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Original Article

Prevalence of dental caries in public and private primary schools in Ilorin South Local Government Area of Kwara State, Nigeria

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Abstract

Dental caries is one of the commonest oral diseases in children, severe caries detracts from children's quality of life: they experience pain, discomfort, disfigurement, acute and chronic infections, and sleeping and eating disruption as well as higher risk of hospitalization, high treatment costs and loss of school days with consequently diminished ability to learn. All of which can be prevented by good oral hygiene. The study compared the prevalence of dental caries and practice of oral hygiene among public and private primary schools' pupils in Ilorin south LGA.

Study was a cross sectional analytical study involving Primary School Pupils in both Private and Public Primary Schools (from primary 2-5) within the age of 5-15 in Ilorin South LGA, Kwara State, Nigeria. Multistage sampling technique was used to recruit 800 participants, 400 from public primary schools and 400 from private primary schools. Interviewer administered semi-structured questionnaire was used to collect data and evaluation technique using DMFT index. Data generated from the study was analyzed using" SPSS version 16. The level of significance was set at P< 0.05 and confidence level at 95%.

Prevalence of dental caries was among all respondents was 11.0%; and significantly higher among pupils from public schools compared with private schools (68.2% versus 31.8%). There is urgent need for promotion of health education on oral health to reduce the prevalence of dental caries especially among public schools.

Keywords: Dental caries, School, Ilorin, Nigeria

Introduction

Oral health is a determinant of general health and quality of life. A combination of measures that includes water fluoridation, brushing, flossing, sealants, good nutrition and regular visits to the dentists can prevent 80-90% of dental problems. Oral health affects people physically and psychologically and influences how they grow, enjoy life, look, speak, chew, taste food and socialize as well as their feelings of wellbeing. The new model of care focuses on the reintegration of oral health care into primary health care. This concept is being explored in both the dental and medical communities. One of the keys to improving access to care is making dental services available, affordable, and accessible for underserved populations. Primary care medicine has more routine contact with these populations, providing opportunities for preliminary dental screening and education as well as integration of clinical services.[1]

Dental caries has been called a scourge of modern civilization and is without doubt, one of mankind's most prevalent chronic diseases. Dental caries is most commonly seen oral disease showing striking geographic variation, socio economic patterns and severity of distribution all over the world.

There is abundant evidence that dietary patterns in children have an influence on caries experience while much of this evidence is from cross sections studies, it is recognized that caries takes time to develop and caries

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status of an individual may reflect the dietary pattern at an earlier age. The lack of a substantial body of published studies relating early dietary pattern with the subsequent development of caries reflects the difficulty in conducting such longitudinal studies.[1]

In the current literature sugar consumption has been implicated as one of major contributors to dental caries. Consumption of sugar containing foods is believed to be on the increase in developing countries particularly among urban residents from higher socio-economic background. It has been suggested that variation in dietary and oral hygiene habits might account for the social and regional distribution of caries experience in Ghanaian school children.[1]

Oral diseases have been a persistent public health problem globally, with almost every individual experiencing poor oral health at least once in their lifetime. Oral conditions affect 3.9 billion people globally; the global burden of which increased by 20.8% from 1990-2010. Untreated caries in permanent teeth was the most prevalent condition followed by severe periodontitis and untreated caries in deciduous teeth[2]**.** Dental caries affects 60-90% of school-age children and most of the adults. Periodontal disease is prevalent in 50-90% of adults, becoming severe in 10-15% of them, while gingival diseases occur in majority of children and adolescents**.** [3] Oral disease burden is significantly higher among poor and disadvantaged population with an increase in developing countries. Globally, poor oral hygiene occurring due to increasing plaque and calculus deposits with increasing age have been reported among children and adolescents. [4]

Dental caries is one of the commonest oral diseases in children, severe caries detracts from children's quality of life: they experience pain, discomfort, disfigurement, acute and chronic infections, and sleeping and eating disruption as well as higher risk of hospitalization, high treatment costs and loss of school days with consequently diminished ability to learn. All of which can be prevented by good oral hygiene.[3]

Consumption of sugar containing foods is believed to be on the increase in developing countries particularly among urban residents from higher socio-economic background .It has been suggested that variation in dietary and oral hygiene habits might account for the social and regional distribution of caries experience in school children.[5]

In the current literature sugar consumption has been implicated as one of major contributors to dental caries [5] It is common to find developing countries discussed as a single population with similar trends in health and disease. Furthermore it is commonly believed that the prevalence of dental caries in developing countries is increasing, though there is insufficient information to confirm this. Establishing possible trends in health and disease is important for long term planning and policy making.

A study to assess the oral health practices of primary school students would reveal how far the nation has gone in promoting oral health using the WHO common risk factor approach. Furthermore, the study would encourage improvement and sustenance of good oral hygiene among the students. It will also lead to the institution of appropriate control measures by the students, their parents and the Government. This work is thus, aimed at assessing oral hygiene status of respondents and determining the prevalence of dental caries among the study population. The study aimed to compare the prevalence of dental caries and practice of oral hygiene among public and private primary schools pupils in Ilorin south LGA.

Material and Methods

Study design

Study was a cross sectional analytical study.

Setting

The study was conducted in Ilorin, the Kwara State capital, Nigeria. Ilorin is located within the North central geo-political zone of Nigeria. It has a population of 1,000,147. Ilorin South has its headquarters at Fufu. Ilorin South has 11 wards.

There 156 private primary schools and 55 public primary schools in Ilorin South LGA. The Local Government Authority under the supervision of the State Universal Basic Education Board (SUBEB) is responsible for the coordination of the primary school system including school health programme in the public primary schools, while the State Ministry of Education (SMOE) coordinates same in the private primary schools.

Participants

The study population was all registered Primary School Pupils in both Private and Public Primary Schools (from primary 2-5) within the age of 5-15 in Ilorin South LGA. Multistage sampling technique was used to select participants for the study. A total sample size of 800 was used, 400 from public primary schools and 400 from private primary schools. Proportional allocation was used to allot the number of private schools pupils and public schools pupil based on the total number of pupils in public schools and private school.

Data sources / measurement

Data was collected through interviews and by direct observation by a dentist. An evaluation technique using DMFT index as an evaluation tool was done.. (DMFT is decayed, missing and filled teeth).The total score for each participant was calculated, the total for public schools were calculated and divided by the number of participant to find the average for public schools, the same applies for private schools. A Mouth spatula was used and the whole examination was non-intrusive.

Interviewer administered semi-structured questionnaire was used to collect data, the questionnaire sought information about; demographic characteristics, dietary habit/history, oral hygiene practice, socio-cultural practice/beliefs and oral health knowledge, attitude and practice.

Statistical methods

Data generated from the study was analyzed using" SPSS version 16. The data was presented in the form of tables and charts. Where applicable, categorical variables were summarized using proportions. Knowledge was scored by using 0-6 for Poor, 7-14 for Fair, 15-20 for Good, while questions on Practice were scored using 0-3 for Poor and 4-6 for Good. For the comparative analysis of the outcome measure variables were compared using Chi-Square test. The level of significance was set at $P< 0.05$ and confidence level at 95%.

Ethical approval

Ethical clearance for this study was obtained from the Research and Ethics Committee of Faculty of Clinical Sciences University of Ilorin. Letter of permission for the study was obtained from the SMOE and the SUBEB for the private and public primary schools respectively. Consent of respondents was obtained, hence participation was voluntary. Confidentiality of information provided was also be maintained. Participating schools had the benefit of knowing the extent of prevalence of dental caries in their respective schools which can serve as a base line data for future evaluation and also identify the areas of treatment need and need for improvement of oral hygiene in their respective schools, thus making the school a healthier and safer place for all the members of the school community.

Results

Majority Participants and descriptive data

Majority (49.2%) of the respondents were age group 11-13 years in public school as compared to private school where 42.0% were age group 8-10 years with more male (52.5%) in public school compared to 51.2% in private school, though is not statistically significant ($p > 0.05$). Modal occupation of respondents' mothers were self-employed (58.3%) while that of respondents fathers were civil servants (48.1%). As shown in Table 1

Table 1: Socio demographic distribution of the respondents

Variables	Public 400 (%)	Private400 (%)	χ^2	P
Age Groups				
5 – 7	**37 (9.2)**	**151 (37.8)**		
8 – 10	**130 (32.5)**	**168 (42.0)**		
11 – 13	**197 (49.2)**	**73 (18.2)**		
14 – 15	**36 (9.0)**	**8 (2.0)**	**148.7**	**< 0.0001**
Gender				
Male	**210 (52.5)**	**205 (51.2)**		
Female	**190 (47.5)**	**195 (48.8)**	**0.1**	**0.723**
Tribe				
Yoruba	**311 (77.8)**	**264 (66.0)**		
Hausa	**20 (5.0)**	**11 (2.8)**		
Igbo	**25 (6.2)**	**106 (26.5)**		
Others	**44 (11.0)**	**19 (4.8)**	**66.5**	**0.0010**
Religion				
Christianity	**242 (60.5)**	**334 (83.5)**		
Islam	**158 (39.5)**	**66 (16.5)**	**52.5**	**< 0.001**
Occupation of mother				
Civil Servant	**157 (39.2)**	**133 (33.2)**		
Self Employed	**218 (54.5)**	**248 (62.0)**		
Unemployed	**25 (6.2)**	**19 (4.8)**	**4.7**	**0.094**
Occupation of father				
Civil Servant	**181 (45.4)**	**204 (51.0)**		
Self Employed	**199 (49.9)**	**189 (47.2)**		
Unemployed	**19 (4.8)**	**7 (1.8)**	**7.2**	**0.028**

In this study, only 88 (11.0%) of the respondents were caries positive out of which 60 (68.2%) were children

from public school and 28(31.8%) were children from private school. It's scientifically significant (p<0.05). As shown in Table 2

Table 2: Prevalence of dental caries among the respondents

School	Dental caries			
	Present (%)	Absent (%)	χ^2	P
Public	28(7.0)	372 (93.0)	12.2702	0.0005
Private	60(15.0)	340(85.0)		

Main results

The major source of information was school with majority understanding tooth decay as effect of bacteria and sugary food causes cavity, it's identified to be cause by sugary food (75.1%) and regular brushing can prevent it (69.9%) As shown in Table 3

Knowledge	Public (%)	Private (%)	χ^2	P
Causes tooth decay				
Sugary food	291 (77.0)	290 (73.2)	1.454	0.228
Bacterial	228 (60.3)	198 (50.0)	8.319	0.004
Worm	256 (67.7)	208 (52.5)	18.609	< 0.001
Not brushing regularly	276 (73.0)	246 (62.1)	10.454	0.001
Not using fluoride toothpaste	216 (57.1)	191 (48.2)	6.158	0.013
Symptoms of tooth decay				
Whitish spot on the tooth	246 (65.1)	207 (52.3)	13.068	< 0.001
Cavity on tooth	210 (55.6)	204 (51.5)	1.269	0.260
Pain from tooth	292 (77.2)	245 (61.9)	21.534	< 0.001
Swelling from the tooth	193 (51.1)	179 (45.2)	2.657	0.103
Preventive measures of tooth decay				
Reduce sugar intake	274 (72.5)	305 (77.0)	2.109	0.146
Using fluoride toothpaste	219 (57.9)	170 (42.9)	17.423	< 0.001
Using herbal toothpaste	212 (56.1)	202 (51.0)	2.002	0.157
Consulting herbalist	15 (4.00	28 (7.1)	3.548	0.060

Majority (82.2%) brushes every day of which 45.9% brushes twice a day of which more children in private school (51.2%) brushes more, compare to 40.5% in public school. Its scientifically significant (p<0.05) with majority (53.9%) using fluoride tooth paste with more, 59.2% among private school children compare to 48.5% in public school children. It's scientifically significant (p<0.05). As shown in table 4.

Table 4: Oral hygiene practices of respondents

Variables	Public (%)	Private (%)	χ^2	P
Frequency of tooth brushing daily				
Once a day	196 (49.0)	136 (34.0)		
Twice a day	162 (40.5)	205 (51.2)		
More than twice a day	42 (10.5)	59 (14.8)	18.743	< 0.001
Gangling habit after meal				
Yes	246 (61.5)	300 (75.0)		
Types of toothpaste used				
Ordinary toothpaste	106 (26.5)	82 (20.5)		
Fluoride toothpaste	194 (48.5)	237 (59.2)		
Herbal toothpaste	100 (25.0)	81 (20.2)	9.348	0.009

Majority (68.8%) of respondents had fair knowledge on dental caries of which private school children (73.5%) was higher compare to public school children (64.0%).It's scientifically significant (p<0.05) of which 93.0% had poor oral hygiene and only 7.0% had good oral hygiene with more 9.5% among private school children compared to 4.5% among public school children though it show no significant (p>0.05). As shown in Table 5

Table 5: Knowledge and Practice Score of Respondents

Variables	Public (%)	Private (%)	χ^2	P
Knowledge group				
Poor	40 (10.0)	25 (6.2)		
Fair	256 (64.0)	294 (73.5)		
Good	104 (26.0)	81 (20.2)	8.946	0.011
Practice group				
Poor	382 (95.5)	362 (90.5)		
Good	18 (4.5)	38 (9.5)	7.680	0.006

Respondents with good knowledge on dental caries where higher among public school, of majority were age group 11-13 years (50.0%),male (56.7%) and self-employed father (40.4%).There is no significant relationship between knowledge of respondent on dental caries and age group, sex, marital status and fathers occupation.(P >0.05) As shown in Table 6

Table 6: Comparing practice of oral hygiene of respondents with socio-demographic status

Variables	Public	%		Private	%	
	Poor	**Good**	**χ^2 / p**	**Poor**	**Good**	**χ^2 / p**
Age group						
5 – 7	**35 (9.2)**	**2 (11.1)**		**144 (39.8)**	**7 (18.4)**	
8 – 10	**125 (32.7)**	**5 (27.8)**		**143 (39.5)**	**25 (65.8)**	
11 – 13	**189 (49.5)**	**8 (44.4)**		**67 (18.5)**	**6 (15.8)**	
14 – 15	**33 (8.6)**	**3 (16.7)**	**1.519/ 0.678**	**8 (18.5)**	**6 (15.8)**	**10.793 /0.013**
Sex group						
Male	**202 (52.9)**	**8 (44.4)**		**189 (52.2)**	**16 (42.1)**	
Female	**180 (47.1)**	**10 (55.6)**	**0.490 /0.484**	**173 (47.8)**	**22 (57.9)**	**1.405 /0.236**
Father's occupation						
Civil servant	**177 (46.5)**	**4 (22.2)**		**188 (51.9)**	**1 (5.6)**	
Self employed	**186 (48.8)**	**13 (72.2)**		**167 (46.1)**	**22 (57.9)**	
Un employed	**18 (4.7)**	**1 (5.6)**	**4.138 /0.126**	**7 (1.9)**	**0 (0)**	**2.393 /0.302**

Respondents with good oral hygiene practice is higher among private school children(9.5%), of which majority were age group 8-10 years (65.8%),female (57.9%) and self-employed fathers (57.9%).There is significant relationship with age group of respondents and practice of oral hygiene (p<0.05) but there is no significant relationship with sex, marital status of mothers and occupation of father and practice of oral hygiene (p>0.05). Table 6

Discussion

Majority 51.9% of the pupils were boys, which is in accordance to study conducted in India[6] and Lagos[7]. Modal age group in public schools was 11-13 years (49.2%) when compared to 18.0% in the same age group among private school. This can be attributed to the fact that private schools have a lower school enrollment age compared to public schools. Occupation of mothers was majorly (58.3%) self-employed while that of fathers was majorly (48.1%) civil servant.

In this study, only 88 (11.0%) of the respondent were caries positive out of which 60 (68.2%) were children from public school and 28(31.8%) were children from private school. Its scientifically significant (p<0.05).This is lower compared to study done in India where of 742 caries positive school children, 53.0% public school children and 350 47.0% private school children. The low number of dental caries in this study can be due to better access to dental service and awareness of dental health in school and improved dental hygiene practice.

The school was the major source (50.4%), of information and only 34.6% heard from home. This shows there is more dental awareness in school than home. These findings were similar to study done in Lagos [8] where 97.9% of the respondent had heard about dental caries from the school, this is also in agreement with study done in Saudi Arabia. [9]

Majority (74.9%) of the respondents in this study identified tooth decay as effect of bacteria and sugary food resulting to cavity formation on the tooth. Causes of tooth decay identified by respondents was majorly (72.6%) sugary food while the commonest symptom of tooth decay mentioned by respondents was pain from the tooth (67.1%), best method of prevention identified by respondents was majorly (72.4%) reduction in sugar intake. These findings were similar to study done in Lagos [8], Saudi Arabia[9] where respondents identified consumption of sugary food (75.0%),(71.9%) ; pain from tooth (69.2%), (70.0%) and cavity on the tooth (50.9%),(61.1%) respectively but in variance with study done in Indian [6] where majority (90.8%) identified swelling from tooth as sign of tooth decay. The difference in opinion among respondents about symptoms of tooth decay depends on individual experience with tooth decay.

Concerning oral hygiene practice, most (82.l %) of the respondents brushed their teeth every day and less than half (45.9%) of the children brushed twice daily, however more children in private school (51.2%) brushed twice daily compared to public school children (40.5%), this is statistically significant (p<0.05). Fluoride toothpaste was the commonest tooth paste (53.8%) used in this study population. Use of fluoride toothpaste was higher among private school pupils

compared to those in public schools, 59.2% and 48.5% respectively, and this was statistically significant ($p<0.05$). Other cleaning method in this study was charcoal and salt. These findings were not in agreement with study done in Lagos [8] where 68.3% of the total respondents brushed daily with more children in public school brushing twice daily than children in private school, 47.5% of the children in private school used children tooth paste and other method of cleaning include cotton wool and water. The difference in these findings can be attributed to different social factors.

Majority (91.9%) of the respondents in this study consumed sugary product, however, slightly more children in public school (93.5%) consumed more sugary product compared to children private schools (90.2%),though there is no significant ($p>0.05$).More than half (51.6%) of the respondents eat sugary product daily of which this is also slightly higher among public school children (56.0%) than private school children (47.2%) of which more children in private school (49.5%) brushed their teeth before going to sleep compared to (42.5%) in public school. It's significant ($p<0.05$).This can be due to lack or reduced dental health awareness among public school. These findings are in agreement with study done in Saudi Arabia [9] where 98.2% of the respondent consumed sugary product which was done daily and 46.0% brushed their teeth before sleeping but in variance with study in Indian[6] where 67.9% consumed sugary product and only 25.1% brushed their teeth before sleeping. The high percentage of oral hygiene practice in this study can be attributed to high dental health awareness among this study population.

Majority (68.8%) of the respondents had a fair knowledge on dental caries while only 23.1% have good knowledge out of which, 104 (56.2%) were public school children and 81(43.8%) were private school children. A greater majority (93.0%) of the respondents had poor oral hygiene practice and only 7.0% had good practice of which 67.9%were private school children compared to public school with 32.0%, though this finding was not statistically significant ($p>0.05$). These findings are not in agreement with study done in Lagos where 89.1% of the respondents had good knowledge score of dental caries[8]

In conclusion, the prevalence of dental caries was significantly higher among pupils from public schools than those from private schools. There should be increase health education on oral health as it will go a long way to reduce the prevalence of dental caries especially among public schools.

Conclusion

The study assessed the awareness and prevalence of sexual violence among female students of the University of Ilorin. The study revealed that although majority of female students of University of Ilorin were aware of what sexual violence means and majority know that forced sexual intercourse is a form of sexual violence, they were not aware of the complete definition and the various acts that encompass sexual violence. The study also showed that respondents have experienced varying forms of sexual violence and most common perpetrators were acquaintances of the victims. This study calls for the need to address sexual violence in its entirety with a shift from criminal justice perspective to public health perspective. It is also important to educate everyone on the comprehensive definition of sexual violence and the role of every individual in the fight against sexual violence.

Recommendations

The study recommends that school authorities develop/ reinforce policy statement on sexual harassment in schools and establishment of telephone hotlines for counselling and prompt response for vulnerable students.

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