

Knowledge of Oral Prophylaxis and Dental Check-Up Among Primary School Teachers In Lagos State

Correspondence: Castano BO
E-mail: babaalamu@gmail.com

*Castano BO, **Sanni A, ***Dawodu TT,
****Olanrewaju OJ, *****Oguntimehin A

* Dental Centre , General Hospital, Lagos
Island

** University of California, San Diego, USA

*** Dental Centre, Randle General Hospital,
Surulere, Lagos

***** Lagos State University Teaching
Hospital, Ikeja.

Key words: Primary school teachers, oral prophylaxis, oral health knowledge.

ABSTRACT

Background:

The oral health knowledge of school teachers influences the success of the National Oral Health Policy at the community level, hence, this study aimed to assess and compare the oral health knowledge of school teachers in urban and rural areas of Lagos State.

Materials and methods:

A cross-sectional study was carried out, using a multistage sampling technique to select 200 primary school teachers in both urban and rural areas. A pretested, self-administered questionnaire was used. Data were analysed using SPSS version 20. Descriptive statistics, Chi-square and logistic regression were used, and p -value <0.05 considered significant.

Results: The survey showed that the average age of respondents in rural and

urban areas was 39 ± 10.92 and 47 ± 7.56 , respectively. In both areas, more female teachers were surveyed than males. The majority of respondents in both rural and urban areas were married. Additionally, most respondents had earned a National Certificate of Education. However, there was a significant difference between rural and urban teachers regarding oral health knowledge. Over half (55%) of urban teachers had adequate oral health knowledge, while only 37% of rural teachers did. The survey also revealed a significant association between oral health knowledge and geographical location ($p=0.0102$; OR=2.081), marital status ($p=0.0204$; OR=0.26), and teaching experience ($p=0.0442$; ≤ 10 years, OR=1.533; ≤ 15 years, OR=2.130 and >16 years, OR=3.179).

Conclusion:

Primary school teachers in urban area showed averagely better oral health knowledge than their counterparts in the rural area of Lagos State. Hence, there should be, intensive oral health workshops and trainings for primary school teachers, both in rural and urban areas of Lagos State, so that the National Oral Health Policy may be a success.

INTRODUCTION:

Microbial dental plaque has been established as the primary aetiological factor in the establishment and progression of dental caries and periodontal diseases.¹ Dental plaque can be removed by professional oral prophylaxis or by homecare oral prophylactic aids like chemical plaque removal (chlorhexidine) and mechanical aids (toothbrushes, chewing sticks, dental flossing, etc). These help in plaque control by inhibiting oral

biofilm and plaque formation.^{2,3} Periodic professional oral prophylaxis is needed to enhance long-term inhibition of gingivitis since many patients are neither well-motivated nor skilful at maintaining a plaque-free oral environment for an extended period of time.¹ Twice daily regular tooth brushing with professional oral prophylaxis are the main public health measures available for the control and prevention of periodontal diseases and dental caries. These preventive measures can, therefore, improve the quality of life of patients.⁴

Several studies^{5,7} have shown the negative impact of oral disease on school children's quality of life, emphasizing its effect on school attendance. The incidence of gingivitis in pupils peaks around 6-7 years when permanent teeth erupt. Pupils with dental diseases are twelve times more likely to be absent from school than those with good oral health. The earlier quoted survey estimated school time lost is about 50 million hours annually.⁵⁻⁷ However, a more recent survey by Naaval and Kelekar⁸ estimated the school time lost to be around 142 million hours annually, of which 34.4 million hours was due to sudden dental care, 79.8 million hours was due to routine/orthodontic care, while the rest 27.8 million hours was due to cosmetic care. This burden is no doubt huge. School teachers are role models and may influence oral hygiene habit change by reinforcing oral health education to their pupils, thus making them central to controlling preventable oral diseases.^{5,9-12} Good oral health practices like dietary change, regular tooth brushing, dental flossing, and dental check-ups are best acquired in childhood with other developing habits.⁵⁻⁷ Thus, imparting school children is a potential way to positively affect child's attitude, values and behaviour, as well as the community at large.⁷

In the light of the above, the National School Health Program¹³ and National Oral Health Policy¹⁴ saddled school teachers at the community level with the responsibility of identifying, implementing, monitoring, evaluating, and mobilizing for healthy school environment and oral health promotion in

their village or ward. The school health program has among its objectives the promotion of healthy practices among learners and staff in order to prevent diseases through organization of school health days.¹² On the other hand, the oral health policy aims to achieve optimum oral health for at least 50% of Nigerians through sustainable awareness creation, strategic research, workforce development, coordination of oral health activities, institutionalization of modern dental practices and integration of oral health into national health programs.¹⁴ Studies by Ehizele et al,¹⁵ Nyandindi et al¹⁶ and Sofola et al¹⁷ have revealed that school teachers have poor oral health knowledge. It is crucial to know if there has been improvement in their oral health knowledge since the enactment of the national oral health policy and if location is a factor in accessing oral health knowledge. This study, therefore, aimed to assess and compare the knowledge of oral health among primary school teachers in both urban and rural areas of Lagos state.

MATERIALS AND METHODS

Study Design: A cross-sectional study was conducted to compare the oral health knowledge of primary school teachers in urban and rural areas of Lagos state. The sample size was calculated using the formula for comparing proportions¹⁸ giving a total of 200 and this was derived using proportions of oral health knowledge of primary school teachers from past prevalence in the rural⁹ and urban¹⁰ areas. A multi-stage sampling technique was used to consecutively recruit a sample size of 100 urban primary school teachers in Oshodi local council development area. Another sample size of 100 rural primary school teachers was also recruited in Agbowo local council development area. Administrative permission was obtained from both Lagos State Universal Basic Education Board and the head teachers. Consent of each participating teacher was were obtained. Ethical approval was sought and obtained from Lagos State University Teaching Hospital health research and ethical committee.

Study Instrument and Procedure:

A pretested self-administered questionnaire was used to collect relevant data from the teachers. The questionnaire was divided into five sections: Section 1 elicited for demographic data; Section 2 assessed knowledge of oral prophylaxis and hygiene; Section 3 assessed knowledge about dental check-up and common childhood dental problems; Section 4 evaluated the willingness of teachers to impart knowledge of oral health to their pupils; and Section 5 assessed the knowledge of existing dental clinics in the local government where their school is located as well as the local government where they resided. Sections two, three, and five contained 34 items that were used to assess and score oral health knowledge.

Data Management:

Data was cleaned and entered into SPSS version 20 software. Frequency tables were generated for categorical variables. Means and standard deviations were computed for continuous variables. Chi square was used to compare categorical variables. The odd ratio was determined.

A score of one (1) point was awarded for each correct answer and zero (0) for an incorrect answer giving a total obtainable score of 34 points; this was adapted from Jegede et al.¹⁹ The points were then converted to percentages and the median (68%) of the total score of the group was collated. Each respondent's aggregate score was inadequate knowledge if it was less than 68% of the median score of the group, or adequate knowledge if it was more than 68% of the median score of the group.

The median dichotomy into inadequate and adequate knowledge was adapted from Folayan et al.²⁰ The bi-variate associations were tested using chi-square test for all categorical variables. The outcome variable (dependent variable) was knowledge of teachers about oral health knowledge about dental check-up. There were 34 questions that assessed the oral health knowledge of teachers. The grouping variable (independent variable) was the local council

development area (LCDA) where teachers were located at the time the data was being collected. The independent variable was dichotomized as Rural if the teacher was teaching in Agbowa-Ikosi-Ejirin LCDA or Urban if the teacher was teaching in Oshodi LCDA. Bivariate comparison between the dependent and independent variables were tested using chi-square, and *p*-value <0.05 was considered statistically significant.

RESULTS

Descriptive Analysis

Most respondents were females in rural (59%) and urban (87%) areas. The study found that rural and urban areas had a high percentage of ever-married teachers (83% and 97%, respectively). Most respondents had attained a National Certificate of Education (NCE) in both areas, with 57% rural and 49% urban areas. However, more teachers in urban areas had a first degree (42%) and a second degree (8%) compared to those in rural areas. Urban teachers were also older, with a mean age of 47±7.56 years compared to 39±10.92 years in rural areas.

Regarding oral health knowledge, most teachers in urban areas (55%) had adequate knowledge, while the majority in rural areas (63%) had inadequate knowledge. Urban teachers also had more experience, with a mean of 20±8.38 years compared to 13±0.42 years in rural areas. Most respondents in both areas had started teaching between the ages of 21–30. Most respondents were willing to impart oral health knowledge, with 98% in urban areas and 96% in rural areas. An average number of respondents (54% in rural areas and 52% in urban areas) were aware of the availability of dental clinics in their local government areas. However, most respondents in rural (61%) and urban (67%) areas were not aware of the presence of dental clinics in the local councils where their schools were situated. Table 1 is a summary of the demographic characteristics of the study population (Table 1).

Table 1: Descriptive Characteristics of Participants (n=200)

CHARACTERISTICS	FREQUENCY	
	Rural (n = 100)	Urban (n = 100)
Knowledge OP,DC & CDP		
Inadequate knowledge (<68%)	63 (63%)	45 (45%)
Adequate knowledge (>68%)	37 (37%)	55 (55%)
Age group		
34 and below	39 (39%)	4 (4%)
35 – 44	24 (24%)	34 (34%)
45 and above	37 (37%)	62 (62%)
Mean (Age±SD)	39±10.92	47±7.56
Sex		
Male	41 (41%)	13 (13%)
Female	59 (59%)	87 (87%)
Tribe		
Yoruba	89 (89%)	85 (85%)
Igbo	4 (4%)	9 (9%)
Others	7 (7%)	6 (6%)
Marital status		
Ever Married	83 (83%)	97 (97%)
Single	17 (17%)	3 (3%)
Educational attainment		
SSCE	12 (12%)	1 (1%)
NCE	57 (57%)	49 (49%)
BSc	28 (28%)	42 (42%)
MSc	3 (3%)	8 (8%)
Years of teaching experience		
0 – 5 years	31 (31%)	1 (1%)
6 – 10 years	19 (19%)	13 (13%)
11 – 15 years	19 (19%)	25 (25%)
> 16 years	31 (31%)	61 (61%)
Mean (Years teaching experience)	13±0.42	20±8.38
Age at teaching debut		

Contributory Factors to Prolonged Hospital Stay After Discharge

OP: Oral Prophylaxis; **DC:** Dental checkup; **CDP:** Childhood Dental Problems; **LCDA:** Local Council Development Area; **SSCE:** Senior Secondary Certificate; **NCE:** National Certificate of Education; **BSc:** Bachelor of Science; **MSc:** Master of Science.

BIVARIATE ANALYSIS

Table 2 shows the bivariate relationship between oral health knowledge {knowledge of oral prophylaxis, knowledge about oral hygiene practice, childhood dental problems, and dental check-up}; it revealed a significant association with our primary exposure (independent variable) of teaching location of teachers (rural or urban), age, marital status, and years of teaching experience ($p < 0.05$). The significant predictors include the location of teachers { $p = 0.0102$, CI=95%, OR=2.081(1.182-3.664)}. The teachers in urban areas were twice as likely to have adequate oral health knowledge as those in the rural areas. Marital status of the teachers was another significant predictor { $p = 0.0204$, CI =95%, OR=0.26(0.084-0.812)}. Single teachers are less likely to be knowledgeable than the ever married. Lastly, teaching experience was another significant predictor { $p = 0.0442$, CI=95%; OR=1.533(0.536-4.389); OR=2.130(0.805-5.633); OR=3.179(1.327-7.614)}. Age was a borderline predictor { $p = 0.05$, CI=95%; OR=2.009(0.876-4.610); OR=2.552(1.192-5.463)}. (Table 2)

Table 2: Bivariate Analysis of Variables between Adequate and Inadequate Knowledge of Participants

VARIABLE	Inadequate knowledge n (%)	Adequate n (%)	Known; P-value	Adequate knowledge (95% CI)
LCDA*				1
Agbowa LCDA	63 (58.33%)	45 (41.67%)	0.0102	2.081(1.182-3.664)
Oshodi LCDA	37 (40.22%)	55 (59.78%)		
Age Group				
34 and below	30 (27.78%)	13 (14.13%)	0.05	2.009 (0.876 - 4.610)
35 - 44	31 (28.70%)	27 (29.35%)		
> 45	47 (43.52%)	52 (56.52%)		2.552 (1.192 - 5.463)
Sex				
Male	32 (29.63%)	22 (23.91%)	0.3648	0.746 (0.397-1.405)
Female	76(70.37%)	70(76.09%)		
Marital Status*				
Ever Married	92(85.19%)	88(95.65%)	0.0204	0.26(0.084-0.812)
Single	16(14.81%)	4(4.35%)		
Educational Attainment				
SSCE	9 (8.33%)	4(4.35%)	0.3416	1.659(0.481-5.729)
NCE	61(56.48%)	45(48.91%)		
BSc	33(30.56%)	37(40.22%)		2.522(0.710-8.961)
MSc	5(4.63%)	6(6.52%)		2.699(0.507-14.366)
Years of Teaching Experience*				
0-5 years	23(21.30%)	9(9.78%)	0.0442	1.533(0.536-4.389)
6-10 years	20(18.52%)	12(13.04%)		
11-15 years	24(22.22%)	20(21.74%)		2.130(0.805-5.633)
≥ 16 years	41(37.96%)	51(55.43%)		3.179(1.327-7.614)
Age at Teaching Debut				
≤ 20 years	12(11.11%)	9(9.78%)	0.9388	1.67(0.464-2.933)
21 - 30 years	80(74.04%)	70(76.09%)		
31 years and above	16(14.81%)	13(14.13%)		1.083(0.349-3.362)
Willingness to Impart OHP to Pupils				
Yes	4(3.70%)	2(2.17%)	0.5321	1.731(0.310-9.671)
No	104(96.30%)	90(97.83%)		1

LCDA: Local Council Development Area; * $p < 0.05$; 1 = Reference level; **OR:** Odd Ratio; **SSCE:** senior secondary school; **NCE:** National Certificate of Education; **BSc:** Bachelor of Science; **MSc:** Master of Science

DISCUSSION:

Primary school teachers are pivotal in the success of the National Oral Health Policy and School Health Program of the Federal Republic of Nigeria.^{13,14} This was corroborated by Edomwonyi et al²¹ in a quasi-experimental survey done in urban area of Lagos which revealed that teachers were as effective as dentists in delivering oral health knowledge to their pupils. They are role models and, as such, exert great influence on their pupils as reported by a study⁹ in Uganda. Besides, children in this age group, being in their formative years, begin to cultivate long-lasting habits and behaviour which may positively impart their adult life leading to a healthy oral lifestyle.^{5,6,9} Primary school teachers in this study generally showed poor oral health knowledge. Although, larger proportions of teachers in the urban area (55%) were averagely more knowledgeable than those in the rural area (37%). This finding is consistent with studies done by Lawal et al¹², Adebayo et al⁵, Ehizele et al¹⁵, and Sofola et al¹⁷ who found that primary school teachers in their studies had poor oral health knowledge. This is particularly disturbing in that this research was conducted 15+ years after Sofola et al¹⁷ carried out their survey in Lagos State. This, in our view, should have served as a policy basis to improve oral health knowledge of the primary school teachers, which in turn would have positively impacted their pupils.

Also, with the introduction of both School Health Program and National Oral Health Policy^{5,11,13,14} there has been no real improvement in the oral health knowledge or impactful intervention to stem oral health ignorance among primary school teachers in Lagos State as at the time this study was conducted. Plausible reasons may be due to acute shortage of dental therapists in the employment of the state government who support dentists as oral health educators. Adeniyi et al²² reported that in 2012, the ratio of dental therapists to patients nationally was 1:127,273, that is one dental therapist serving over one hundred and twenty thousand patients. Furthermore, in year 2023, the Dental Therapist Registration Board has a total of 5250²³ registered

therapists to serve a population of about 225 million²⁴ Nigerians, translating to a ratio 1:416,000, meaning one dental therapist serves about four hundred and sixteen thousand patients, and unpublished records from Lagos State Health Service Commission have 43 dental therapists who are in the public service of the state. This workload may in no small measure overwhelm and discourage this cadre of dental staff from carrying out this duty of oral enlightenment. Most of this cadre of dental staff may also prefer to work in dental clinics in the urban centres, leading to inequitable distribution dental staff manpower.²⁵

Besides, the annual World Oral Health Day (WOHD) celebration may be more often restricted to the urban centres because of limited sponsorship, so rural primary school teachers may not be privileged to this oral health knowledge awareness. Governmental funding in Nigeria for health is about 5% of the national budget, of which a meagre 0.41% is for oral health care delivery,²² this may further stifle the funds needed to assist the dental therapists in emphasising oral health education and on these primary school teachers. Teachers in the urban area in this study had average better oral health knowledge than their rural counterparts. This might be due to in addition to the above likely reasons, the enlightening effects of the various social media advertorials, and visits by toothpaste manufacturing companies and Community Dentistry Registrars to these urban primary schools, thus reinforcing oral health knowledge. It is noteworthy that more teachers in the urban area had higher educational qualifications than those in the rural area, which may impact the willingness of urban primary school teachers to acquire new knowledge. These reasons may account for why urban teachers are twice more likely to be more knowledgeable than those in rural area.

Marital status was positively significantly related to oral health knowledge and this is consistent with observation by Lawal et al.¹² Adducible reason could be that married teachers, who are parents, have been

involved in children training of which oral hygiene is daily enforced on their wards. Teaching experience was also positively and significantly related to oral health knowledge; this corroborated the studies by Lawal et al¹² and Shodan et al.⁶ It might be that over the years, due the routine inspection of their pupils' hygiene habits like fingernails, hair, and dentition, these teachers have seen increased absenteeism from schools occasioned by the incidence of periodontal diseases among pupils especially bleeding gums, probably have realised the need for thorough oral hygiene, and could have been emphasising same on their pupils. According to Nigerian National Oral Health Policy 2012¹⁴ school teachers are part of the community-level oral health education committee. This present study established that these teachers, who are very willing to be oral health educators, could serve as alternative oral health personnel in reinforcing oral health knowledge and thus reduce the burden of oral diseases. This agrees with Akera et al⁹ that primary school teachers contributed in no small measure to reinforcing oral health knowledge and practice. The average knowledge of primary school teachers in the urban area and the poor knowledge of those in the rural area may explain one of the likely reasons for the failure to attain the goal of the National Oral Health Policy, which is achieving optimum oral health in at least 50% of Nigerians by 2015.

Lastly, age is another predictor of oral health knowledge and this is so because oral health knowledge and practices acquired through life experience tend to improve with age. This agrees with Folan et al²⁰ that adherence to self-care oral health practice tends to improve with age.

The limitation of this study is that it did not inquire from the teachers if they had been given any previous oral health education and training ever since the National Oral Health Policy was signed into law.

CONCLUSION AND RECOMMENDATION:

Public primary school teachers in urban areas have adequate oral health knowledge than their counterparts in rural areas. There

is, therefore, a need to organise training and workshop for these teachers on oral health education so that the goal of the National Oral Policy may be actualized.

ACKNOWLEDGEMENT:

We will like to acknowledge Dr Olusola Adejumo, Medical Director, Agbowo General Hospital for the support he gave during the data collection, and the Lagos State Universal Basic Education Board.

Conflict of interest: None.

REFERENCES

1. American Academy of Pediatric Dentistry Clinical Affairs Committee; American Academy on Pediatric dentistry council on Clinical Affairs. Guideline on the role of dental prophylaxis in Pediatrics Dentistry. *Pediatr Dent* 2008-2009; 30 (7 Suppl): 119-20.
2. Wolinsky LE, Sote EO. Isolation of Natural Plaque-inhibiting Substances from 'Nigerian chewing sticks'. *Caries research* 1984; 18(3): 216-225.
3. Petersen PE, Mzee MO. Oral Health profile of school children, mothers and school teachers in Zanzibar. *Community Dent Health* 1998; 15(4): 256-62.
4. Omili M, Ofili AN, Omuemu V. Oral Health perception among officers and men of the Nigerian Prison Services, Abuja. *Eur J Gen Dent* 2013; 2:252-6.
5. Adebayo AM, Onadeko MO. Knowledge of school health programme among public primary school teachers in Oyo state, Southwestern Nigeria: A Rural-Urban comparative study. *Afr J. Reprod health* 2015 Sept; 19(3): 55 -60.
6. Shodan M, Prasad KVV, Javali SB. School Teachers knowledge about prevention of Dental caries and malocclusion in India. *J. Oral Health Comm Dent* 2014; 8(1): 6-11.
7. EnasRN. Effect of Preventive Periodontal Health Education on Oral Hygiene of Primary school children. *MDJ* 2009; 6(4): 402-407.

Contributory Factors to Prolonged Hospital Stay After Discharge

8. Naavaal S, Kelekar U. School Hours Lost Due to Acute/Unplanned Dental Care. *Health Behav Policy Rev.* 2018;5(2):66-73. DOI: <http://doi.org/10.14485/HBPR.5.2.7>
9. Akera P, Kennedy SE, Obwolo MJ, Schutte AE, Lingam R, Richmond R. Primary School teachers' contributions to Oral health promotions in urban and rural areas of Gulu District, Northern Uganda: a qualitative study. *BMC Oral Health* 2022; 22(1):211.
10. Ramroop V, Wright D, Naidu R. Dental health knowledge and attitude of primary school teachers towards Developing Dental Health Education. *West Indian Med J* 2011; 60(5):576.
11. Odeyemi KA, Chukwu EE. Knowledge, Attitude and Practice of School health among primary school teachers in Ogun State, Nigeria. *Niger J. Paed* 2015 Aug; 42(4): 340 -345.
12. Lawal FB, Bankole OO. Oral health awareness and practices of Primary school teachers in Ibadan, Nigeria. *Journal of the West African College of Surgeons.* 2014 Jun; 4(2): 47 -65.
13. National School Health Programme retrieved from www.unicef.org on 22/03/2017
14. National Oral Health Policy retrieved from www.health.gov.ng 22/03/2017
15. Ehizele A, Chiwuzie J, Ofili A. Oral Health knowledge, attitude and Practices among Nigerian Primary school teachers. *Int J Dent Hyg* 2011; 9(4): 254-60.
16. Nyandindi U, Palin-Palokas T, Milen A, et al. Participation, willingness and abilities of school teachers in oral health Education in Tanzania. *Community Dent Health*, 1994; 11(2):101-104.
17. Sofola OO, Agbelusi GA, Jeboda SO. Oral Health knowledge, attitude and Practices of Primary school Teachers in Lagos State. *Niger J Med* 2002 Apr-Jun; 11(2):73-6.
18. Smith PG, Morrow RH. *Methods for field trials of intervention against tropical diseases: 'a toolbox'*. New York. Oxford University, 1991: 42- 69.
19. Jegede AT, Oyedele TA, Sodipo BO, Folayan MO. Oral health knowledge and practices of dentists practicing in a teaching hospital in Nigeria. *Indian J. Dent. Res* 2016; 27(2):137-44.
20. Folayan MO, Khami MR, Folaranmi N, et al. Determinant of Preventive dental practice for children among final-year dental students in Nigeria. *Int J Paediatr Dent.* 2014; 24(1): 43 -50. doi:10.1111/ipd.12024.
21. Edomwonyi AI, Adeniyi AA, Adedigba MA, Oyapero A. Use of teachers as agents of oral health education: Intervention study among public secondary school pupils in Lagos. *J Family Med Prim Care* 2020; 9:2806-13.
22. Adeniyi AA, Sofola OO, Kalliecharan RV. An appraisal of the oral health system in Nigeria. *Int Dent J.* 2012; 62(6):292-300.
23. Dental Therapist Registration Board of Nigeria retrieved from <http://www.dthbn.gov.ng> retrieved 10/10/2023
24. World population by countries retrieved from <http://www.worldometer.info> retrieved 10/10/2023
25. Uguru N, Onwujekwe O, Ogu UU, et al. Access to Oral health care: a focus on dental caries treatment provision in Enugu Nigeria. *BMC Oral Health.* 2020;20(1):145