

DENTAL SURVEY IN NIGERIA PART 4. PREVALENCE AND SEVERITY OF PERIODONTAL DISEASES

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ABSTRACT

Six hundred and seventy-three school children from the age of 3 to 20 living in the urban and the rural areas of Nigeria were examined by the Joint Dental Epidemiological Survey in 1986. The survey was funded by the Grant-in-Aid from the Japanese Ministry of Education, Science and Culture, and was conducted by both the Japanese survey team and the staff from the University of Ife, Ile-Ife, Nigeria. The periodontal state of the children was evaluated according to the Community Periodontal Index for Treatment Needs (CPITN) by WHO (1).

The prevalence of periodontal diseases was found to be 84.2% within the sample with a high occurrence of gingivitis and heavy deposits of calculus. However, there was little evidence of damage to the periodontal tissues. This can be attributed to the nature of their diet. The results suggested that there would be an increasing need for well-planned and organized public educational programs for the Nigerian children to promote better oral hygiene coupled with parental involvement in the prevention at home.

Key words: Periodontal diseases, Dental epidemiological survey, Nigerian school children.

INTRODUCTION

Periodontal diseases are one of the most common diseases among the human being. The prevalence and the severity of the

diseases are subject to a variety of factors which are geographical, socioeconomic and intraoral habits. WHO, in its report (1), indicated that the prevalence of periodontal diseases in the Asian and the

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Received for publication, February 1, 1988.

African people is higher and more severe than in the Americans and the Scandinavians. However, few epidemiological studies on the periodontal diseases in the Africans have been reported in the international literature in this field. No studies have been reported about the results with the diagnostic criteria of 'CPITN'.

Thus, a joint dental epidemiological survey was conducted by the present authors (2, 3) in Ile-Ife, Oyo State, Nigeria, since 1980, to compare the prevalence of dental diseases between the Nigerian children and the Japanese children. This paper describes and discusses the results obtained from the periodontal examination by the survey in 1986. Also, the etiology of the periodontal diseases is suggested and the treatment needs are indicated in the paper.

SUBJECTS AND METHODS

The subjects examined during the survey of 1986 are shown in Table 1. A total of 673 children were examined by the survey. They were divided into two groups. One group of children from the nurseries, primary schools, junior high schools and senior high schools in the city of Ife was examined. This group consisted of 271 children, representing the urban community group. The other group of children came from the nurseries, primary

schools, junior high schools and senior high schools in the villages of Ashipa and Origbo, which were 30 kilometers away from the city of Ife. There were 402 children in number, which represented the rural community group.

Oral inspection was conducted in the open air, using a dental mouth mirror and a falcate (falciform) explorer (CPITN type) for the examination of periodontal pockets. These instruments were the same as that designed by WHO (Fig. 1). The same examiner inspected all the subjects to assure consistency in the diagnosis of periodontal pockets throughout the survey. The number of children examined daily was also limited to 30 children to minimize

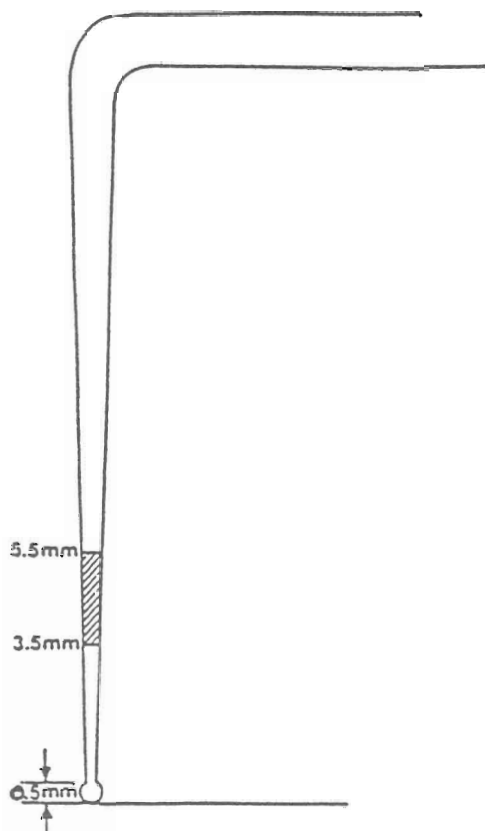


Fig. 1. Falcate Explorer (CPITN Type) for Periodontal Pockets, Similar to that of WHO's Design.

Table 1. Distribution of Subjects Examined in 1986

Age group	Urban		Rural	
	Male	Female	Male	Female
≤5	15	18	0	1
6-8	57	47	29	23
9-11	40	46	46	43
12-14	26	21	81	61
15-17	0	1	56	40
18-	0	0	12	10
Total	138	133	224	178

misjudgements which may be caused by the examiner's fatigue.

Evaluation method: The dental arches were divided into six segments. The explorer was used to determine the clinical state of each segment applying the criteria as illustrated in Figure 2. Each code number corresponds to the depth of the pocket present.

RESULTS

1. Prevalence of periodontal diseases

Table 2 shows that an average of 15.4% of the whole sample of Nigerian children had no sign of periodontal diseases throughout the age of 3 to 20. This means that the remaining 84.6% of the children had some signs of periodontal diseases. The prevalence of periodontal diseases tends to be minimal in early childhood and increases with age, which is shown by the increase of bleeding gingiva and calculus deposits. Three children, which is 0.4% of the whole sample, were excluded from this analysis, because they skipped the periodontal examination even though they were registered for the rest of the survey. Figure 3 illustrates the percentage of healthy periodontia in the males and females in each group. This shows that the

prevalence of periodontal diseases was lower in the females generally. Figure 4 illustrates the prevalence of the periodontal diseases in the urban and the rural population. This shows that the prevalence of periodontal diseases is higher in the rural population.

The average number of segments for each CPITN code is shown in Table 3. The number of segments without the diseases ranged from 2.8 to 4.2 and the number of segments with bleeding ranged from 1.7 to 3.1.

There was a calculus deposit in the segments from 1.5 to 2.7 and shallow pockets were seen in the segments from 0.1 to 0.3. There were no segments with deep pockets. It is obvious from this result that the degree of periodontal diseases is mild in the Nigerian children (5).

2. CPITN codes and treatment needs

Table 5 suggests that 84.2% of the children require oral hygiene instructions. Of the total children 79.3% need oral prophylaxis but none required complex treatment.

DISCUSSION

Emslie (5), Sheiham (6), and Enwonwu and Edozien (7) reported on the epidemiological studies of periodontal diseases in Nigeria. Sheiham (6) examined the Yoruba people and mentioned that the periodontal pocket formation with the disturbance of the periodontal tissue was found in 82.5% of the adults aged 25 years and over. In the present survey, the Yoruba children of 3 to 20 years old were examined. Periodontal diseases were found in 84.2% of the children.

Occurrence of shallow pockets accounted for 11.6% which was confined to 0.11 to 0.32 segments out of six segments per head. The most common type of periodontal diseases was gingivitis caused partly by the dental plaque and

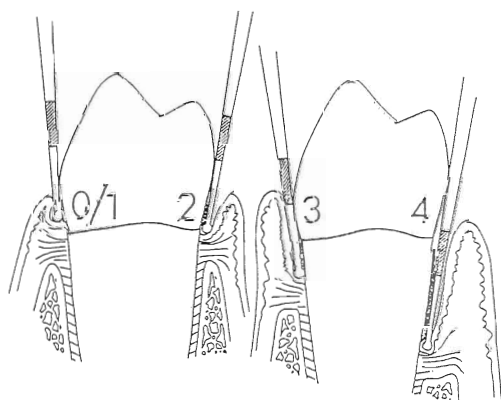


Fig. 2. Code Number Corresponding to Depth of Pocket Present (Ref. (1)).

Table 2. Treatment Need Codes

Age	N	No periodontal disease	Bleeding only (B)	Calculus (C)	Shallow pockets (P1)	Deep pockets (P2)	Excluded
-5	34	29.4%	0.0%	52.9%	17.6%	0.0%	0.0%
6-8	156	23.7%	3.2%	62.2%	10.9%	0.0%	0.0%
9-11	175	12.6%	4.6%	76.0%	6.9%	0.0%	0.0%
12-14	189	12.2%	4.2%	70.9%	11.1%	0.0%	1.6%
15-17	97	8.2%	12.4%	59.8%	19.6%	0.0%	0.0%
18-	22	18.2%	0.0%	63.6%	18.2%	0.0%	0.0%
Total	673	15.4%	4.9%	67.5%	11.6%	0.0%	0.4%

TN0= No treatment needed (Code 0).

TN1= Provision of oral hygiene in the individual (Code 1).

TN2= TN1 plus scaling (Code 2 and Code 3).

TN3= TN2 plus complex treatment including surgical intervention.

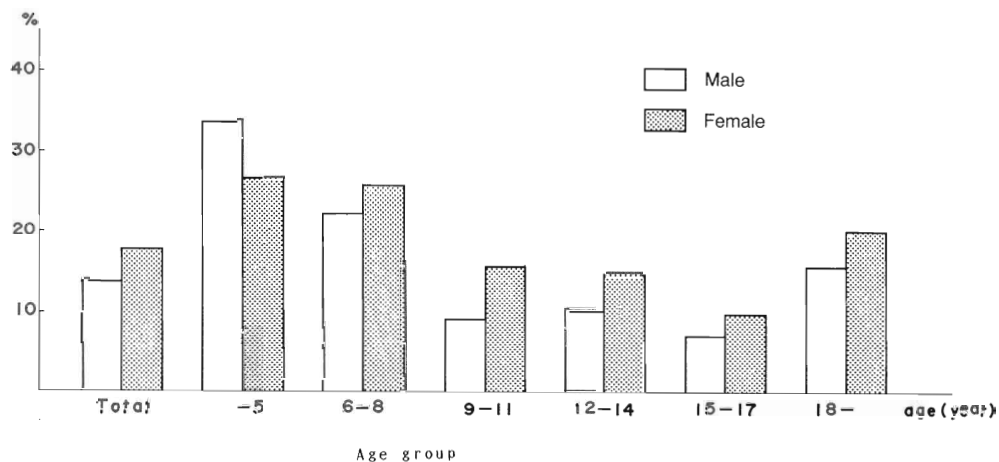


Fig. 3. Percentage of Healthy Periodontia in Males and Females in Each Age Group

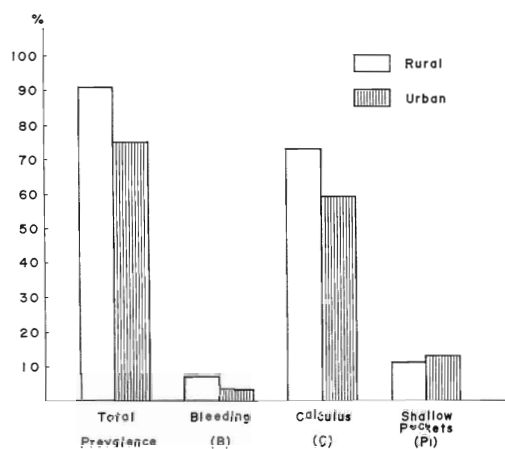


Fig. 4. Prevalence of Periodontal diseases in Urban and Rural Nigerian School Children

Table 3. Average Percentage Distribution of Each CPITN Code

Age	N	No periodontal disease	Bleeding (B)	Calculus (C)	Shallow pockets (P1)	Deep pockets (P2)	Excluded
-5	34	4.24	1.71	1.50	0.24	0.00	0.06
6-8	156	3.74	2.21	1.90	0.15	0.00	0.04
9-11	175	2.94	3.06	2.66	0.11	0.00	0.01
12-14	189	2.80	3.11	2.63	0.15	0.00	0.10
15-17	97	2.98	3.02	2.32	0.27	0.00	0.00
18-	22	3.23	2.77	2.32	0.32	0.00	0.00

Table 4. Average Number of Segments for Each CPITN Code

Code 0. Intact findings—Healthy periodontal tissues
Code 1. Where the shaded area of the explorer is completely visible and there was no calculus deposits but bleeding after examination.
Code 2. Where the shaded area of the explorer is completely visible but calculus deposits are present above or below the margin of the gingiva.
Code 3. Where a portion of the shaded area of the explorer is below the margin of the gingiva. Depth is between 3.5-5.5 mm.
Code 4. Where the shaded area of the explorer is completely subgingival. Depth is over 5.5 mm.

calculus deposits.

In the survey, five children had Code 3 (see Fig. 2) recorded in four of the six segments of the dental arch, accompanied by acute inflammation of the gingiva. These five cases were further investigated by taking ten pericardonal radiographs for each case to examine the periodontal involvement. There was no radiographic evidence of alveolar bone resorption.

Dental calculus deposit was seen in 67.5% of the total sample of children. This value is considerably higher than that of their Japanese counterpart (8).

Emslie (5) reported a periodontal index score of Russell (9), being 1.6 for the Nigerian children with the age range of 2 to 5 years. Greene (10) reported a higher figure for the Indian children of the same

Table 5. Periodontal Treatment Needs

Age	N	Hygiene instruction (TN1)	Prophylaxis (TN2)	Complex treatments (TN3)
-5	34	70.6%	(1.50) 70.6%	(0.00) 0.0%
6-8	156	76.3%	(1.90) 73.1%	(0.00) 0.0%
9-11	175	87.4%	(2.66) 82.9%	(0.00) 0.0%
12-14	189	86.2%	(2.63) 82.0%	(0.00) 0.0%
15-17	97	91.8%	(2.32) 79.4%	(0.00) 0.0%
18-	22	81.8%	(2.24) 81.8%	(0.00) 0.0%
Total	673	84.2%	79.3%	0.0%

age range.

The application of the CPITN criteria gives a true periodontal health state of the individual and the prevalence in the community. This also affords ease of comparison with the other groups of children in the other parts of the world and indicates the need and the nature of the treatment required.

It is obvious, from the results of this survey, that programs of oral hygiene and prophylaxis must be embarked upon emphasizing the importance of plaque

control in the dental education curriculum. The plaque control and prophylaxis such as scaling and polishing must be encouraged as the most essential adjunct to the use of the tooth brush and/or the local traditional tooth cleansing chewing stick.

The prevalence of periodontal diseases was lower in the females generally (Fig. 3). The only exception in this case was in the under 5-year age group. This occurrence could not be explained. There was generally a higher periodontal disease prevalence in the rural community than in the urban community. This was due to the oral health educational facilities which were available to the school children, in the urban areas, most of whose parents were educated and were aware of oral health hygiene. The children from the rural areas were mostly from the farming communities and, invariably, their parents were illiterate and could not pass on to their children any knowledge on oral health education. The traditional forms of oral hygiene practices without the prophylaxis of scaling and polishing, which are most essential, should be reduced.

The higher periodontal disease prevalence in the males could be due to the general self-awareness of the females from a relatively early age. This trend was also observed in the earlier survey conducted (1). Also, due to the lower socioeconomic rating of most of the rural parents, the nutritional value of their food was lower than that of the urban parents who could afford a high quality food. There would therefore be a lowered resistance of the body and tissues to infection in the rural children. This was borne out by Enwonwu and Edozien (5) where the close relationship between periodontal diseases and socioeconomic status was studied in 941 children of the age range of 5 to 19.

Periodontal pocket formation was predominant in the urban children. This might be due to the nature of the diet which tended to be soft, sweet and of less fiber content. It was consequently easy for the soft food debris to lodge within the gingival crevice and other areas of the mouth, which is inaccessible to routine cleansing. Most rural diet was based on yam, casava, maize and vegetables. These could not easily lodge in the inaccessible parts of the oral cavity.

ACKNOWLEDGMENTS

This paper was based on the results obtained from the joint dental epidemiological survey follow-up research in Nigeria in 1986, which was conducted by the Overseas Survey, Grant-in-Aid for Scientific Research from the Japanese Ministry of Education, Science and Culture (No. 61041026, No. 62043023). We would like to express our sincere thanks to two very important persons, Vice-chancellor of the University of Ife, Prof. W. Abimbola, and Dean of the Faculty of Health Sciences, Prof. S. O. Olusi, for their full support and advice to the joint research project. Also many thanks could be expressed to all of the staff members of the School of Dentistry, the University of Ife, who co-worked with us during this survey, and to Mr. G. Ogundele, Deputy Manager, University of Ife Guest House, Ltd., Ile-Ife, for his perfect hospitality offered to us during this survey.

Finally, we would like to express our gratitude for the special and perfect management by Mr. Fuyuzume and Mr. Kawahara of the Japanese Embassy in Lagos. Part of the dental instruments and materials used in this survey was donated from the Lion Corporation Applied Research Laboratories (Dr. Y. Ochiai), the Yoshida Co., Ltd., Morita Co., Ltd., and others.

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