Oral health status of 12-year-old Nigerian children

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Summary

Background study: **The World Health Organization has set some goals for the oral health of the 12-year olds[1]. This study, which is being carried out in a developing nation, will add to the accumulating data worldwide on this index age group.**

Study design: **One thousand six hundred 12-year-old public and private secondary school pupils were examined in six local government areas of Lagos State. The objective of the study was to assess their oral health status and treatment needs.**

Results: **In this study caries prevalence was found to be 24.6% with a mean DMFT of 0.46. The "D" component formed the greater proportion indicating low dental care in the population. The oral hygiene status (OHIS) of the students was generally fair. The girls had better oral hygiene and lower prevalence of gingivitis and calculus than the boys. The difference was however not significant (p>0.05). The treatment needs of the students revealed that 72.7% required periodontal treatment, 34.6% required restorative treatment and 10.3% required orthodontic treatment.**

Conclusion: **This study concludes that even though caries level in this age group was low, oral hygiene was fair and the utilization of oral health services was poor.**

Key-words: ***Oral health status, Dental caries, 12-year-olds.***

Résumé

Vue d'ensemble: L'organisation mondiale de Santé s'est fixé des objectifs pour la Santé buccale des enfants de 12ans. Cétte étude que nous menons dans un pays developpé l'est unique dans le sens où les résultas escomptés s'ajouteront aux informations déjà recueillies par le monde entier à propos de ce groupe d'âge.

Procédure d'etude: C'est une enquête descriptive du type phases .multiples avec des sujets triés au sort de différentes couches sociales. Il y a environ mille six cent enfants de 12ans qui ont servi des sujets. Ils étaient tous d'écoles privées et publiques confondues. Ils sont des habitant de six municipalités d'Etat de Lagos. L'objectif de l'étude était d'examiner leur statut de santé buccale.

Résultats: Cette étude a démontré qu'il y a une prépondérance de caric dentaire à 24,6% avec une moyenne 0,46 de DMFT. La partie 'D' s'est manifestée davantage et indiquait qu'il y avait moins de soin buccal parmi ces élèves. Le statut buccal de ces élèves était en général passable. Les filles étaient mieux en hygiène bucca le que les garçons. Ainsi, elles avaient moins de prépondérance de gingivite et de calcul que les garçons. La différence n'était pourtant pas signifiante, (p> 0.05).

Le résultat démontre que ces élèves ont besoin d'un traitement périodique à 72, 7%, un traitement correctionnel a 34, 6% et un traitement orthodontiques (intense) à 10, 3%.

Conclusion: En tout, l'étude constate qu'il est vrai qui il y a en un niveau bas de carve dentaire parmi ces élèves et un constat de soin buccal passable, cependant. Ils n'ont pas bénéficié ou fait usage de manière propre des services de santé buccale.

Introduction

The two most common oral diseases are periodontal disease and dental caries. While dental caries is believed to be a disease of affluence and mostly affecting children up to adolescence, periodontal disease is believed to be a long life disease, affecting both children and adults.

Because dental caries is globally believed to be a disease of children and young age groups, in recent times a lot of focus has been on the occurrence of dental caries in children. The World Health Organization (WHO)[1] has focused attention on the oral health care of these age groups. The belief is that if the children of today have well-maintained oral health, then the adult dentition of the future will be almost perfect if not totally perfect. Adequate attention on the oral health care of the child predisposes to good oral health in adulthood.

In the light of the above, we have decided to carry out a study on the oral health of 12-year-old Nigeria children. This index age group has been chosen for many reasons. The first reason is that this is the age at which all the deciduous dentition would have been replaced by permanent dentition and we therefore want to see the health of the early part of the evolving permanent dentition. The second reason is that the World Health Organization has set some goals for the oral health of the 12-year old and the Organization has instructed each country to work towards achieving these goals[1].

This study, which is being carried out in a developing nation, will add to the accumulating data worldwide on this index age group. It will in particular allow for comparison with data from other developing countries as well as giving opportunity for comparing with data from the developed countries.

Materials and methods

Selection of schools

Ten public schools and 10 private schools were selected in Lagos state by selecting 2 schools each from 5

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urban local government areas from an approved list obtained from the state Ministry of Education using a table of random numbers. From each school, 80 students aged 12 years to 12 years 11 months were selected by using a systematic sampling method from the school register. Equal sex predilection was ensured in the selection. In schools where the required number cannot be obtained, a higher number was picked from another school with more students to make up for the required number.

A total of 1,600 students (800 males and 800 females) were thus obtained for inclusion in the study. Permission for the survey was obtained from the Lagos State Ministry of Education. The consent of parents /guardians of the students and also that of the students were obtained.

Calibration of examiners

To assess inter-examiner variability, the two examiners GAA and SOJ examined 20 subjects with various conditions likely to be encountered separately and the results were compared. To assess intra–examiner variability one in ten students was re-examined.

Field work

In each school visited, each child completed a questionnaire, which contained questions on personal data, age, sex, parents' occupation, knowledge, attitudes and oral health practices of the students. Also previous dental visits, past dental treatment and method of oral hygiene used by the students were assessed.

After filling the questionnaires, the students were examined in a well-lit room using natural daylight. Each student was seated on a chair facing the window.

The teeth were examined using a plain mouth mirror and a sickle probe. Caries was diagnosed using the WHO criteria 1997 except that only permanent teeth were recorded[2]. CPITN index[3] and Greene and Vermillion index[4] were also used.

Adequate precaution to prevent cross infection was taken and information obtained was recorded in a prepared section of the questionnaire.

Data analysis.

The epi-info statistical software version 6.04 was used for data entry, validation and data analysis. Chi -square test of association was used to determine the significance of differences. Difference was taken as significant at the level of $p<0.05$.

Results

A total of 1,600 students aged between 12 years 0 Months and 12 years 11 months age last birthday (mean age 12.057) were examined, 800 were males (mean age 12.058), 800 were females (mean age 12.057).

Dental caries

One thousand two hundred and twenty two (76.4%) of the students were caries free while 378(23.6%) had dental caries (Table 1).

The DMFT for the study population was 0.46. DMFT for the public schools was 0.5. This is higher than the DMF for the private school, which is 0.44. There was no statistically significant difference in DMFT scores in both genders (p= 0.125) (Table 2).The D component of the DMFT formed the greater proportion of the DMFT and the number of filled teeth was also very low (FT- 0.02).

Oral hygiene status

The oral hygiene status of the children is presented in table 3. Only 458 (28.6%) students had 0 max CPITN score. 202(12.6%) students had gingivitis. Of these 85(5.3%) were males and 117 (7.3%) were females. 1110 (69.4%) students had calculus in their mouth.

Diseases of oral mucosa, bone and defects of teeth

The distribution of the diseases of oral mucosa, bone and defects of the teeth are listed on Table 4.

Occlusal abnormalities

One thousand one hundred and fifty two (72%) of the students had normal occlusion, 133(8.3%) had crowding of

Table 1 DMFT scores according to gender/schools

Sex	DMFT Scores	
	Public	Private
Male	0.503	0.348
	(±1.110)	(± 0.941)
Female	0.473	0.533
	(± 1.075)	(± 1.718)

P value=0.125, not significant

Table 2 Oral hygiene scores (OHIS)

OHIS	Male	Female
Private	1.041	0.836
Public	1.313	1.008

P value (males) = 0.0090 *P value (females) = 0.0059*

Table 3 CPITN scores according to type of school and gender

CPITN Score (Max)	Male		Total males	Female		Total females	Total males & females
	Private n = 400	Public n = 400	N = 800	Private n = 400	Public n = 400	n = 800	n = 1600
0	126	62	188	140	130	270	458
1	8	3	11	10	11	21	32
2	266	335	601	250	259	509	1110
Total	**400**	**400**	**800**	**400**	**400**	**800**	**1600**

Code: 0 – *No sign of disease*; 1 – *Gingival bleeding on probing* 2 – *Supra or subgingival calculus.*

Table 4 Prevalence of disease of oral mucosa bone and dental defects

Disease	No affected	% Total
Disease of oral mucosa	229	14.3
Enamel defects	39	2.4
Dental caries	378	23.6
Traumatized teeth	157	9.8
Tetracycline stains	50	3.1
Peg Shaped tooth	15	0.9
Fusion/germination	2	0.1
Supernumeraries	10	0.6
Malocclusion	448	10.3

Table 5 Occlusal abnormalities seen

	No	%
Normal	1152	72
Crowding	133	8.3
Diastema	148	9.3
Anterior open bite	50	3.0
Cross bite	28	1.8
Overbite	18	1.1
Overjet	25	1.6
Edge to edge	46	2.9
Total	1600	100

Table 6 Treatment needs

Treatment Needs	Male	Female	Total	%
OHI only	11	21	32	2.0
S&P & OHI	601	509	1110	69.4
Amalgam fillings	123	143	266	16.6
Anterior composite of GIC	53	57	110	6.9
AJC	10	8	18	1.1
Posterior crown	1	1	2	0.1
Denture	15	5	20	1.25
Extraction	21	34	55	3.4
Orthodontics	90	75	165	10.3

**Some students required more than one treatment*

the anterior teeth, 148 (9.3%) had diastema and 50(3.1%) had anterior open bite. Other occlusal abnormalities are listed in Table 5.

Treatment needs

One thousand one hundred and forty two (71.4%) of the students require scaling and polishing and oral hygiene instructions (Table 6). Two hundred and sixty six (16.6%) require amalgam fillings and 110(6.9%) require extraction. One hundred and sixty five (10.3%) require orthodontic treatment. Other treatments needed are listed in Table 6.

Discussion

The prevalence of dental caries is constantly changing all over the world [5,6]. In the developed countries it was initially very high but in the past two to three decades, there has been a decline in dental caries prevalence rates [7,8]. However, dental caries still remains "the single most common disease of childhood that is neither self-limiting nor amenable to short term pharmacological management" [8]. More than 80% of the pediatric population in the USA is affected by dental caries by age 17 years [9].

In Africa, the prevalence of dental caries, even though it was found to be relatively low, is steadily increasing [6,10]. This increase has been attributed to increased urbanization and change in the diet [11,12]. In Nigeria, the prevalence of dental caries has been reported to be low but steadily increasing by various authors [13,14]. In this study 76.4% of the students were caries free. The overall DMFT is 0.46.

The level of dental caries found in the 12 year olds is in the low category in accordance with the World Health Organization classification and the Organization's goal of 3.0 DMFT for the 12year age group [1]. This result compares favorably with the results of several other studies from Nigeria and other parts of Africa. [15-19].

The overall DMFT for the public school was 0.5; this is higher than that of the private schools (0.4) even though the difference was not statistically significant. This result contradicts popular belief that children from higher socio-economic class have more caries than children from poorer background. The higher prevalence of caries in the public schools can be attributed to the fact that all these children reside in the urban areas as well as availability of very cheap and affordable local sweets that are highly sugar concentrated. In fact, in the country today, the cheapest snack a child could buy is the local sweets.

The level of dental care seen in these students is very low. This low level of dental care also showed in the low number of filled teeth (FT-0.02) and the D component of the DMFT which formed the greater proportion of the DMFT. This agrees with recent findings, which observed very low levels of dental treatment in their subjects [16,17]. The World Health Organization has suggested that in countries where the DMF is increasing, the trend can be curbed through effective prevention campaigns so as to promote the adoption of new lifestyles and new eating habits that would not promote caries development [20]. It is also important to incorporate and encourage the traditional methods of oral hygiene that have proved their effectiveness and which are inexpensive and culturally acceptable [21].

More importantly is the wide variation in DMFT scores indicating that while the overall mean for the population is low, there are children who exhibit a high caries level and may be considered a high risk group.

The oral hygiene status (OHIS) of the students was good except for the boys in the public schools who had fair oral hygiene scores with OHIS of 1.3427 (Table 4). The fact that majority of these students had good oral hygiene scores is not surprising as urban children have been documented to have better oral hygiene than rural children probably because they have better oral hygiene awareness and access to cleaning agents [22].

The oral hygiene status and prevalence of calculus was significantly different in both sexes. The girls had better oral cleanliness, low prevalence of plaque, calculus and gingivitis than the boys. This observation is in agreement with previous studies [22,23].

Various degrees and types of malocclusion were seen in this study, 165 (10.3%) of these students required orthodontic treatment that they may not be able to afford.

The treatment needs of the students revealed that 72.7% require periodontal treatment, 34.6 require restor

ative treatment and 10.3% require orthodontic treatment.

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