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Dental caries in children- an assessment of the knowledge of Nigerian paediatricians

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Abstact

Background: A high proportion of Nigerian children with caries are left untreated resulting in complications. Paediatricians often provide primary care and maybe useful in improving oral health care.

Aim: To assess the oral health knowledge on dental caries and professional experience of a sample of Nigerian paediatricians.

Methods: A self-administered questionnaire-based cross sectional survey of paediatricians attending the annual national conference of the Paediatric Association of Nigeria in January 2011 at Abuja, Nigeria was conducted. The questionnaire assessed knowledge on early childhood caries, oral health services provided and attitude to preventive dental services. Data analysis was done using EPI-info (version 3.5) statistical software.

Results: Of the 200 questionnaires administered, 145 were properly completed and returned (response rate of 72.5%). The respondents' gender was almost evenly distributed. Their age range was 26-77 years (mean 41.8±7.4 years). A total of 83 (57.2%) respondents reported receiving oral health education prior to this study. Over 90% of the respondents had received various dental complaints from their patients. Very few (26.2%) performed oral screening routinely although 94.2% believed that oral screening should be routinely carried out. Only 28.9% of the respondents felt adequately informed about oral health though 86.6% were willing to receive training on oral health care. Most of the respondents agreed that dental assessments and counselling should be included in routine paediatric clinical examination.

Conclusion: Paediatricians could be useful in increasing access to oral health care for Nigerian children. Hence, oral health education should be included in the training programme of Nigerian paediatricians.

Keywords: *Dental caries, paediatricians, knowledge, children.*

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Résumé

Contexte: Un grand nombre d'enfants nigérians souffrant de la carie dentaire sont abandonnés sans soin, entrainant ainsi de sérieuses complications. Les pédiatres offrent souvent des premiers soins et pourraient être utiles pour l'amélioration des soins de santé bucco-dentaire.

Objectif: Evaluer les connaissances sur la santé buccodentaire sur la carie dentaire et l'expérience professionnelle d'un échantillon de pédiatres nigérians.

Méthodes: Une enquête transversale par un questionnaire auto-administré de pédiatres participant à la conférence nationale annuelle de l'Association pédiatrique nigériane, en Janvier 2011 à Abuja, au Nigeria a été menée. Le questionnaire a évalué les connaissances sur la carie de l'enfance, les services de santé bucco-dentaire fournis et l'attitude des services de prévention des maladies de dents. L'analyse des données a été effectuée à l'aide d'Epi-Info (version 3.5), un logiciel statistique.

Résultats: Sur 200 questionnaires distribués, 145 ont été correctement remplis et retournés (taux de réponse de 72,5%). Le genre des personnes interrogées a été presque uniformément réparti. Leur âge variait de 26 à 77 ans (moyenne 41,8 ± 7,4 ans). Au total, 83 (57,2%). Les personnes interrogées ont déclaré avoir reçu une éducation sanitaire bucco-dentaire avant cette étude. Plus de 90% des personnes interrogées avaient reçu des plaintes dentaires de leurs patients. Très peu (26,2%) ont régulièrement subi le dépistage bucco-dentaire, bien que 94,2% estiment que le dépistage par voie orale devrait être réalisé régulièrement. Seul 28,9% des personnes interrogées estimaient être vraiment informés de la santé bucco-dentaire tandis que 86,6% étaient disposés à recevoir une formation sur les soins de la santé bucco-dentaire. La plupart des personnes interrogées ont convenu que les évaluations dentaires et des conseils devraient être inclus dans l'examen pédiatrique qui se fait habituellement dans les cliniques.

Conclusion: Les pédiatres pourraient être utiles pour accroître l'accès aux soins de santé bucco-dentaire pour les enfants nigérians. Par conséquent, l'éducation à la santé bucco-dentaire doit être inclue dans le programme de formation des pédiatres nigérians.

Introduction

The burden of oral diseases is often neglected within the health care system even though oral health is a vital component of general health. Poor oral health

often has an impact on the quality of life and well being of affected persons and their families [1-3]. Globally, tooth decay remains a substantial problem in young children even though dental caries is largely a preventable dental disease. This is made worse by existing barriers to obtaining dental care [1,4,5]. In Nigeria, the prevalence of caries is considered low however a high proportion of affected teeth in children are left untreated resulting in complications [6]. Moreover, majority of the children that seek dental services present late at the clinics [4,7,8]. Coupled with this, is the shortage of oral health personnel. Consequently, children residing in Nigeria tend to receive more of emergency and curative care rather than preventive oral health services an albeit unsatisfactory approach to oral health [1,7]. In contrast, developed countries that have invested in preventive oral care have observed positive trends in terms of reduction in the prevalence of oral disease and savings in dental expenditure [9,10].

Many children in Nigeria are exposed to medical care at an early age but not dental care. Thus, medical providers have a unique opportunity to provide anticipatory guidance, oral health screening for these children and also play an important role in helping children and their families gain access to dental care [11]. Anticipatory guidance is the process of providing practical, developmentally appropriate information about children's health to prepare parents for significant physical, emotional, and psychological milestones [12]. It is well accepted among physicians that using anticipatory guidance during well-child medical visits is an effective tool for educating parents about how to ensure the best possible health for growing children. In dental anticipatory guidance, parents are counselled regarding infant oral hygiene, home- and office-based fluoride therapies, dietary factors, oral habits, and dental injury prevention [12].

To properly provide anticipatory guidance on oral health and performing oral health screening, health care providers need to be adequately informed on common oral diseases in children. However, oral health has limited integration into medical education and little time is allotted to oral health in formal undergraduate and postgraduate medical education [11,13,14]. Research indicates inadequate knowledge of oral health among general medical practitioners and paediatricians despite the importance of such knowledge of these personnel given their role in the health care delivery system [11,15,16]. In developed countries medical practitioners have served as sources of referral for dental disease. They have thus played an important role in the reduction of dental problems.

In Nigeria, given the low treatment ratio for dental caries, there is a need to identify new strategies for ensuring children dental care. One of such strategies is anticipatory guidance, oral screening and referral by paediatricians. In order for this to be effective, there is a need to ensure that paediatricians have adequate and accurate oral health knowledge. Consequently, this present study aimed to assess the oral health knowledge on dental caries and professional experience of a sample of Nigerian paediatricians.

Material and methods

A cross-sectional survey of consenting Paediatricians who attended the annual national conference of the Paediatric Association of Nigeria in January 2011 at Abuja was carried out. The study was approved by the Lagos State University Teaching Hospital (LASUTH) ethical committee. Participants were recruited after explaining the nature of the study to the conference attendees.

The survey instrument was a self administered questionnaire containing 23 open and close ended questions in three sections. The first section obtained demographic information of the respondents such as age, gender, location and type of practice. The second section assessed their knowledge of early childhood caries using questions adapted from a previously validated questionnaire used by Lewis *et al* in a similar study amongst paediatricians in the USA and by Murthy et al in Bangalore [15]. The previous studies included four questions for assessing their knowledge of the spread of caries, use of fluoride, and dental sealants. The question on fluoride in their questionnaire was excluded and substituted because it was on a concept of fluoridated water supply and fluoride supplements which is presently not applicable in the Nigerian context [11]. The final section assessed their current roles in the prevention of dental caries during routine well child care. It also assessed their willingness to provide oral screenings, counselling and referrals as well as their views on their possible roles in the provision of preventive dental care. The instrument was pre tested among 15 doctors in the paediatric unit of a tertiary health care facility in Lagos.

Questionnaires were completed and immediately returned by the participants.

Data entry and analysis was done using EPI-info (version 3.5) statistical software and descriptive statistics were generated on demographic variables. The Fisher's exact statistical test was used for comparing the effect of previous oral health education on the ability of the respondents to provide correct responses to the knowledge questions.

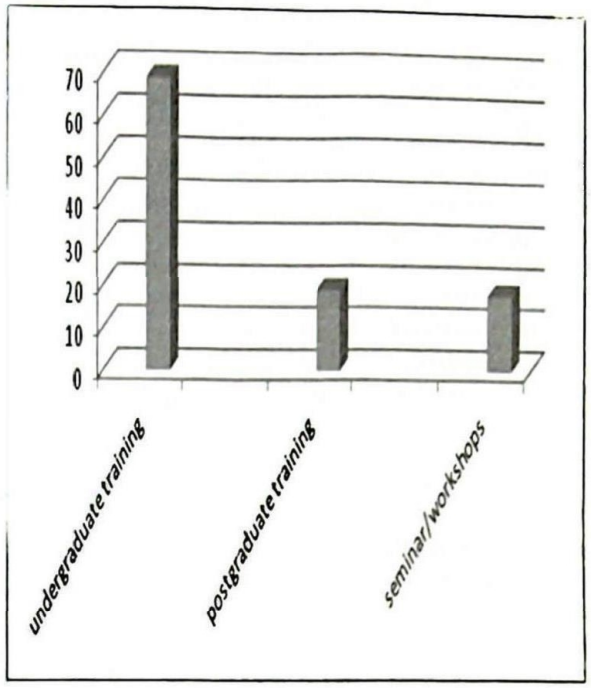
Results

A total of 200 questionnaires were administered of which 145 were properly completed and returned giving a response rate of 72.5%. Respondent's age range was 26- 77 years with a mean of 41.8±7.4 years. Female respondents were slightly more while the Yoruba ethnic group accounted for 40.7% of the study population (Table 1).

Table 1: Socio-demographic characteristics of respondents

	No	%
Age category		
35 years and below	28	19.5
36-45 years	83	57.2
46 years and above	34	23.5
Total	145	100.0
Gender		
Male	68	46.9
Female	77	53.1
Total	145	100.0
Year of graduation		
Unspecified	31	21.4
Less than 10 years	43	29.7
11 – 20 years	39	26.9
21 years and above	32	22.0
Total	145	100.0
Ethnic group		
Hausa	18	12.4
Ibo	28	19.3
Yoruba	59	40.7
others	40	27.6
Total	145	100.0
Location of practice		
Teaching hospital	90	62.1
General hospital	10	6.9
Federal hospital/armed forces	30	20.7
Private practice	9	6.2
Others	6	4.1
Total	145	100.0
Duration of paediatric practice		
Unspecified	24	16.6
10 years and below	74	51.0
11-20 years	36	24.8
21 years and above	11	7.6
Total	145	100.0

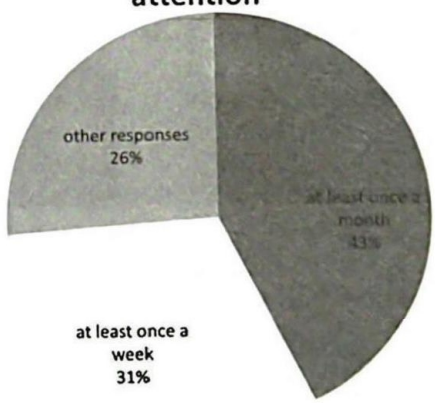
A total of 83 (57.2%) respondents reported receiving oral health education prior to the study (Figure 1). Respondents reported a mean patient load of 54 (range1-200) per week. In all, 74% of respondents reported attending to at least one patient with a dental complaint either on a weekly or monthly basis. The remaining respondents (26%) received dental related complaints on an infrequent basis (Figure 2). Only 28.9% of the respondents considered they were



**(Multiple responses)*

Fig, 1: Source of oral health information

Figure 2: Frequency of respondents encounter with patients requiring dental attention



adequately informed about oral health although 86.6% considered oral health an important component of child health care and were willing to receive training on oral health. Majority of the respondents (85.8%) reported visiting a dentist prior to the conduct of this study of which 13.2% was within the last year and 43.4% within the last two years.

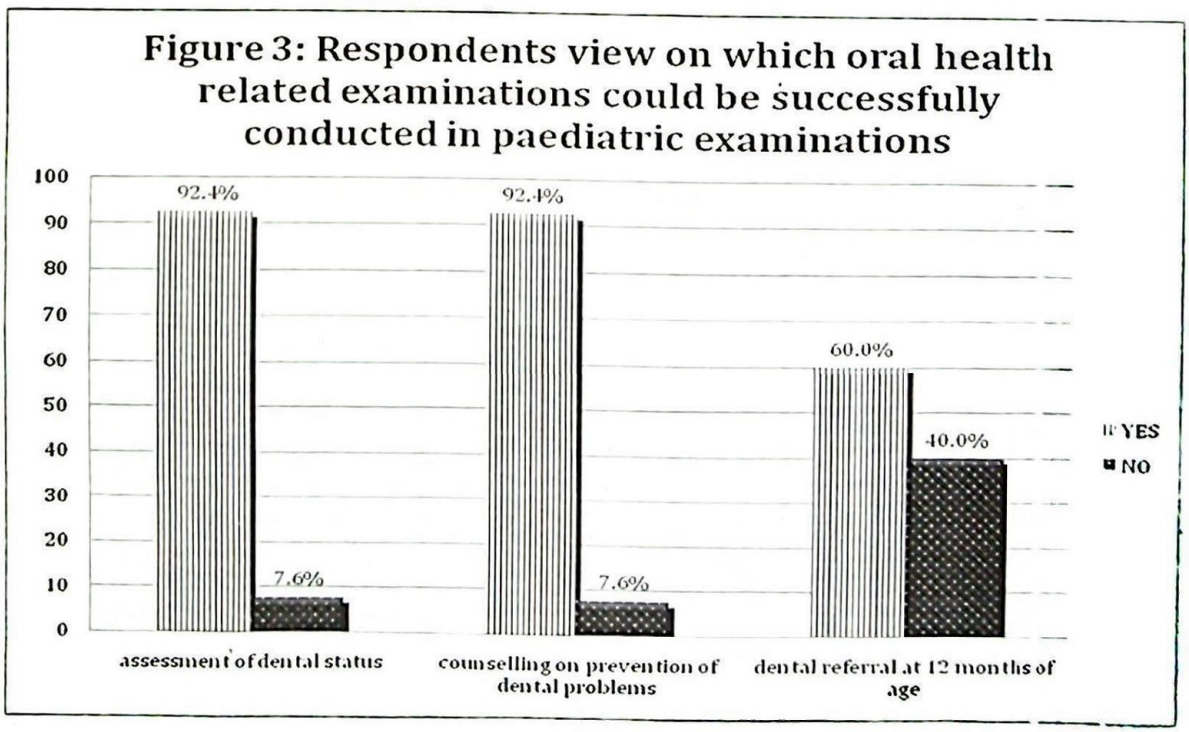
Knowledge of dental caries

Responses to questions assessing knowledge of the commonest oral disease in children (dental caries) are displayed in Table 2. Only 37.2% of the study population correctly stated that bacteria could be

Table 2: Effect of previous oral health education on responses to knowledge questions*

	Don't Know		False		True		Fishers exact test
	No	%	No	%	No	%	
*Bacteria can be a cause of tooth decay **(True)*							
Previous oral health education	5	6.0	0	0.0	78	94.0	p=0.071
No previous oral health education	0	0.0	0	0.0	62	1000	
*Only bottle-fed children get tooth decay**(False)*							
Previous oral health education	6	7.2	73	88.0	4	4.8	p=0.791
No previous oral health education	3	4.8	56	90.3	3	4.8	
*Cavity causing bacteria can be transmitted between mother and child**(True)*							
Previous oral health education	23	27.7	28	33.7	32	38.6	p=0.731
No previous oral health education	22	35.5	18	29.0	22	35.5	
*Fluoride helps to prevent tooth decay**(True)*							
Previous oral health education	4	4.8	2	2.4	77	92.8	p=0.239
No previous oral health education	0	0.0	1	1.6	61	98.4	
*Dental sealants can be applied to children's teeth to prevent decay**(True)*							
Previous oral health education	35	42.2	36	43.4	12	14.5	p=0.096
No previous oral health education	47	75.8	12	19.4	3	4.8	

*For the purpose of data analysis the tables was collapsed and analyzed as correct answers versus incorrect answers.
**Correct responses inserted in brackets.



transmitted between mothers and their children while 31.7% believes that bacteria is not transmitted from mother to child and 31.7% did not know the correct answer. Only 10.3% correctly stated that dental sealants could be used for caries prevention. Interestingly, 56.6% of the respondents did not know the role of sealants while 33.1% stated that it would not be useful in preventing caries.

The respondents' previous receipt of oral health education was not significantly ($p>0.05$) related to the respondents' ability to give correct responses to the questions. Similarly the employment of respondents in a teaching or non teaching facility was not significantly related to the respondents' responses ($p>0.05$). The duration of practice as a paediatrician also had no impact on the respondents' answers ($p>0.05$).

Scope of oral health services provided by paediatricians

Concerning oral health services presently provided by the paediatricians examined in this survey, 38 (26.2%) reported routine examination of their patient's mouths for cavities (tooth decay), 66 (45.5%) counselled patients on regular dental visits, while 97 (66.9%) counselled on the importance of tooth brushing. However, majority (94.2%) of the study participants agreed that dental assessments and counselling on preventive oral health should be included in routine paediatric examination. Only sixty percent of the study participants agreed that patients should be routinely referred to the dentist at 12 months of age (Figure 3). Ninety five percent of respondents believe that doctors and nurses should be involved in oral health care and 94.2% would be willing to provide oral health services. A large proportion of respondents had received various dental complaints from their patients (Figure 3). In managing these complaints, most of the practitioners (85.4%) referred the patients to the dentist, 69.2% prescribed medications, while 2.4% did nothing.

Discussion

This study revealed that paediatricians in Nigeria have limited knowledge of some aspects of dental caries which is the most common oral disease afflicting children globally. Studies in other countries have documented a similar trend among paediatricians [11, 15-17]. For example, despite the fact that there has been a lot of information regarding dental caries in medical literature in the last two decades, very few were aware that caries is an infectious disease that can be transmitted from the mother to child [11]. This finding in the present group of paediatricians is not surprising since majority of the study participants obtained information about oral health during their undergraduate study.

In addition, very few were exposed to oral health training during their post graduate training while very few attended oral health related seminars and workshops. This is in spite of the fact that most of the respondents graduated less than 20 years before this study was conducted. This result therefore suggests a lack of interest in oral health issues among Paediatricians in Nigeria. The lack of interest may stem from the fact that limited dental information is provided for medical students during the undergraduate training. An update of the dental content of the medical curriculum at both undergraduate and post-graduate level is suggested.

Just about a quarter of the respondents routinely performed oral examination for patients despite agreeing that dental assessment and counselling should be included in routine paediatric examination. Moreover, many of the respondents reported encountering patients with dental problems frequently. This is unsatisfactory as paediatricians are regarded as first level contact for children and research suggests that they could effectively provide oral health screening for children [18]

The study also sought the views of respondents on three oral health related practices that could be successfully conducted by paediatricians, namely; assessment of dental status, counselling on prevention of dental problems and dental referral at 12 months of age. Of the three practices, fewer respondents agreed that patients should be routinely referred to the dentist at 12 months of age. It is important to note that the Academy of American Paediatricians (AAP) has adopted the inclusion of oral health anticipatory guidance during well-child visits [18]. The recommendations specify that the first dental risk assessment should occur at about six months of age and the establishment of a dental home should occur by one year of age for children considered to be at risk for dental caries. The Academy of American Paediatric Dentistry (AAPD) also recommends that the first dental visit should occur no later than 12 months of age [19]. While these timelines may be effective in the USA where there is a large number of dental professionals the dearth of dental professionals in Nigeria may pose a challenge to achieving such goals. Nonetheless the dental profession embraces the concept that, with early intervention, it may be possible to reduce or eliminate future dental caries [19].

A study by Savage *et al* in 2004, observed the effectiveness of early dental visit in reducing the occurrence of dental diseases as well as reducing dentally related cost [10]. It was observed that children who had their first preventive dental visit by one year were more likely to have subsequent preventive visits but were not more likely to have subsequent restorative or emergency visits. Whereas, children who had their first preventive visit at age two or three years were more likely to have subsequent preventive, restorative, and emergency visits [10].

A study of physicians trained to provide preventive oral health services to preschoolers was observed to be effective in reducing caries related treatment for the children [20]. The program was observed to be most effective when children were seen for their first visit at about one year of age and when they had regular follow-up visits.

In conclusion, this study has highlighted the limited knowledge of Nigerian paediatricians on dental caries and their willingness to provide anticipatory guidance on oral health/preventive dental services/ promote oral health. Thus, Paediatricians could be useful in oral health promotion in children. However, they need to be adequately trained. This may help in increasing awareness, access to oral health care and reducing the prevalence of late presentations at the dental clinics for Nigerian children.

Recommendations

·Paediatric oral health education should be included in the training programme of Nigerian paediatricians.
·Continuing dental education programme should be encouraged for Nigerian paediatricians.
· Further study to determine barriers to carrying out oral examination during routine examinations by paediatricians on their patients is also recommended.

References

1. Petersen PE, Bourgeois D, Ogawa H, *et al.* The global burden of oral diseases and risks to oral health. Bulletin of the World Health Organisation. 2005; 83:661-669.
2. Mignogna M and Fedele S. The neglected global burden of chronic oral diseases. J Dent Res. 2006; 85: 390-391.
3. Pahel BT, Rozier RG, and Slade GD. Parental Perceptions of Children's Oral Health: The Early Childhood Oral Health Impact Scale (ECOHIS). Health Qual Life Outcomes, 2007; 6:5.
4. Sote EO. Attendance pattern and presenting oral health problems of children at the Lagos University Teaching Hospital Lagos, Nigeria. Nig Qt. J. Hosp. Med. 1996; 6: 80-84.
5. dela Cruz GG, Rozier RG and Slade G. Dental screening and Referral of Young Children by Pediatric Primary Care Providers. Pediatrics 2004; 114: e642-e652.
6. Adeniyi AA, Agbaje MO, Onigbinde O *et al.* Prevalence and pattern of dental caries among a sample of Nigerian public primary school children. Oral Health Prev Dent 2012;10:267-274.
7. Oredugba FA, Orenuga OO, Ashiwaju MO and Agbaje MO. Risk factors associated with early childhood caries in Nigerian children. Nig Dent J 2008;16:67-72.
8. Aderinokun GA. Characteristics of Children Attending the Dental Clinic (UCH), Ibadan: An indication of Community Awareness and attitude to Oral Health. Nig. Dent. J.1990; 9:28-32.
9. Wang NJ, Kallestaal C, Petersen PE and Armadottir IB. Caries preventive services for children and adolescents in Denmark, Iceland, Norway and Sweden: strategies and resource allocation. Community Dent Oral Epidemiol 1998; 26:263-271.
10. Savage MF, Lee JY, Kotch JB and Vann Jr WF. Early Preventive Dental Visits: Effects on Subsequent Utilization and Costs. Paediatrics 2004; 114; e418-423.
11. Lewis CW, Grossman DC, Domoto PK and Deyo RA. The role of the paediatrician in oral health of children: a National survey. Paediatrics 2000; 106:1-7.
12. Nowak AJ and Casamassimo PS. Using anticipatory guidance to provide early dental intervention. *J Am Dent Assoc.* 1995; 126:1156 –1163.
13. Gonsalves WC, Skelton J, Heaton L, *et al.* Family Medicine Residency Directors knowledge and attitude about Pediatric Oral health Education for residents. J Dent Educ 2005; 69:446-452.
14. Sofola OO and Ayankogbe OO. Nigerian family physicians knowledge of oral diseases and their attitude to oral health care- a pilot study. Nig Dent J 2009; 17:12-15.
15. Murthy GA and Mohandas U. The knowledge attitude and practice in prevention of dental caries amongst paediatricians in Bangalore: A cross sectional study. J. Indian Soc Pedod. Prevent dent 2010; 28:100-103.
16. Prakash P, Lawrence HP, Harvey BJ, *et al.*. Early childhood caries and infant oral health: Paediatricians' and family physicians' knowledge,

practices and training. Paediatr Child Health 2006; 11(3):151-157.
17. Bottenberg P, Melckebeke LV, Louckx F and Vandenplas Y. Knowledge of Flemish paediatrician about childrens oral health- results of a survey. Acta Paediatrica 2008; 97(7) 959-963.
18. American Academy of Paediatrics policy statement. Paediatrics 2003; 111:1113-1115.
19. American Academy of Paediatric Dentistry policy statement. Paediatr. Dent 2009;31:1-302.
20. Pahel BT, Rozier RG, Stearns SC and Quiñonez RB. Effectiveness of Preventive Dental Treatments by Physicians for Young Medicaid Enrollees. Paediatrics 2011; 127:e682–e689.

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