

ORIGINAL ARTICLE

Caries experience in the primary Dentition of Nursery School Children in Ile-Ife, Nigeria.

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Abstract.

Objective: To measure the prevalence and pattern of distribution of dental caries in suburban Nigerian children attending nursery school in Ile – Ife, Nigeria.

Methods: A cross sectional survey of 423 children (225 boys, 198 girls) aged 3 – 6 years using dmft index. WHO recommendations for oral health survey were used for caries diagnosis (non cavitated lesions were excluded). All examinations were carried out by two calibrated examiners.

Result: The prevalence of caries was 10.9% and a mean decayed, missing and filled teeth index (dmft) was 0.3 with the d - component comprising 92%. The mean dmft of children with high social status was higher than children with low social status. No statistically significant differences were found between boys and girls. The pattern of distribution revealed that out of 46 children diagnosed for caries 29 (63%) had caries confined to posterior teeth, 3 (6.5%) had caries only in anterior teeth and in 14(30.4%) both anterior and posterior teeth were affected. Caries free children accounted for 89.1%

Discussion: The experience of caries in suburban Nigerian nursery school children found in this study was lower than that reported in most African countries and developed countries.

Conclusion: Caries is not a widespread problem in some young suburban Nigerian nursery school children in the population examined. The importance of dental education and oral health programme both curative and preventive measures for this population are important to maintain the WHO / FDI millennium goal in Nigerian children population.

Key words: Caries, dmft, suburban, nursery, children.

INTRODUCTION

Dental caries is a complex disease, the cause of which has received significant research attention during the ninetieth and most of the twentieth centuries¹. Caries is common in children. If caries is left untreated complications such as toothache, dentoalveolar abscess causing

the facial profile of the patient could arise. These complications could become a burden to the patient, parents and guardians of the children affected by caries. Research symposia^{2,3} have highlighted the problem and devastating effect it can have on very young children.

The reported prevalence of dental caries in primary dentition was between 2.1% - 73%^{4,5} and the dmft score was between 0.9 - 4.8^{6,7,8}. In Africa the mean dmft score reported for primary dentition was 0.1- 3.1 depending on the age of the children^{9,10}. In a recent study

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in Kenya, a high prevalence of dental caries 63.5% and a mean dmft of 2.95 have been reported¹¹. A reported study in South Africa showed that both the percentage of children with dmft > 0 and mean dmft increased between 1981 and 1989 and have slowly declined in the absence of organized prevention to produce a secular trend of decreasing caries rate¹². The reason for the decline was unknown but was speculated to be due to a change in mutans streptococci strains. Association between high caries prevalence and high salivary levels of mutans streptococci in young children have been reported¹³. The authors suggested that only identification of mutans streptococci in colonized children might be of value in selecting at caries risk children for preventive measures.

In Nigeria recent studies on dental caries in nursery school children is sparse. Most of the data on primary teeth dealt with primary school children in Nigerian cities^{14,15} in which the dmft scores reported among 6 year – old children was 1.3 and 0.6 – 1.5 depending on socioeconomic background of the children. The aim of the present study was to measure the prevalence and distribution of dental caries in the primary dentition of nursery school children in Ile-Ife a suburban population in the south western part of Nigerian and to analyze the roles of some background factors in the decay of primary teeth. The fluoride content of the drinking water in the studied population was questionable since there was no common source of water in the community. Over 60% of this population obtain drinking water from the wells and boreholes. The only reliable source of fluoride in this population is from fluoridated toothpaste being used by the majority of the children for cleaning their teeth.

Method.

A cross sectional survey of 423 children aged 3 – 6 years attending nursery school in Ife central local government was carried out in 2003 and 2004 using WHO diagnostic criteria. Non cavitated lesions were excluded. In order to maximize cooperation the children were examined visually while standing in front of the examiners who were seated or kneeling.

All examinations were carried out by two calibrated examiners under natural light and mouth mirrors aided diagnosis of caries into dentine. Soft tissues were checked for sinuses. Decayed, filled surfaces of primary teeth and extractions due to caries were recorded. Missing incisors were not recorded as being extracted because of difficulty of distinguishing between extraction and normal exfoliation. The parents were advised of the planned examination. The parents were asked to complete the questionnaires sent to them through their children. Questions on the following variables were asked, age, sex, frequency of consumption of sugar containing food, snacks and drinks, tooth brushing habits and parent's occupation.

All the 13 nursery schools located in Ife central local government were included in the study to represent different socio economic standards (SES). The socioeconomic status was based on the father's income and mother's education¹⁶. All the children present in school on the days of examination were included in the study.

The intra-examiner reproducibility was tested by having the same examiners reexamined 30 children. Of the repeated examinations there was complete agreement in the diagnosis of caries in 28 cases. The data were analyzed with IBM computer using SPSS 10.0 version.

Results.

A total of 423 children, 225 boys (52.7%), 198 girls (40.8%) in 13 nursery schools in Ile -Ife central local government participated in the study. There was no consent withheld in all the children (Table1).

Table 1: Distribution of children examined by age and gender

Age (Years)	Male	%	Female	%
3	44	10.4	39	9.2
4	57	13.5	54	12.7
5	55	13.1	56	13.2
6	69	16.3	49	11.6
Total	225	53.3	198	46.7

The response rate of the questionnaires completed by the parents was high 97%. All the nursery schools in Ife central local government were private schools. Out of these 423 children, 127 (30%) were from high SES, 176 (41.6%) were from middle SES and 120 (28.4%) were from low SES. Overall 10.9% of the sampled children had experience caries.

Over 89% of the children examined were caries free (dmft =0). The mean dmft was 0.3. The mean dmft of children with high SES and middle SES were slightly higher than children with low SES. No statistically significant difference were found between boys and girls $P > 0.05$ (Table2).

Table 2: Distribution and percentage of dmft scores, among suburban Nigerian children population in Ile-Ife.

dmft	Boys	%	Girls	%
0	202	89.7	175	88.4
1-2	19	8.4	17	8.8
3-4	3	1.3	5	2.5
5 or more	1	0.4	1	0.2
Total	225	100	198	100

No positive relationship was observed between age and dmft score. The majority of the dmft teeth (92%) was scored for the d-component and the remainder been scored for extraction and filling of teeth. Most of the decayed teeth were untreated and teeth showing gross destruction of the crown accounted for 5% of teeth affected by caries.

The pattern of distribution revealed that out of the 46 children diagnosed for caries 29 (63%) had caries confined to posterior teeth, 3 (6.5%) had caries only in anterior teeth and in 19 (30.4%) with both anterior and posterior teeth affected.

Twenty one percent of the children examined were observed to consume

sugar containing drinks, sweet snacks and food twice or more per day. The content of these snacks and drinks contain sucrose (Table 3).

Table 3: Distribution and percentage of suburban Nigerian children with (dmft=1) or more) or without caries lesion (dmft = 0) according to daily frequency of consuming sweet snacks and /or drinks (information missing in 8 cases).

Frequency of snacking	dmft=0 n	%	dmft > 1 n	%
0-1	143	84.5	184	74.7
2 or more	26	15.4	62	25.2
Total	169	100	246	100

Frequent consumption of sugar was observed to be associated with more caries $P < 0.05$.

The oral hygiene was generally poor in the children examined. About half of the children with low SES presented with poor oral hygiene compared with one third of children with high middle SES. Over 95% of the children used fluoridated toothpaste for cleaning their teeth.

Discussion

In accessing children of this age group in Ile- Ife, relatively few problems were encountered as many of them attended private nursery schools especially children with high SES. Children with low SES are rarely found in private nursery schools because of the high tuition fee charged by these institutions. Relatively a high proportion of children with low SES attended private nursery school attached to the university staff

school because the tuition fee had been highly subsidized. The children of the very poor Nigerian families attended public schools where education is free and tuition fee are not paid. But the government free education programme starts from primary school and this was responsible for non availability of public nursery schools in Ile-Ife. Some possible bias should be considered as the children who were cared for at home and those with child minders were inaccessible and their dental health might have been different from those attending nursery schools. However, caries prevalence had been reported to be higher in children attending public nursery school than those attending private nursery school¹⁷ For further studies in this age group a house to house search is advocated.

The prevalence of dental caries found in this study population at Ile-Ife, a semi-urban population in the southwest of Nigeria was 10.9. The mean dmft was 0.3 and this is considerably less than that generally reported for urban Nigerian children population^{14,15} African children^{9,11,12} and children in the middle east, Asia and developed countries^{5,8,18,19,20}. The study has shown that the majority of the suburban Nigerian children are not receiving and / or are not seeking oral health care. This is evident in the dmft index in which 92% was recorded for the d – component indicating that high proportion of decayed teeth were untreated. This is similar to reported studies in other African countries^{7,9} Untreated decayed teeth is a frequent occurrence in African children. In many African countries, access to oral health services is limited and teeth are often left untreated and this calls for concern. The study has also shown that 89.1% of the children were caries free this is an indication that the WHO / FDI goal had been achieved. In a study in south Africa

among children of all races aged 4-5 years, only rural black children had mean caries scores as low as those found in the present investigation²¹.

No significant difference in dmft scores in the boys and girls could be confirmed in this study and this is in agreement with reported Nigerian study¹⁵ and other African studies^{10,22,23}. A tendency for African boys to have more caries lesion than girls have been reported^{15,23} and this kind of slight (statistically non significant) difference is also observed in the present study.

The frequency of consuming sweet snacks and drinks is more in high SES and middle SES children than low SES children and this frequency also increases with the dmft score (Table 3). This is due to the fact that the parents of children with high and middle SES are economically empowered and are able to provide these carcinogenic food, drinks and snacks more frequently to their children than children from parents who are low income earner.

Caries experience in the suburban Nigerian children in the present study is higher in children with high and middle SES. Caries experience of children has frequently been reported to be related to their SES background. In developed countries this correlation is mostly negative^{24,25}. The reverse is the case in African children²⁶. This study is in agreement with previous study on urban Nigerian children indicating that children with high SES show higher caries activity than children with low SES¹⁵. The same trend was observed in this study. As this study deals with suburban Nigerian children only, there is possibility that the difference in SES and in the prevalence of caries would have

been more significant if rural children had been included.

Conclusion

Dental caries is not a widespread problem among young suburban Nigerian children. Over 89% of children examined were caries free indicating that the WHO / FDI goals for the millennium^{27,28} namely 50% of children free of caries at age 5 – 6 years is already achieved in the studied population. The study revealed that the d – component of the dmft index was high 92% indicating that many carious teeth were left untreated and this calls for concern. There is need for dental education especially oral health campaign to attend the dentist and oral health programme including both curative and preventive measures for this population to maintain the WHO / FDI millennium goal.

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