ORIGINAL RESEARCH

First Dental Visits among Children in Ibadan South-West, Nigeria: Age and Reasons

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Abstract

Aim: It is recommended that a child should have their first appointment with a dentist by their first birthday. An early first-time appointment with the dentist offers many prospects, which include timely preventive care and education on the child's oral health. This study aimed to determine the average age in years at which a first dental clinic visit is made and the reasons among children aged 16 years and below attending a tertiary hospital in Ibadan, Nigeria.

Materials and methods: This was a retrospective review of clinical records of 531 children who attended the Child Oral Health Clinic at Dental Centre, University College Hospital (UCH) for the first time between November 2021 and December 2022. Data on age at a first dental visit, reasons for attending, family structure, birth order, and primary caregiver were collected. Descriptive statistics, Chi-square, and logistics regression analysis were conducted.

Results: Most patients had their first dental visit at 7–9 years of age (30.3%), followed by 10–12 years (23.9%), and only 1.5% visited the dentist by their first birthday. The commonest reason for the first visit were malocclusion/oral habits (37.7%), dental pain (17.3%), dental trauma, and infection (9.4% respectively). Factors associated with presenting at older ages included attendance at public school (p = 0.005), being from a polygamous family (p = 0.012), increased number of children in the family p = 0.004), having non-parent family members as primary caregiver p = 0.004).

Conclusion: Many Nigerian children do not have their first dental appointment until much later in life, despite the recommendation that it should occur by age 1.

Clinical significance: Our study findings aim to culminate in the development and implementation of a robust, comprehensive intervention with the ultimate objective of establishing a cohesive and coordinated strategy that ensures that Nigerian children living in Ibadan get their first dental checkup by the first year of life.

Keywords: Age, Children, Clinical record, Dental-visit, First, Reasons.

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INTRODUCTION

Oral health is a crucial part of a child's general health and wellbeing, and early dental visits are recommended as essential preventive practice for young children.^{1,2} The early years, especially between birth and 5 years, are well recognized as the formative years for which the foundation of adult oral health is laid.^{3,4} Within this period, a child's dental disease risks and patterns are established.^{3,4} The American Academy of Pediatric Dentistry (AAPD) and the American Dental Association (ADA) recommend that for preventive pediatric oral healthcare, a child should make the first visit to the dentist within six months of the eruption of the first deciduous tooth and no later than age one.⁵ During the visits, dental professionals assess the child's dentition and may detect childhood dental diseases early. In addition, both the child and caregiver can access information on the child's dental development, and receive guidance on proper oral hygiene and dietary counseling for the child. Furthermore, the visit could establish an opportunity for a cordial relationship between the child and the dentist, which can foster a lifetime of relationships.² Moreover, the caregivers can air their concerns regarding the child's oral health and receive appropriate counsel including a visit schedule that is tailored to the child's dental healthcare needs.¹

The pediatric age-group has been generally described as including children from birth to age 16 or 18 years (depending on

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the geographical region or location and the legal framework in the regions).⁶ Specifically, the age of 16 years forms the upper cutoff limit for accessing care at the clinics designated for children's health (both general and oral health) care in most hospitals in Nigeria.⁷ This means that children in this category need their parents or guardians to accompany them to the clinic to give consent for the services to be accessed.

Available evidence show that many parents do not comply with recommended age for a first dental visit for their children, rather they present for symptomatic relief whenever problems arise at any age of the child.^{2,8,9} Owing to late presentation, many children seeking dental care often appear distressed, the parents distraught and mostly unable to afford the cost for treatment because of the outof-pocket payment system.^{2,8} The National Health Insurance Scheme (NHIS), the viable alternative payment system is mostly accessed by workers in public and civil service and those in well established private organizations but poorly accessed by the general public.¹⁰ The situation is worsened by the limited coverage of preventive oral healthcare services in the NHIS.¹⁰ Children and young adults with dental disease are at risk of serious developmental problems, function disorders, and behavioral problems.¹¹ Having a timely first dental visit for a child, without the need for invasive treatment, facilitates prevention of oral diseases.¹² In addition, dental health costs are significantly reduced when children receive their first preventive dental visit at an early age.¹² Common misconceptions formed by significant others (parents/guardians/caregivers) that may have fueled the low priority given to dental healthcare include that deciduous teeth will eventually exfoliate or the belief that teeth are expendable and dental diseases are non-life-threatening conditions.^{9,13,14} Public health dentists have been at the forefront of promoting the recommended age for children's first dental visits. However, it is unclear how these interventions have fared among the population in Ibadan. A good understanding of the age and reasons for children' initial presentation at a dental clinic facility is crucial to the planning of appropriate public oral health interventions that can encourage preventive dental care use and lower the incidence of oral illnesses in children. This study therefore investigated the age of children at their first dental visit at the University College Hospital (UCH) pediatric dental clinic and their reason for the visit.

MATERIALS AND METHODS

A retrospective review of clinical records of patients (16 years and below) that presented at the Child Oral Health Clinic throughout the year 2022 and up to November 2021 was done.

Location: The study was carried out at the dental outpatient clinic (Dental Centre) of the UCH, Ibadan, Oyo state, Southwestern Nigeria. University College Hospital is a referral healthcare centre, being one of the largest Tertiary Health Care facilities in Nigeria owned by the Federal Government. The hospital provides healthcare services to patients of diverse ethnicity, culture, language, and religion from Ibadan, and its environs. The dental centre consists of six clinical Departments, including the Department of Child Oral Health which comprises two units: the Pediatric dentistry unit and the Orthodontics unit. The dental center provide dental care services to people at all levels of socioeconomic strata, even without the need for the presentation of referrals.

Sample Size Estimation: Using a formula for a descriptive cross-sectional study (Z2pq/e). With a 21.2% prevalence of early childhood caries among nursery school children aged 3–5 years, 5% margin of error, a 95% confidence interval, and a 25% attrition

(incomplete patient record), the minimum sample size was obtained in 321 case notes.

Ethics and Permissions: Ethical approval was obtained from the research and ethical committee of the UI/UCH ethics review board with UI/UCH EC Registration number: NHREC/05/01/2008a. Permissions were obtained from the hospital authorities. Patient confidentiality was ensured during the course of the research. Only information relevant to the study was collected. Anonymity was also ensured by not using identifiers such as the patient's name and the name of the school attended.

Sampling Technique and Procedure: Using the logbook from the records office containing all patients seen at the Child Oral Health Clinic, we retrieved consecutive case notes of first-timer patients seen at the clinic within a fourteen months period starting in November 2021 and ending in December 2022.

Inclusion and Exclusion Criteria: Using a proforma (Appendix 1) developed to guide data extraction, all case notes with complete information on the patient characteristics as outlined in the proforma were included. We excluded the case notes of patients with special healthcare needs.

Pretest: A five man-team was raised for the data collection. The team was trained in the understanding and interpretation of the proformer. A pretest was carried out to identify ambiguities in the proformer which were prompty reviewed. The inter-and intrarater agreement measurement was done among the team, and we achieved appreciable levels of agreement (good–excellent).

Data Handling: The data was handled with the utmost confidentiality. The collected data was entered into Microsoft Excel, and spreadsheet and stored in this form in the cloud. The data was checked daily to detect errors and missing values, which were addressed promptly.

Measures: The sociodemographic and patient characteristics considered in the study included age at presentation (within the first year, 1-3 years, 4-6 years, 7-9 years, 10-12 years, 13-15 years, and ≥15 years), gender (male and female), current class (kindergarten or lower, nursery, primary, junior, senior and post-secondary school), tribe (Yoruba, Igbo and others), religion (Christianity and Islam), family structure (monogamous, polygamous, single/separated/ divorced parents), number of children in the family (1, 2, 3, 4, 5+), patients' birth order (firstborn, second-born, third-born or fourthborn or higher), and patient's primary caregiver (parents or other family members). The participants' complaints at their first dental visit were grouped into (1) caries, (2) infection, (3) malocclusion/ oral habits, (4) pain, (5) preventive treatments-routine checkup and prophylactic scaling and polishing, (6) dental trauma, (7) teeth discoloration/mouth odor, and (8) others. The dental complaints that were grouped as "others" due to their small sample size included bleeding gum, cleft lip/palate, tongue tie, oral ulcer, gum recession, limited mouth opening and missing teeth.

Data analysis: Data analyses were restricted to 531 clinical records which fulfilled eligibility criteria. Descriptive statistics performed included patients' sociodemographic characteristics and their reasons for presentation at the clinic. Univariate results were presented in counts and percentages. Exact Pearson Chi-square was used to carry out bivariate analyses between age at first presentation, birth order, and reasons for the patient's first presentation. Factors associated with age at first presentation (continuous outcome) were evaluated using a multivariable linear regression. Analyses were done with STATA, version 18.0 (Stata Statistical Software: College Station, TX: Stata Corp LP), and the significance level was determined using a two-sided *p*-value < 0.05.

Table 1: Demographic characteristics of the pediatric dental patients (n = 531)

(n = 531)	
Characteristics	N (%)
Age at presentation	
Within the first 1 year	8 (1.5)
1–3 years	34 (6.4)
4–6 years	111 (20.9)
7–9 years	161 (30.3)
10–12 years	127 (23.9)
13 years 16	90 (16.6)
Age at presentation [Years–M(SD)]	8.6 (<u>+</u> 3.6)
Gender	
Male	275 (51.8)
Female	256 (48.2)
Type of school ^{1,2}	
Private	458 (86.3)
Public	22 (4.14)
Current class ¹	
Kindergarten or lower	32 (6.0)
Nursery school	33 (6.2)
Primary school	242 (45.6)
Junior secondary school	98 (18.5)
Senior secondary school	58 (10.9)
Post-secondary school	6 (1.1)
Tribe ³	
Yoruba	456 (85.9)
Igbo	39 (7.3)
Others	36 (6.8)
Religion	
Christianity	384 (72.3)
Islam	147 (27.7)
Family structure ¹	
Monogamous	451 (84.9)
Polygamous	33 (6.2)
Single/separated/divorced parents	11 (2.1)
Number of children in the family ¹	
1	43 (8.2)
2	159 (29.9)
3	172 (32.4)
4	87 (16.4)
5+	36 (6.8)
The patient's birth position ¹	
Firstborn	211 (39.7)
Second born	151 (28.4)
Third born	90 (17.0)
Fourth-born or higher	58 (10.9)
Patient's primary caregiver	
Parent (Father and/or mother)	491 (92.8)
Other family members ⁴	40 (7.5)

¹Might not add up to 100% because of missing data; ²Post-SSCE excluded; ³Other tribes, including Hausa, Urhobo, Ebira, and so on ⁴Such as grandmother, aunt, brother, sister, and so on

Results

Demographic Information

The socio-demographic characteristics of the 531 pediatric dental patients are described in Table 1. About 52% of the dental patients were male. The majority (86.3%) of the patients attended private schools, 45.6% were in primary school, 85.9% were Yoruba, 72.3%

Table 2: Reasons for the pediatric patients' first presentation at the dental clinic (n = 531)

Complaints at first dental visit	N (%)
Caries	32 (6.0)
Infection	50 (9.4)
Malocclusion/oral habits	200 (37.7)
Pain	92 (17.3)
Preventive treatments	41 (7.7)
Dental trauma	50 (9.4)
Teeth discoloration/mouth odor	40 (7.5)
Others ¹	26 (4.9)

¹Others such as bleeding gum, cleft lip/palate, tongue tie, oral ulcer, gum recession, limited mouth opening, and missing teeth

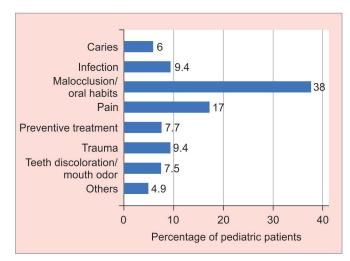


Fig. 1: Showing the reasons for the first dental visit among the patients

were Christians, 84.9% were from a monogamous family setting and 91.8% were with at least 2 children in the family. Two-thirds were either firstborn (39.7%) or second-born (28.4%).

Age at First Dental Visit

Most patients had their first dental visit at 7–9 years of age (30.3%), followed by 10–12 years (23.9%), 4–6 years (20.9%), 13–15 years (16.4%), 2–3 years (6.4%), within the first year of life (1.5%) and greater than 15 years (0.2%). The average age at the first dental visit was 8.6 (\pm 3.6) years (Table 1).

Reasons for First Dental Presentation

As many as 200 pediatric patients (37.7%) made their first dental visit due to emotional concerns about the child's teeth (malocclusion) or oral habits such as thumb, lip sucking, and tongue thrusting (Table 2 and Fig. 1). Patients also presented because of dental pain (17.3%), dental trauma (9.4%), dental infection (9.4%), preventive treatment (7.7%), tooth discoloration or mouth odor (7.5%), and caries (6.0%). In the remaining case notes (4.9%), presentation was based on bleeding gum, cleft lip/palate, tongue tie, oral ulcer, gum recession, limited mouth opening, and missing teeth (Table 2 and Fig. 1).

The results of the bivariate analyses are presented in Tables 3 to 5. Age at first presentation was significantly (p < 0.001) associated with patients' reasons for the first dental visit (Table 3). Complaints about the arrangement of teeth (malocclusion)/oral habits formed the most common presentation reason across all study age-groups. This was closely followed up by the complaint

			Age at first	presentation			
	<1	1–3	4–6	7–9	10–12	>13	p-value
Reasons for presenting							
Caries	1 (12.5)	8 (23.5)	7 (6.3)	7 (4.4)	3 (2.4)	6 (6.7)	< 0.001
Infection	0 (0.0)	5 (14.7)	8 (7.2)	15 (9.3)	14 (11.0)	8 (8.9)	
Malocclusion/oral habit	1 (12.5)	6 (17.6)	42 (37.8)	66 (41.0)	58 (45.7)	27 (30.0)	
Pain	0 (0.0)	1 (2.9)	22 (19.8)	28 (18.0)	22 (17.3)	19 (21.1)	
Preventive treatments	0 (0.0)	3 (8.8)	7 (6.3)	12 (7.4)	8 (6.3)	11 (12.2)	
Dental trauma	1 (12.5)	3 (8.8)	8 (7.2)	19 (11.8)	10 (7.9)	9 (10.0)	
Teeth discoloration/mouth odor	1 (12.5)	1 (2.9)	9 (8.1)	10 (6.2)	9 (7.1)	10 (11.1)	
Others	4 (50.0)	7 (20.6)	8 (7.2)	4 (2.5)	3 (2.4)	0 (0.0)	
Birth order							
Firstborn	2 (25.0)	12 (35.3)	49 (44.9)	57 (36.1)	58 (47.5)	26 (32.5)	<0.012
Second-born	5 (50.0)	19 (55.9)	26 (23.9)	48 (30.4)	36 (29.5)	23 (28.8)	
Third-born	1 (12.5)	3 (5.9)	16 (14.7)	37 (23.4)	16 (13.1)	20 (25.0)	
Fourth-born+	1 (12.5)	1 (2.9)	18 (16.5)	16 (10.1)	12 (9.9)	11 (13.7)	

Table 4: Association between the reason for first dental visit and birth order

Reasons for presenting	Firstborn	Second born	Third born	Fourth born+	p-value
Caries	15 (7.4)	8 (5.1)	5 (5.4)	4 (6.8)	0.222
Infection	13 (6.4)	16 (10.3)	11 (12.0)	6 (10.2)	
Malocclusion	81 (39.7)	59 (37.8)	31 (33.7)	20 (33.9)	
Pain	39 (19.2)	17 (10.9)	20 (21.7)	13 (22.0)	
Preventive treatments	11 (5.4)	15 (9.6)	7 (7.6)	5 (8.5)	
Dental trauma	13 (6.4)	17 (10.9)	11 (12.0)	8 (13.6)	
Teeth discoloration	21 (10.3)	15 (9.6)	4 (4.3)	0 (0.0)	
Others	11 (5.4)	9 (5.8)	2 (3.3)	3 (5.1)	

 Table 5: Multivariable linear regression model showing factors

 associated with age at first dental visit

Characteristics	Coefficient (95% CI)	p-value
Gender Male Female (Ref)	0.54 (-0.07-1.17)	0.087
Type of school Private (Ref) Public	2.15 (0.67–3.63)	0.005
Tribe Yoruba (Ref) Igbo Others	-0.29 (-1.44-0.86) -0.56 (-1.81-0.70)	0.619 0.384
Religion Christianity (Ref) Islam	-0.01 (-0.77-0.76)	0.978
Family structure Monogamous (Ref) Polygamous Single/separated/divorced parents	1.24 (0.35–2.58) 0.57 (–2.09–3.23)	0.012 0.673
Number of children in the family	0.36 (0.12–0.60)	0.004
Patient's primary caregiver Parent (Father and/or mother) (Ref) Other family members	2.02 (0.64–3.40)	0.004

Ref, reference group; 95% Cl, 95% confidence interval. Model: Age at presentation as a continuous variable

of pain in age-groups starting from 4 to 6 years and above. Age at first presentation was significantly (p < 0.012) associated with the patient's birth order (Table 4). The patient's birth order (p = 0.222) was not statistically associated with the reasons for the patient's first dental visit (Table 5).

Factors Associated with Age at First Dental Visit

The results of the multivariable linear regression assessing the factors associated with the pediatric patient's age at the first dental visit are presented in Table 5.

Factors associated with presenting at older ages among pediatric dental patients included attendance at public school ($\beta = 2.15$; Cl: 0.67–3.63, p = 0.005), being from a polygamous family ($\beta = 1.24$; Cl: 0.35–2.58, p = 0.012), increased number of children in the family ($\beta = 0.36$; Cl: 0.12–0.60, p = 0.004), having non-parent family members as primary caregiver ($\beta = 2.02$; Cl: 0.64–3.40, p = 0.004), after adjusting for other socio-demographic factors (Table 5).

DISCUSSION

From our study, the pediatric patients' average age for a first dental visit of 8.6 years is a far cry from the recommended period of between the ages of 6 months and one year.⁵ Our study's modal age range of first dental visit' corresponds with reports from studies conducted among pediatric dental patients seen in Lagos University Teaching Hospital (LUTH) and Lagos State Teaching Hospital, as well as at the dental clinics in India.^{2,15,16} Reasons for a

child's first dental visit may be linked to fears that the child will be uncooperative, that deciduous teeth are less important, and that dental diseases are non-life-threatening.^{14,17,18} In contrast, lower ages of first dental visits were reported: In Saudi Arabia¹⁹ and Bulgaria²⁰ the commonest ages reported were 3–6 years, while in the United States of America the commonest age was 2–4 years.²¹ Quite impressively in a study conducted in Lebanon, all the children had visited the dentist before their first birthday, albeit the visits were mostly problem-driven.²² As a higher age of first dental visit is a common finding in many study reports, it is indicative of the low awareness or perhaps negative attitude among caregivers regarding the appropriate age for a child's first dental visit and its importance.^{16,19} Prevention of oral disease in children is most achieved when dentist appointments are made just before or soon after the eruption of their first teeth.²³ Evidence abounds on the benefits of such visits which are largely preventive in nature, such that the future need for restorative and emergency dental care, are greatly reduced and so are the associated treatment costs, more so, among children that are considered high risk.²³ Unfortunately, despite the professional recommendations of age of first dental visit by the first-year birthday, the report from this study as well as many other studies reports indicates that very few children had such experience.

The Dental Public Health (DPH) specialists occupy a privileged position in oral health promotion in this instance since they see both the children' caregivers and the children in their places of comfort such as their homes and schools.^{24,25} The use of a tailored public health intervention program targeted at the youngest population should be explored.²⁴ In the intervention, it is essential to include information about the significance of deciduous teeth and the importance of early first dental visits so that dental services are not needed only when a problem arises. Regarding the associated factors, being the first child, having a non-biological parent as primary caregiver and being from a polygamous home were associated with presenting at older ages for the first-time dental visit. More studies to unravel the reasons behind these findings are recommended.

We found that the majority of the children had their first dental visit for therapeutic purposes, whereas just less than ten percent visited for preventive care. Similar to our study, the study conducted in the LUTH² study also showed that most of the children had their first dental visit for therapeutic reasons, with just about a fifth of them visiting for preventive care. These findings are in sharp contrast to the reports obtained from a study conducted in Aracatuba, Brazil which showed that the majority of parents/ guardians, sought dental care for their children for prophylactic examination and prevention.²⁶ Although this was largely attributed to an educational program organized by the dental school in Aracatuba to promote awareness among the population. Parents may seek early dental treatment due to anxiety about their child's oral health and a desire to ensure their well-being. Research suggests that parents who perceive their child to be at risk of dental problems or who have had negative dental experiences themselves may be more likely to seek dental care for their children at a young age.²⁷ Early and asymptomatic dental clinic visits are relatively rare in most climes.⁹ As most benefits in oral disease prevention in children hinge on early dental clinic appointments.²³ The DPH team may, in addition to the efforts, emphasize the importance of preventive visits as the best form of care rather than therapeutic ones.

In our study, the commonest reason for seeking dental care among the first-timer patients was due to concerns about the unsatisfactory arrangement of teeth (malocclusion) and worries about oral habits developed by the children, which includes lip, thumb and hand sucking and thrusting among others. This reason was followed by pain-related complaints and then trauma-related presentations. Understandably so, perhaps, because our study's location the UCH dental centre is a tertiary care facility, and the orthodontic unit, which enjoys large referral volumes from the DPH team's awareness campaigns in schools, form a part of the Child Oral Health Department clinic at the hospital. Excluding this referral advantage effect, the finding in our study would seem to correspond with reports from similar studies conducted on other locations: Lagos² and Saudi Arabia²⁸ India¹⁶ and Poland²⁹ since it was not stated in all these studies if the orthodontic unit formed a part of the Pediatric clinics. The commonest reason for a first dental visit, reported in all these aforementioned studies, was pain related. Such a pattern of dental care-seeking behavior which seemed problem-initiated rather than driven by primary prevention, had been long-established in most culture and thus justifying the need for interventions to address and reverse the situation, through all means possible: Schools and mass media campaigns.³⁰ This awareness campaigns may be partly responsible for the parents, guardians and significant others who sought care regarding the unsatisfactory arrangement of teeth and dental habits they had observed in their children's wards.²⁶ Although, overall, the commonest reason for first dental visits in our study is not pain-related. But seeing that the reason borders on concerns with established dental problems that have manifested into obvious symptoms, it is not preventive in nature either. Therefore, the need to emphasize more early and routine visits cannot be overemphasized.

The limitations of our study includes the convenient nature of the data collected from patient's records. A randomized populationbased study that will include significant others' perspectives of their child's first dental visit experience is recommended for future studies.

CONCLUSION

This study revealed that most pediatric dental patients had their first clinic visit between the ages of 7–9 years, as opposed to the recommended period of by their first birthday. The commonest reason for seeking dental care among the first-time pediatric patients was due to emotional concerns about tooth arrangement and the child's dental habits.

Clinical Significance

Our study findings aim to culminate in the development and implementation of a robust, comprehensive intervention with the ultimate objective of establishing a cohesive and coordinated strategy that ensures that Nigerian children living in Ibadan get their first dental checkup by the first year of life.

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Authors' Contribution

MEO: Conceptualization; MEO, OEO, CO, TSF, SAN, FTA: Protocol development and investigation; MEO, TOT, OEO, CO, TSF, SAN, FTA, JIO: Methodology; MEO, TOT, OEO, CO, TSF, SAN, FTA: Participant recruitment, data collection, and data entry; MEO, ST, TOT, OTJ, OEO, CO, TSF, SAN, FTA, JIO, OIO, TIG: Data analysis; MEO, ST, TOT, OTJ, OEO, CO, TSF, SAN, FTA, JIO, OIO, TIG: Writing-original draft preparation; MEO, ST, TOT, OTJ, OEO, CO, TSF, SAN, FTA, JIO, OIO, TIG: Writing-original draft preparation; MEO, ST, TOT, OTJ, OEO, CO, TSF, SAN, FTA, JIO, OIO, TIG: Review of original draft; MEO, ST, TOT, OTJ, OEO, CO, TSF, SAN, FTA, JIO, OIO, TIG: Final review and editing; Funding acquisition: [Nil]; MEO, ST, TOT, OTJ, OEO, CO, TSF, SAN, FTA, JIO, OIO, TIG: Resources; MEO: Supervision.

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Appendix 1: Sociodemographic characteristics, time of presentation, and reasons among pediatric patients in dental center, UCH, Ibadan