)	45(69.2)
Do you routinely recommend a dental visit to patients?	12(18.5)	53(81.5)
Do you counsel patients and their guardian on the importance of regular tooth brushing?	39(60.0)	26(40.0)

brushing should be after the first tooth erupts. When asked about their role in the promotion of oral health, majority 57 (87.7%) were of the opinion that paediatricians have a role in promoting oral health. Less than one-tenth 5 (7.7%) of the respondents were of the opinion that the current curriculum in Paediatric post graduate training is adequate to promote oral health. All the paediatricians 65 (100.0) agreed that assessment of dental caries be part of routine well child care. Majority 63 (96.9%) agreed that counselling on prevention of dental caries should be part of routine well child

care. Almost all 60 (92.3%) the paediatricians were of the opinion that oral health education be a part of their post graduate curriculum.

Three-quarter of the respondents 50 (76.9%) were of the opinion that paediatricians should rotate through paediatric dentistry unit. About 20 (40.0%) of them suggested a month posting to paediatric dentistry unit.

Figure 1 indicates that 59% of the paediatricians had good knowledge followed by moderate knowledge (32%) and poor knowledge (9%) about prevention of dental caries. For their practice,

71% of them had poor practice, followed by moderate practice (20%) and good practice (9%) [Figure 2]. Opinion for the prevention of dental caries was positive in about 71% of the paediatricians.

DISCUSSION

This study assessed the knowledge, practices and opinion of paediatricians in Lagos in the prevention of dental caries. The results provide valuable information for the formulation of oral health strategies directed at educating paediatricians and other health professionals who work with children.

Primary preventive strategies for oral health are an essential public health priority since dental caries is, for example, the most common chronic disease among children worldwide. Experts recommend that initiatives begin with very young children to promote positive outcomes during childhood and subsequent adulthood.^{9, 10}

Paediatricians are in an ideal and unique position to advice families about the prevention of oral diseases in their children because of their frequent contact with families for routine preventive visits in the child's first few years of life.¹⁰ The American Academy of Paediatrics (AAP) emphasizes that paediatric health care professionals should be trained to perform an oral health risk assessment on all children beginning at 6 months of age.^{10, 11}

The knowledge of the paediatricians was assessed and majority of them (90.8%) acknowledged that exposure to sugar causes tooth decay and that not only bottle fed children can have caries. There is evidence to show that not only bottle fed infants can have caries but also infants who sleep with the mother and nurse all night long have increased risk of dental caries. Breast milk alone is not cariogenic but prolonged on-demand night time feeding.^{12,13} It is recommended that infants should be held while feeding and any child who falls asleep while feeding should be burped and then placed in bed.

Less than one-third (27.7%) of the paediatricians knew that cavity causing bacteria can be transmitted from mother to child. This figure is however lower than that reported in previous studies.^{5, 14}

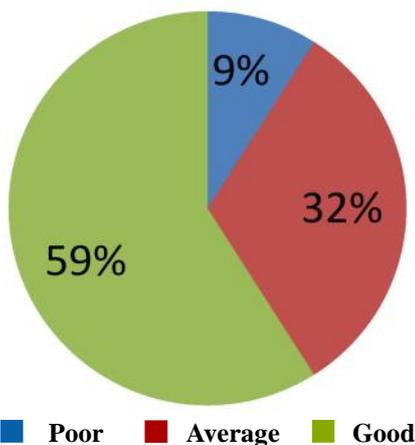


Fig. 1: Knowledge of Paediatricians on the Prevention of Dental Caries

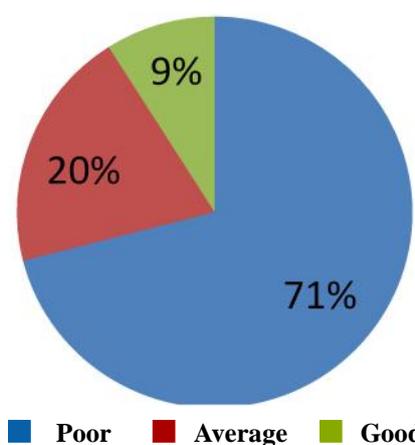


Fig. 2: Practice Guidelines of Paediatricians on the Prevention of Dental Caries.

Table 4: Opinion about Dental Caries

First dental visit of a child should be at:	n(%)
6 months	11(16.9)
1 year	31(47.7)
1-3yrs	12(18.5)
3 yrs	3(4.6)
>3yrs	1(1.5)
Don't know	7(10.8)
How often should a child visit the dentist?	n(%)
Once a year	12(18.5)
Twice a year	45(69.2)
Anytime	5(7.7)
Don't know	3(4.6)
Commencement of tooth brushing should be:	n(%)
After the first tooth erupts	27(41.5)
After all the teeth have erupted	2(3.1)
After a few teeth have erupted	28(43.1)
Don't know	8(12.3)
Do paediatricians have a role in promoting oral health?	n(%)
Yes	57(87.7)
No	5(7.7)
Don't know	3(4.6)
Is the current curriculum in pediatric post graduate training adequate to promote oral health?	n(%)
Yes	5(7.7)
No	40(61.5)
Don't know	20(30.8)
Should assessment of dental caries be a part of routine well child care?	n(%)
Yes	65(100.0)
No	0(0.0)
Should counseling on prevention of dental caries be a part of routine well child care?	n(%)
Yes	63(96.9)
No	2(3.1)
Do you think oral health education should be part of the post graduate curriculum?	n(%)
Yes	60(92.3)
No	5(7.7)

Mutans streptococci (MS) is the causative organism involved in early childhood caries, and transmission can be vertical (usually from the mother) or horizontal (within or outside the family). Mothers and intimate caregivers who have untreated tooth decay and share same utensils, food, pre-chew the child's food or kiss the child on the mouth are likely to transmit the disease to the child.^{10,15,16}

Most of the paediatricians agreed that fluoride supplements and dental sealants can prevent tooth decay and this

is in accordance with the American Academy of Pediatric Dentistry (AAPD) guidelines. Fluoride is mainly used in fluoridated water, fluoridated dentifrice and topical application by an oral health professional. Patients identified as having greater risk of dental caries are candidates for more aggressive therapy.¹⁷ In the city of Lagos where there is no fluoridated water supply, fluoridated dentifrice is the source of fluoride that should be recommend for all individuals that have teeth.¹⁷

In this study, assessment of their

practice showed that more than two-thirds (71%) of the paediatricians have poor practice in the prevention of dental caries. Only about one-third (30.8%) of the physicians examine children's teeth routinely for dental caries and 18.5% of them recommend routine dental visit. These figures are however lower than that reported in previous studies.^{9,14,18,19} The American Academy of Pediatrics (AAP) in 2003 released a policy calling on paediatricians to perform an oral health risk assessment on all children by age 1 year.¹⁰

Majority of the paediatricians were of the opinion that counselling and prevention of dental caries should be a part of the well child care. Almost all of them agreed that they have a role in promoting oral health and 92.3% were of the opinion that oral health education should be a part of the postgraduate curriculum since the current curriculum is inadequate to promote oral health. This finding is similar to other studies^{5,9,19} which reported that paediatricians' knowledge and training in oral health during residency and continuing medical education programs were insufficient and desired more education.

Most of the paediatricians (61.5%) had their last formal training in oral health in medical school. Although, training in oral health would be easiest if foundational knowledge and positive attitudes were imparted in medical school, however, fewer efforts have targeted medical students due to the tightly packed nature of the medical school curriculum, the undifferentiated career plans of students, and underlying attitudes about separating medical and dental education.^{20,21} Establishing effective practice patterns in the area of oral health is probably best achieved during residency training. In residency, trainees begin an intense education in their specialty. Residents have a vested interest in learning about oral health at this time when it is presented as an integral part of the care they provide.¹⁴ Moreover, many clinicians believe that physicians practice the way that they were taught in residency.^{14,22,23} Accordingly, the American Academy of Paediatrics (AAP), the American Academy of Family Physicians (AAFP),

and the Society of Teachers of Family Medicine (STFM) have embarked on major efforts to integrate oral health education into residency education²². The value of incorporating infant oral health education into residency training is well documented.^{23,24}

Only about 47.7% of the paediatricians stated that the first dental visit of a child should be within 1 year of age. The AAPD recommends that the first dental visit should be within 6 months of eruption of the first tooth and not later than 12 months of age.¹⁷ Early visit to the dentist allows preventive measures, early diagnosis and orientation regarding proper diet and oral hygiene as well as prevention of early childhood caries, dental trauma and non nutritive sucking habits.^{17, 18} It is important to have an effective and efficient reference system among health professionals in the fields of dentistry and medicine to ensure more effective and efficient care of paediatric patients.¹

However there are certain barriers to the involvement of paediatricians in this process, some of which include insufficient time during appointments and lack of discussion between health professionals in the field of dentistry and medicine.^{14,19} The use of printed materials and videos can help overcome this barrier and also discussions are needed to motivate paediatricians with regards to considering the importance of oral health and being willing to take up additional activities aimed at improving oral health.¹⁴

We conclude that most paediatricians in Lagos had moderate knowledge, poor practice and lacked proper awareness about prevention of dental caries. We recommend that preventive dentistry topics in oral health promotion and prevention of dental caries be part of their postgraduate curriculum, continued dental health education programme for paediatricians, referral of related cases to paediatric dentists and oral health related topics be published in paediatric medical journals.

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REFERENCES

1. 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.
2. Satcher D, Kaczorowski J, Topa D. The expanding role of the paediatrician in improving child health in the 21st century. *Pediatrics* 2005; **115**: 1124–1128.
3. Satcher D. Children's oral health: The time for change is now. *Acad Paediatr* 2009; **9**: 380–382.
4. Mani SA, Aziz AA, John J, Ismail NM. Knowledge, attitude and practice of oral health promoting factors among caretakers of children attending day-care centers in Kubeng Kerian, Malaysia: A preliminary study. *J Indian Soc Pedod Prev Dent* 2010; **28**: 78–83.
5. Murthy GA, Mohandas U. The knowledge, attitude and practice in prevention of dental caries amongst paediatricians in Bangalore: A cross sectional study. *J Indian Soc Pedod Prev Dent* 2010; **28**: 100–103.
6. US preventive service task force recommendation. Prevention of dental caries in preschool children. *Am J Prev Med* 2004; **26**: 326–329.
7. Johnsen DC. The role of the pediatrician in identifying and treating dental caries. *Pediatr Clin North Am* 1991; **38**: 1049–1052.
8. Schafer TE, Adair SM. Prevention of dental disease. The role of the pediatrician. *Pediatr Clin North Am* 2000; **47**: 1021–1042.
9. Di Giuseppe G, Nobile CGA, Marinelli A, Angelillo IF. Knowledge, attitude and practices of paediatricians regarding the prevention of oral diseases in Italy. *BMC Public Health* 2006; **6**: 176.
10. American Academy of Paediatrics: Oral health risk assessment timing and establishment of the dental home. *Pediatrics* 2003; **111**: 1113–1116.
11. The American Academy of Pediatric Dentistry: Clinical guideline on infant oral health care AAPD reference manual 2004–2005.
12. Brice DM, Blum JR, Steinberg BJ. The etiology, treatment and prevention of nursing caries. *Compend Contin Educ Dent* 1996; **17**: 96–98.
13. Wyne AH, Adenubi JO, Shalan T, Khan N. Feeding and socioeconomic characteristics of nursing caries children in Saudi population. *Pediatr Dent* 1995; **17**: 451–4.
14. Balaban R, Aguiar CM, da Silva Araujo AC, Filho EBRD. Knowledge of paediatricians regarding child oral health. *Int J Paediatr Dent* 2012; **22**: 286–291.
15. Davey AL, Rogers AH. Multiple types of the bacterium streptococcus mutans in the human mouth and their intra-family transmission. *Arch Oral Biol* 1984; **29**: 453–460.
16. Berkowitz RJ, Jones P. Mouth-to-mouth transmission of the bacterium streptococcus mutans between mother and child. *Arch Oral Biol* 1985; **30**: 377–379.
17. American Academy of Pediatrics-Section on Pediatric Dentistry and Oral Health. Police Statement. Preventive oral health intervention for paediatricians. *Pediatrics* 2008; **122**: 1387–1394.
18. Brickhouse TH, Unkel JH, Kacitis I, Best AM, Davis RD. Infant Oral Health Care: a survey of general dentists, paediatric dentists, and paediatricians in Virginia. *Pediatr Dent* 2008; **30**: 147–153.
19. Prakash P, Lawrence HP, Harvey BJ, McIssac WJ, Limeback H, Leake JL. Early childhood caries and infant oral health: Paediatricians' and family physicians' knowledge, practices and training. *Paediatr Child Health* 2006; **11**: 151–157.
20. Sterns J, Schneider D, Davis A. Oral Health Special Topic Outline in Family Medicine Curriculum Resource Project. Society of Teachers of Family Medicine. 2004. Available at: <http://fammed.musc.edu/fmc/data/pdf/fmcrfinal/specialtopics.pdf>. Accessed September 19, 2009.
21. Mouradian W, Reeves A, Kim S, et al. An oral health curriculum for medical students at the University of Washington. *Acad Med* 2005; **80**: 434–442.
22. Academic Pediatrics Association. Educational guidelines for pediatric residency. Available at: <http://www.ambpeds.org/egwebnew/>. Accessed September 19, 2009.
23. Blass ES, Rozier RG, Chattopadhyay A, Quiñonez R, Vann WF Jr. Effectiveness of an educational intervention in oral health for pediatric residents. *Ambul Pediatr* 2006; **6**: 157–164.
24. Douglass JM, Douglass AB, Silk HJ. Infant oral health education for pediatric and family practice residents. *Pediatr Dent*. 2005; **27**: 284–291.