

Research



Maternal knowledge, dental service utilization and self-reported oral hygiene practices in relation to oral health of preschool children in Lagos, Nigeria

Olubukola Olamide Olatosi, Afolabi Oyapero, Nneka Kate Onyejaka, Gbemisola Ojombo Boyede

Corresponding author: Olubukola Olamide Olatosi, Department of Child Dental Health, Faculty of Dental Sciences, College of Medicine University of Lagos, Lagos, Nigeria. bukkyolatosi@gmail.com

Received: 14 Apr 2020 - **Accepted:** 05 Jun 2020 - **Published:** 09 Jun 2020

Keywords: Knowledge, practices, mother, childrens oral health, dental service utilization

Copyright: Olubukola Olamide Olatosi et al. PAMJ - One Health (ISSN: 2707-2800). This is an Open Access article distributed under the terms of the Creative Commons Attribution International 4.0 License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article: Olubukola Olamide Olatosi et al. Maternal knowledge, dental service utilization and self-reported oral hygiene practices in relation to oral health of preschool children in Lagos, Nigeria. PAMJ - One Health. 2020;2(10). 10.11604/pamj-oh.2020.2.10.22850

Available online at: <https://www.one-health.panafrican-med-journal.com/content/article/2/10/full>

Maternal knowledge, dental service utilization and self-reported oral hygiene practices in relation to oral health of preschool children in Lagos, Nigeria

Olubukola Olamide Olatosi^{1,&}, Afolabi Oyapero², Nneka Kate Onyejaka³, Gbemisola Ojombo Boyede⁴

¹Department of Child Dental Health, Faculty of Dental Sciences, College of Medicine University of Lagos, Lagos, Nigeria, ²Department of Preventive Dentistry, Faculty of Dentistry, Lagos State

University College of Medicine, Lagos, Nigeria, ³Department of Child Dental Health, University of Nigeria, Ituku, Enugu State, Nigeria, ⁴Central North West London NHS Trust Foundation, United Kingdom

&Corresponding author

Olubukola Olamide Olatosi, Department of Child Dental Health, Faculty of Dental Sciences, College of Medicine University of Lagos, Lagos, Nigeria

Abstract

Introduction: *maternal oral health practices and perception about infant oral health are probable pointers to the status of an infant's oral health. We aimed to evaluate maternal knowledge about infant oral health and oral hygiene practices.*

Methods: *a descriptive study was conducted among 334 mothers using a cluster sampling technique. A 32-item pretested validated, interviewer administered questionnaire obtained socio-demographic data, pattern of dental service utilization, maternal and child oral hygiene practices and to assess oral health related knowledge. Linear regression analysis was conducted to assess predictors of knowledge scores, $p \leq 0.05$ was accepted as statistically significant.*

Results: *only 42 (12.6%) knew how a baby's mouth should be cleaned while 127(38%) knew that cariogenic bacteria was transferrable. The mean knowledge score was 4.89 ± 1.72 out of 9. There was a moderate positive significant correlation ($.334$; $p < 0.000$) between maternal educational level and having good knowledge. Multiple linear regression analysis revealed that the knowledge score was significantly associated with mother's oral hygiene practices ($\beta = 0.167$; 95% CI; $p < 0.001$), education level ($\beta = 0.321$; $p < 0.000$). **Conclusion:** *our study showed that mothers had fair knowledge and practice in relation to the oral health of infants and that those with higher education and good oral hygiene practices had better knowledge irrespective of their residential location. This however did not reflect in their attitude towards seeking dental care.**

Introduction

Dental health can affect the functional, psychological and social dimensions of a child's well-being while developmentally crucial processes of communication, socialization and self-esteem are also affected by poor dental health [1]. Furthermore, oral diseases restrict activities at school, at work and at home causing millions of school and work hours to be lost each year

throughout the world [2]. Thus, oral ill health, whether due to dental caries, tooth erosion, or gum disease, imposes a significant burden not only on the individual but also on the economy. Despite government and dental professional initiatives to stem the tide, poor child oral health outcomes continue to persist. This may be attributed to limited access of dental services by mothers and late implementation of preventive dental care interventions aimed at young children. Strategies undertaken to ameliorate the social disparities in oral health worldwide have yielded insufficient results, and dental problems predominantly amongst children, especially those with social or medical vulnerabilities continue to be a major issue [3]. In most developing countries, investment in oral health care is low. In these countries, resources are primarily allocated to emergency oral care and pain relief; if treatment were available, the costs of dental caries in children alone would exceed the total health care budget for children. Regular dental visits for receiving oral care are not the norm in childhood and adolescence [4]. This is mainly attributed to inadequate financial resources, shortage or mal-distribution of dental personnel, in addition to the absence of integration with other non-dental healthcare professionals (HCP) [5]. Dental prevention and treatment approaches are traditionally focused on the individual in the dental chair or the child in a preschool or school-based prevention program. To overcome this barrier, the multilevel conceptual model of children's oral health determinants was developed by Fisher-Owens *et al.* [6] expanded the traditional dental caries model proposed by Keyes which focused on interactions within the oral cavity, to include interactions between the child, family, and community-level influences that vary over time. It considers that an infant's risk of dental decay is related to the early acquisition of transmitted microorganisms especially in mothers with high counts of cariogenic bacteria.

Genetic/molecular evidence also suggests that caries in children is largely attributable to vertical transmission of the microorganisms from mothers,

and this has been the impetus for prevention strategies aimed specifically at reducing behaviors implicated in this transmission [7]. Interest in behavioral interventions started with the understanding that most preventive strategies require action on the part of the individuals who would benefit-action that may not occur naturally and therefore must be actively motivated in some way [8]. Within this context, maternal/parental education, attitudes and beliefs, and other psychosocial factors characterize significant mediators of parents' oral health behaviors and by inference, that of their children [9]. For younger children especially, the role of parents and primary caregivers is critical for caries control [10]. The family plays an important role in the child's dietary habits, oral health behaviors, and dental services utilization, [11] and these environmental factors modify genetic and other biologic characteristics [12]. Since mothers are the gatekeepers to the health of their children, a positive impact can be anticipated in their children's oral health status if they are provided with adequate information on oral disease prevention [13]. However, few mothers seem to receive enough information in a timely fashion. An assessment of the baseline knowledge and attitude of mothers about infant oral health and their own oral hygiene practices is essential to formulate an effective infant oral health promotion program. It is also pertinent to understand the barriers impeding women's dental service utilization and the context that may facilitate improved utilization. The aim of this study was thus to evaluate maternal knowledge about infant oral health and oral hygiene practices. We also aimed to determine the influence of maternal knowledge on preventive practices in oral health and dental service utilization in Lagos State.

Methods

Ethical consideration: ethical approval was obtained from the Health Research and Ethics Committee of the Lagos University Teaching Hospital (ADM/DCST/HREC/APP/2343). Written

informed consent was obtained from all the study participants and their confidentiality was guaranteed.

Study design: a descriptive, community-based study which recruited participants through a household survey.

Study setting: Lagos state is situated in the South Western of Nigeria and it is the economic nerve centre of the country. It shares boundaries with Ogun State both in the North and East and on the West by Benin Republic. In the South, it stretches for 180 km along the coast of the Atlantic Ocean and occupies an area of 3,577sq km, 22% or 787sq km which consists of lagoons and creeks. The study was conducted in Ikorodu, Epe, Surulere and Alimosho local government areas of Lagos State. An LGA is a geographic unit with a defined administrative and political structure.

Sampling method: a multi-stage cluster random sampling method was applied in different regions of each identified LGA. In the first stage of the sampling, the four LGAs were selected by simple random sampling (by balloting) from the 16 urban and four rural LGAs in Lagos State. The LGAs thus formed the Primary Sampling Units (PSUs). Participants were recruited from four out of the National Population Enumeration sites in the each of these Local Government Areas. Stage 2 involved the selection of eligible households within the enumeration sites for the survey. At each of the enumeration sites, every third household on each street was considered eligible for recruitment of a study participant. Stage 3 involved the selection of actual respondents for interview and examination. Every consecutive house in each street that had an eligible respondent was selected until the sample size was reached. Alternative sexes and age ranges of children identified for our study recruitment were selected to participate in each consecutive household.

Study population: the study population comprised mothers of children under-five and those who had resided in the selected LGAs for at least one year

preceding the study, while transitory visitors were excluded. Only mothers who were biological parents or legal guardians and those that were at home at the time of data collection were included in the study.

Sample size: we estimated that 78.3% of the study population had poor knowledge of oral hygiene methods based on the response to a previous survey carried out among caregivers in Nigeria [14]. Using the 95% confidence level and a 5% margin of error the calculated sample size for our survey was estimated to be 280 respondents. We made a 10% allowance for incomplete responses making our minimum sample size 310.

Data collection tool: data were collected using a previously validated, pretested, structured, and interviewer-administered questionnaire written in English language. House-to-house data collection was done from the June to August 2018, from the different LGAs. The interviewers were made up of the principal researcher and 6 calibrated research assistants who had undergone training for 4 days prior to data collection. All filled questionnaires were reviewed, while queries and gaps identified in the questionnaires were promptly addressed. A total of 334 questionnaires were administered. The final questionnaire had 32 questions under following sections: *Section I:* had five questions on the mothers' demographic characteristics including age, religion, employment, educational level, occupation, work status and number of children in the household. The highest level of education completed was asked in an open-ended question, "What is the highest level of education that you completed?" For this study, we dichotomized these answers to whether the caregivers had less than 12 years of formal education or more than it. *Section II:* obtained information about utilization of dental services, determining history of previous visits, reasons for the visit, perceived reasons for avoiding dental care, alternative remedies for dental care and history of dental care for the child. Attending a dental check-up within the last year was defined as preventive care use.

Section III: comprised of six questions, which aimed to assess the practices of the mother regarding oral hygiene care. The respondents were requested to report their methods of oral hygiene, the frequency with which they brush their teeth, use of fluoridated toothpaste and care and replacement of toothbrushes. *Section IV* also comprised of six questions which determined the oral hygiene practices of the child on the methods of oral hygiene, the frequency with which it is performed, who performs it for the child, use of fluoridated toothpaste and care and replacement of toothbrushes. *Section V:* had nine questions which assessed the oral care knowledge among mothers. It elicited what a baby's mouth without teeth should be cleaned with ;When a mother/caregiver should start cleaning a child's teeth ; What should be used to clean a child's mouth from 2years; How often the child's teeth be cleaned? How often the toothbrush should be changed; if baby teeth need treatment/care since they will fall off; if tooth decay is preventable; if tooth decay can be transferred from mother to child and if eating of sweets, chewing gums and sugar containing drinks can cause tooth decay. Each question had 5 multiple responses with only one correct option. Correct responses received a score of 1 while incorrect responses were scored 0.

Data analysis: the data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) Version 22.0 (IBM Corp, Armonk, NY). Bivariate analysis was done using Chi-squared test and Fisher's exact test depending on the number of variables in a cell. Correct knowledge responses were awarded 1mark, while incorrect answers were scored 0 with a possible range of 0-9. In order to dichotomize the variable, the mean of the final scores served as cut-off point, with respondents scoring below the mean categorized as having poor knowledge and all others scoring the mean score and above comprising those with good knowledge. The mean score for this sample was 4.89 ± 1.72 . Logistic regression was conducted to examine multivariate associations between respondents' characteristics and knowledge of oral hygiene

among the mothers. Variables with statistical differences at $P < 0.05$ in bivariate analyses were considered for inclusion in logistic regression analyses. The dependent variable was good knowledge about oral hygiene while the independent variables for the model were maternal age, educational attainment, oral hygiene practices of the mother and child. Odds ratios (OR) and confidence intervals (CI) were computed for each predictor variable. Level of significance was set at 0.05.

Results

The socio-demographic characteristics of the study subjects including age distribution, maternal educational attainment, and number of children in the household, occupation type and residence of respondents as well as association between independent and dependent variables are presented in Table 1. All the caregivers were the birth mothers and majority were aged 31-47 years (258; 77.2%); had a secondary school level of education (150; 44.9%); between 3-4 children (168; 50.3%) and dwelt in urban slums (77; 23.5%). In bivariate analysis, maternal educational attainment and number of children in the household were significantly associated with good knowledge about oral health and hygiene while there was a moderate positive correlation between maternal educational attainment and good knowledge ($(\rho) = 0.334$; $p=0.000^*$)-Table 1. Table 2 presents the pattern of utilization of dental services by the respondents with association between independent and dependent variables obtained by χ^2 or Fisher's exact test. The highest proportion of the respondents (78.1%) had never visited a dental clinic. Toothache (38; 52.1%) was the most common reason adduced for visiting the clinic while no need for dental care due to the absence of toothache was the primary reason for not attending the clinic (205; 61.4%). A high proportion of the respondents stated that their child had previously experienced toothache (125; 37.4%) but self-prescribed medication was their most preferred treatment option (65; 52.0%). None of

the variables was however significantly associated with knowledge of oral health and hygiene.

The maternal knowledge of oral health and hygiene is presented in Table 3. Majority of the mothers (299; 89.5%) correctly identified that sweets and sugary snacks can cause dental caries and that dental caries was preventable (262; 78.4%). However, only 38% knew that cariogenic bacteria was transmissible to their child while 49.1% of them assumed that deciduous teeth do not require treatment since they will eventually fall off. Only 12.6% of the mothers agreed that a baby's mouth should be cleaned with moistened cloth. Oral hygiene practices of the mother and that utilized for their infants and the association between independent and dependent variables by χ^2 or Fisher's exact test are presented in Table 4. Most of the mothers cleaned their mouths only once daily (65.3%) with toothbrush and fluoride containing toothpaste (84.4%). Most similarly cleaned their child's mouth only once daily; with toothbrush and fluoride containing (76.9%) toothpaste by themselves (83.2%). Based on cut of values above mean scores obtained from good practices, 259 (77.5%) mothers had poor practices while 228 (68.3%) utilized poor practices for the oral hygiene of their child. There was a moderate positive correlation between mothers' own practices about dental care and their children's oral care ($(\rho) = 0.454$; $p=0.000^*$) Table 5 shows the logistic regression model with variables that were significant in bivariate analysis, with the dependent variable as good knowledge about oral hygiene while the independent variables for the model were maternal age, educational attainment, oral hygiene practices of the mother and child. Maternal educational attainment practices ($\beta = 0.321$; 95% CI = 0.199-0.677; Good maternal oral hygiene practices ($\beta = 0.167$; 95% CI = 0.196-0.594) and frequency of oral hygiene performance for the child ($\beta = 0.043$; 95% CI = -6.528 - -0.102) were still significantly associated with good knowledge of oral health and hygiene. ($p < 0.05$).

Discussion

The oral health of the child has been unequivocally established to have a significant impact on the wellbeing of the child and the whole family [15]. Poor oral health behaviour, once established in the preschool years may be difficult to modify as the child grows older. To prevent the onset of oral disease in children, the American Academy of Pediatric Dentistry, the Canadian Dental Association as well as the Australian Dental Association strongly recommend an early professional involvement with oral examination, risk assessment and the provision of anticipatory guidance to parents within 6 months of the eruption of the first primary tooth, but not later than at 12 months of age [16-18]. All the caregivers in our study were the birth mothers and in the bivariate analysis, high maternal educational attainment, maternal occupation (having an administrative or professional job) and lower number of children in the household were significantly associated with good knowledge about oral health and hygiene while there was a moderate positive correlation between maternal educational attainment and good knowledge. Educational level and maternal age category were observed to significantly influence the oral health knowledge scores in a previous Nigerian study [14]. Edelstein had previously reported that children of parents with less than high school education had the highest caries experience compared to children of parents with higher education levels [19]. Petersen similarly observed a population level relationship between socio-environmental factors, availability of dental services and oral health outcomes [20]. On the contrary however, Schroth *et al.* [21] observed that caregiver's education was not significantly associated with early childhood caries (ECC), but the disparity in the educational attainment of their respondents was not wide.

Sociocultural risk factors that have been identified by previous researchers to negatively impact oral health are low socioeconomic status, poor family income, low levels of education, extremes of

maternal age, single-parent households, and a large family size. Socioeconomic circumstances can determine belief systems which can influence the patterns of food and fluid consumption, oral hygiene habits like tooth brushing and access to dental care [22]. Intergenerational processes such as maternal oral health beliefs, attitudes, and behaviours have been established as a link between maternal oral health and oral health or disease risk in offspring [23]. An understanding of these complex processes is imperative if behavioural modifications from counselling and long term sustenance of oral health interventions for at risk infants is desired. The highest proportion of our respondents (78.1%) had never visited a dental clinic. No need for dental care due to the absence of toothache was their primary reason for not attending the clinic. Olatosi *et al.* [24] in a previous Nigerian study observed that many Nigerian children do not receive a dental home. This is disheartening because the benefits which are derived for the child such as anticipatory guidance and prevention of transmission of cariogenic bacteria from mother to child would have been missed. A previous Behavioral Risk Factor Surveillance System (BRFSS) data showed that pregnant women not receiving dental care were more likely to be from lower socioeconomic strata and likely to be young, less educated, from lower income families, and without health insurance [25]. However, access to dental care is a multifactorial process which is dependent on certain patient and provider influences in low-income populations, such as lack of health insurance, poor financial resources, low oral health knowledge/literacy and concerns about dental treatment safety.

Toothache was the most common reason adduced for visiting the clinic among our study participants. This result corroborates findings from previous similar studies [24,26]. A high proportion of them similarly stated that their child had previously experienced toothache but self-prescribed medication was their most preferred treatment option. Researchers have found associations between maternal oral health (as assessed by the

mother's number of decayed and missing teeth) and young or preadolescent children's caries experience [27]. Maternal untreated caries has been correlated to a higher risk of early childhood caries in their offspring. Caries experience, in common with virtually all traits, is likely to be the result of several forms of gene-environment interplay [28]. In this context, it has been suggested that family history reflects the outcome of shared genetic variations and shared non-genetic factors (environmental factors, exposures, and common behaviors). We however cannot make causal inferences from our study due to its descriptive design. On assessing the knowledge of our respondents about oral health and hygiene, majority correctly identified that sweets and sugary snacks can cause dental caries and that dental caries was preventable. However, only 38% knew that cariogenic bacteria was transmissible to their child less than half of the parents while 49.1% of them assumed that deciduous teeth do not require treatment since they will eventually fall off. Furthermore, only 12.6% of the mothers agreed that a baby's mouth should be cleaned with moistened cloth. In a previous study by Adeniyi *et al.*, [14] most mothers (78.3%) reported using cotton wool or foam with water for their infants' oral hygiene before and educational intervention. The dental environment of a young child is complicated due to the fact that beliefs and practices of mothers directly affect oral health. It is generally recognised that parental beliefs and oral health-related behaviours play an essential role in the establishment of preventive behaviour that will lessen the probability of development of childhood dental caries [29] Consequently, educating mothers about positive oral health habits has been shown to have a positive influence on the oral health of children and reduce their risk of caries progression.

Most of the mothers cleaned their mouths only once daily with toothbrush and fluoride containing toothpaste while they similarly cleaned their child's mouth only once daily. A prior study had shown that the use of fluoride containing toothpaste is widespread in Nigeria [30]. Flouridated toothpaste

essentially remains the only regular source of fluoride in most Nigerian communities due to absence of other forms of systemic fluoride delivery systems. Based on cut of values above mean scores obtained from good practices, 77.5% of the mothers had poor practices while 68.3% utilized poor practices for the oral hygiene of their child. There was a moderate positive correlation between mothers' own practices about dental care and their children's oral care. Adeniyi *et al.* [31] had previously highlighted that maternal factors do affect the oral health status of their children. Maintaining oral hygiene is fundamental to controlling dental plaque which is the precursor of the two most common oral diseases namely dental caries and periodontal disease and effective tooth brushing is the most effective method to achieve good oral hygiene. Our study further reinforces the findings of these studies that the mothers cannot institute a better oral hygiene regimen for their child than their own. In our logistic regression model, high maternal educational attainment, mothers having an administrative or professional job, good maternal oral hygiene practices and frequency of oral hygiene performance for the child were still significantly associated with good knowledge of oral health and hygiene, thus showing that these associations are not spurious. Child health-related attitude and behaviours are taught and adopted at home through the process of primary socialization. These attitude and behaviours are further moulded and internalised by secondary socialization through the community network formed with friends, peers and teachers and others that the children interact with [32]. Furthermore, parents make decisions that influence not only their own health, but also that of their children. Thus risky oral health behaviour such as delayed introduction to tooth brushing, infrequent brushing, lack of parental supervision while brushing and frequent consumption which are acquired in the family have far reaching impacts on the oral health of children.

Conclusion

Our study showed that mother had fair knowledge and practice in relation to the oral health of infants and that those with higher education and good oral hygiene practices had better knowledge irrespective of their residential location. This however did not reflect in their attitude towards seeking dental care, indicating a need for health promotion to motivate them to utilize dental services. Consequently, programs aimed at reducing disparities in child oral health which focus solely on children may fail if they do not design interventions that focus on associations between mother and the child's social environment.

What is known about this topic

- *Socio-demographic and behavioral risk indicators have been suggested to have a high contributory factors towards the development of oral diseases;*
- *Childhood socialization primarily takes place at home, and parents, being the primary role models, have a major influence on their children's oral hygiene and dietary practices. They are also responsible for taking their children to the dental clinic.*

What this study adds

- *To our knowledge, our study is the first community survey conducted in Nigeria among cohorts of rural and urban dwelling mothers to correlate maternal knowledge, dental service utilization and self-reported oral hygiene practices to oral health of preschool children;*
- *We observed gaps in maternal knowledge and low utilization of dental services which was primarily based on the need for curative care. We propose that mothers should be targeted with oral health promotion intervention through antenatal, immunization and well-baby clinics to improve the oral health of their children.*

Competing interests

The authors declare no competing interests.

Authors' contributions

All the authors have read and agreed to the final manuscript.

Acknowledgments

The authors acknowledge the mothers who participated in the program as well as the Paediatric dentistry resident doctors, house officers and other facilitators who were involved in the study.

Tables

Table 1: demographic characteristics of study participants with association between independent and dependent variables by χ^2 or Fisher's exact test

Table 2: utilization of dental services by the respondents with association between independent and dependent variables by χ^2 or Fisher's exact test

Table 3: distribution of maternal correct answers (n; %) to questions regarding the knowledge about oral hygiene

Table 4: oral hygiene practices of the mother and that utilized for their infants with association between independent and dependent variables by χ^2 or Fisher's exact test

Table 5: predictors of good knowledge of oral health and hygiene by logistic regression model

References

1. Locker D, Matear D. Oral disorders, systemic health, well-being and the quality of life: A summary of recent research evidence. Community Health Services Research Unit, Faculty of Dentistry, University of Toronto. 2000.

2. Poul Erik PetersenI, Denis BourgeoisI, Hiroshi Ogawal, Saskia Estupinan-DayII, Charlotte Ndiayell. The global burden of oral diseases and risks to oral health. *B World Health Organ*. 2005 Sep;83(9): 661-9. **PubMed** | **Google Scholar**
3. Dolce MC. Integrating Oral Health into Professional Nursing Practice: an Inter-professional Faculty Tool Kit. *J Prof Nurs*. 2014;30(1): 63-71. **PubMed** | **Google Scholar**
4. Spurr S, Bally J, Ogenchuk M. Integrating oral health into pediatric nursing practice: Caring for kids where they live. *J Spec Pediatr Nurs*. 2015;20(2): 105-14. **PubMed** | **Google Scholar**
5. Vargas CM, Ronzio CR. Disparities in early childhood caries. *BMC Oral Health*. 2006;6(Suppl 1): S3. **PubMed** | **Google Scholar**
6. Fisher-Owens SA, Gansky SA, Platt LJ, Weintraub JA, Soobader MJ, Bramlett MD *et al*. Influences on children's oral health: a conceptual model. *Pediatrics*. 2007;120(3): e510-20. **PubMed** | **Google Scholar**
7. Caufield PW, Cutter GR, Dasanayake AP. Initial acquisition of mutans streptococci by infants: evidence for a discrete window of infectivity. *J Dent Res*. 1993;72(1): 37-45. **PubMed** | **Google Scholar**
8. Albino J, Tiwari T. Preventing Childhood Caries: a Review of Recent Behavioral Research. *J Dental Research*. 2016;95(1): 35-42. **PubMed** | **Google Scholar**
9. Leong PM, Gussy MG, Barrow SY, de Silva-Sanigorski A, Waters E. A systematic review of risk factors during first year of life for early childhood caries. *International Journal of Paediatric Dentistry*. 2013 Jul; 23(4): 235-50. **PubMed** | **Google Scholar**
10. Adair PM, Burnside G, Pine CM. Analysis of health behaviour change interventions for preventing dental caries delivered in primary schools. *Caries Res*. 2013;47Suppl 1: 2-12. **PubMed** | **Google Scholar**
11. Reisine S, Tellez M, Willem J, Sohn W, Ismail A. Relationship between caregiver's and child's caries prevalence among disadvantaged African Americans. *Community Dent Oral Epidemiol*. 2008;36(3): 191-200. **PubMed** | **Google Scholar**
12. Vieira AR, Marazita ML, Goldstein-McHenry T. Genome-wide scan finds suggestive caries loci. *J Dent Res*. 2008 May; 87(5): 435-9. **PubMed** | **Google Scholar**
13. Plutzer K, Spencer AJ. Efficacy of a oral health promotion intervention in the prevention of early childhood caries. *Commun Dent Oral Epidemiol*. 2008 Aug;36(4): 335-46. **PubMed** | **Google Scholar**
14. Adeniyi AA, Oyapero A, Ajieroh V, Sofola O, Asiyani O. Effect of health education intervention conducted by Primary Health Care workers on oral health knowledge and practices of nursing mothers in Lagos State. *J Public Health Afr*. 2018;9(2): 833. **PubMed** | **Google Scholar**
15. Pahel B, Rozier RG, Slade G. Parental perceptions of children's oral health: The Early Childhood Oral Health Impact Scale (ECOHIS). *Health Qual Life Outcomes*. 2007 Jan 30;5: 6. **PubMed** | **Google Scholar**
16. American Academy of Paediatric Dentistry. Guidelines on infant oral health care. *Pediatr Dent*. 2010;32: 114-8.
17. Canadian Dental Association. **The national voice for dentistry**. Accessed. August 12, 2019.
18. **Australian Dental Association**. Accessed. August 12 2019.
19. Edelstein BL. Disparities in oral health and access to care: findings of national surveys. *Ambul Pediatr*. 2002;2(2): 141-147. **PubMed** | **Google Scholar**
20. Petersen PE. Sociobehavioural risk factors in dental caries - international perspectives. *Community Dent Oral Epidemiol*. 2005 Aug;33(4): 274-9. **PubMed** | **Google Scholar**
21. Schroth RJ, Moor P, Brothwell DJ. Prevalence of early childhood caries in 4 Manitoba communities. *J Can Dent Assoc*. 2005;71(8): 567. **PubMed** | **Google Scholar**

22. Do LG, Scott JA, Thomson WM, Stamm JW, Rugg-Gunn AJ, Levy SM *et al.* Common risk factor approach to address socioeconomic inequality in the oral health of preschool children-a prospective cohort study. *BMC Public Health.* 2014;14: 429. **PubMed** | **Google Scholar**
23. Weintraub JA, Prakash P, Shain SG, Laccabue M, Gansky SA. Mothers' caries increases odds of children's caries. *J Dent Res.* 2010; 89(9): 954-8. **PubMed** | **Google Scholar**
24. Olatosi OO, Onyejaka NK, Oyapero A, Ashaolu JF, Abe A. Age and reasons for first dental visit among children in Lagos, Nigeria. *Niger Postgrad Med J.* 2019;26(3): 158-163. **PubMed** | **Google Scholar**
25. Eke PI, Timothé P, Presson S, Malvitz DM. Dental care use among pregnant women in the United States reported in 1999 and 2002. *Prev Chronic Dis.* 2005;2(1): A10-29. **PubMed** | **Google Scholar**
26. Murshid EZ. Children's ages and reasons for receiving their first dental visit in a Saudi community. *Saudi Dent J.* 2016;28(3): 142-7. **PubMed** | **Google Scholar**
27. Bedos C, Brodeur JM, Arpin S, Nicolau B. Dental caries experience: a two-generation study. *J Dent Res.* 2005;84(10): 931-6. **PubMed** | **Google Scholar**
28. Li Y, Caufield PW, Dasanayake AP, Wiener HW, Vermund SH. Mode of delivery and other maternal factors influence the acquisition of *Streptococcus mutans* in infants. *J Dent Res.* 2005;84(9): 806-11. **PubMed** | **Google Scholar**
29. Duijster D, O'Malley L, Elison S, Van Loveren C, Marcenes W, Adair PM *et al.* Family relationships as an explanatory variable in childhood dental caries: a systematic review of measures. *Caries Res.* 2013;47Suppl 1: 22-39. **PubMed** | **Google Scholar**
30. Folayan MO, Khami MR, Onyejaka N, Popoola BO, Adeyemo YI. Preventive oral health practices of school pupils in Southern Nigeria. *BMC Oral Health.* 2014;14: 83. **PubMed** | **Google Scholar**
31. Abiola Adeniyi A, Eytipe Ogunbodede O, Sonny Jeboda O, Morenike Folayan O. Do maternal factors influence the dental health status of Nigerian pre-school children. *Int J Paediatr Dent.* 2009;19(6): 448-54. **PubMed** | **Google Scholar**
32. Inglehart M, Tedesco LA. Behavioral research related to oral hygiene practices: a new century model of oral health promotion. *Periodontol.* 2000;1995;8: 15-23. **PubMed** | **Google Scholar**

Table 1: demographic characteristics of study participants with association between independent and dependent variables by χ^2 or Fisher's exact test

	n (334)	%	Poor Knowledge n=125	Good knowledge n=209	χ^2 †	p value
Maternal age (years) Correlation Factor (ρ)	1.867		p=0.113*			
16-30	76	22.8	23	53	2.079	0.176
31-47	258	77.2	102	156		
Mean 40.63±12.65						
Religion						
Christianity	204	61.1	72	132	0.423	0.061
Islam	129	38.6	53	76		
Others	1	0.3	0	1		
Mother's educational level Correlation Factor (ρ)	0.334		p=0.000*			
None	31	9.3	19	12	18.81	0.000*
Primary	83	24.9	38	45		
Secondary	150	44.9	53	97		
University/Polytechnic	69	20.7	14	55		
Number of children in the household Correlation Factor (ρ)	-0.197		p=0.000*			
1-2	104	31.2	30	74	18.82	0.006*
3-4	168	50.3	58	110		
≥5	62	18.5	37	25		
Working mother						
Yes	291	87.1	108	183	0.151	0.735
No	43	12.9	17	26		
Occupation type						
Managerial/Administrative	3	0.9	0	3	8.055	0.034*
Professional/ supervisory	40	12.0	8	32		
Clerical/skilled artisan	65	19.4	23	42		
Unskilled/Manual	226	67.7	94	132		
Residence of respondents						
Rural	79	24.3	30	49	7.228	0.065
Semi urban	77	23.5	25	52		
Urban	72	22.0	23	49		
Urban slum	99	30.3	43	56		

*Significant †Fishers exact when cells were less than 5

Table 2: utilization of dental services by the respondents with association between independent and dependent variables by χ^2 or Fisher's exact test

	n (334)	%	Poor Knowledge n=125	Good knowledge n=209	χ^2 †	p value
Previous dental visit						
Yes	73	21.9	25	48	0.140	0.505
No	261	78.1	100	161		
Reasons for Dental visit (n=73)						
Toothache	38	52.1	14	24	10.689	0.065
Jaw swelling	2	2.7	0	2		
Bleeding gums	1	1.4	0	1		
Dental caries	22	30.1	8	14		
Tooth fracture	2	2.7	2	0		
Extraction	5	6.8	4	1		
Scaling and Polishing	3	4.1	0	3		
Reasons for not visiting the Dentist (n=261)						
No need/ no toothache	205	61.4	78	127	10.689	0.980
Never heard of a Dentist	21	6.3	9	12		
No dental clinic in my locality	12	3.6	2	10		
Lack of funds	14	4.2	1	10		
No time to spare	19	5.7	10	9		
Fear and anxiety	9	2.7	2	7		
Experience of toothache by the child						
Yes	125	37.4	50	75	0.552	0.265
No	209	62.6	75	134		
Treatment utilised for toothache in the child (n=125)						
Self-prescribed medication	65	52.0	29	36	0.735	0.805
Local remedies	27	21.6	11	16		
Non-dental hospital workers	15	12.0	6	9		
Treatment by a Dentist	15	12.0	3	12		
Nothing	3	2.4	1	2		

*Significant †Fishers exact when cells were less than 5

Table 3: distribution of maternal correct answers (n; %) to questions regarding the knowledge about oral hygiene

Correct responses to questions assessing maternal knowledge	Frequency (n)	Percentage (%)
Baby's mouth without teeth should be cleaned with what? (moistened cloth)	42	12.6
When should a mother/caregiver start cleaning a child's teeth? (when the first baby tooth erupts)	181	54.2
What should be used to clean a child's mouth from 2 years? (Toothbrush and toothpaste)	255	76.3
How often should child's teeth be cleaned? (Twice or more daily)	123	36.8
How often should a toothbrush be changed? (Every 3 months)	162	48.5
Baby teeth do not need treatment/care since they will fall off (False)	164	49.1
Tooth decay is preventable (Yes)	262	78.4
Tooth decay can be transferred from mother to child (Yes)	127	38.0
Eating of sweets, chewing gums and sugar containing drinks can cause tooth (Yes)	299	89.5

Table 4: oral hygiene practices of the mother and that utilized for their infants with association between independent and dependent variables by χ^2 or Fisher's exact test

	n (334)	%	Poor Knowledge n=125	Good knowledge n=209	χ^2 †	p value
Frequency of oral hygiene						
Not everyday	4	1.2	3	1	13.363	0.001*
Once daily	218	65.3	94	124		
Twice or more daily	112	33.2	28	84		
Oral hygiene tool						
Chewing stick alone	32	9.3	21	11	13.175	0.001*
Toothbrush and toothpaste	298	89.5	102	196		
Others	4	1.2	3	1		
Use of fluoride containing toothpaste						
Yes	282	84.4	95	187	0.57	0.000*
No	52	15.6	40	12		
Cleaning of child's teeth						
Yes	314		117	197	0.007	0.570
No	30		8	12		
Oral hygiene tool used for the child						
Chewing stick	2	0.6	1	1	4.253	0.551
Cotton wool	42	12.6	13	29		
Toothbrush & toothpaste	257	76.9	93	164		
Glycerine	1	0.3	1	0		
Salt	3	0.9	2	1		
Others	12	3.6	6	6		
Frequency of oral hygiene for child						
Not everyday	8		5	3	16.18	0.000*
Once daily	241		106	135		
Twice or more daily	85		14	71		
Who cleans the child's teeth						
Mother	278	83.2	102	176	2.963	0.397
Child	37	11.5	21	16		
Other relatives	3	0.9	0	3		
Nanny	5	1.5	2	3		
Correlation factor of practice scores between mother and child (ρ) = 0.454; $p=0.000^*$						
Poor maternal practices	259	77.5				
Good maternal practices	75	22.5				
Poor practices for child	228	68.3				
Good practices for child	106	31.7				
*Significant †Fishers exact when cells were less than 5						

Table 5: predictors of good knowledge of oral health and hygiene by logistic regression model

	β	p-Value	95% CI
Predictors of good knowledge of about oral hygiene			
Maternal educational attainment	0.321	0.000*	0.199–0.677
Maternal occupation	-0.138	0.042*	-0.565– -0.010
Good maternal oral hygiene practices	0.167	0.001*	0.196–0.594
Number of children in the household	0.436	0.329	-0.44 – 1.315
Maternal age	-0.31	0.908	-0.57 – 0.50
Childs mouth is cleaned twice daily	0.636	0.043*	-6.528 –-0.102
Use of fluoride containing toothpaste	0.480	0.943	0.071 – 0.540
Residential location	$\beta = 0.015$	0.769	0.056 –0.435