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NEEDS OF COMMUNITIES IN LAGOS, NIGERIA; A CROSS SECTIONAL
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Periodontal Status and Treatment needs of Communities in Lagos. Nigeria. A cross sectional Study.

Abstract

Background: Periodontal disease is an oral disease with a high prevalence in the world, especially in developing countries such as Nigeria.

Aim: The aim of this study was to evaluate the prevalence of periodontal disease, the periodontal health status, and treatment needs of some communities in Lagos, Nigeria.

Materials and Methods: This was a descriptive study with cross-sectional design. A total of 500 participants were selected from four Communities in Lagos state. The sociodemographic data obtained included age, gender, educational status, and frequency of tooth brushing. The periodontal status and treatment need assessed with the Community Periodontal Index of Treatment Needs (CPITN) and oral hygiene status was assessed using the Oral Hygiene Index simplified (OHI-S)

Data was analyzed using SPSS while chi-squared test was used to compare categorical variables; significance was determined at p value less than 0.05.

Results: The prevalence of periodontal disease was 85.2%. Calculus (code 2) was the most prevalent. The oral hygiene status was good in 32.2%, fair in 49.8%, and poor in 18.0% of the respondents. The CPITN score of code 1 was found in 12.6%, code 2 in 62.4%, and code 4 in 2.2% of the sample. In total, 70.4% required oral hygiene instruction and oral prophylaxis, while 2.2% required complex periodontal treatment. The educational status, age and oral hygiene status were significantly associated with the CPITN scores ($P < 0.05$).

Conclusion: The prevalence of periodontal disease was high in this study population. Gender, educational status and OHI-S score were statistically significant in association with CPITN. Most participants required oral hygiene instruction and oral prophylaxis. To prevent or minimize the progression of periodontal diseases, there is need to implement preventive programs that are beneficial to the society.

Key words: Community, Gingivitis, Periodontitis, Treatment need.

Introduction

Periodontal diseases are the most prevalent oral disease in the world, especially in developing countries such as Nigeria. ^[1] They are a group of diseases which affects one or more of this tissues, gingiva, cementum, periodontal ligament and alveolar bone, and are broadly categorized into gingivitis and periodontitis. Gingivitis, a reversible form of periodontal disease, refers to inflammation restricted to the gingiva without destruction of the other supporting tissues, whereas, periodontitis is the irreversible form, characterized by destruction and loss of connective tissue

attachment and alveolar bone, periodontal pocket formation, loosening of teeth and subsequent tooth loss. ^[2]

The microorganisms present in dental plaque are the main etiologic factors responsible for initiation and progression of periodontal diseases, but several other risk indicators and factors such as sociodemographic characteristics (age, sex, education, income, occupation), medical conditions (diabetes, cardiovascular disease (CVD), arthritis, kidney disease, respiratory disease, stress), and habitual factors (smoking, tobacco use, alcohol, oral hygiene practices) are also associated with periodontal disease. ^[3-6] Other factors include lack of individual awareness, infrequent dental visits, and high levels of illiteracy. ^[7] In Africa, periodontal disease constitutes a major public oral health problem and is considered a socio-economic disease. ^[8] Among Nigerians, the prevalence is high and it is the second most common cause of tooth loss. ^[9,10]

Although, a number of studies assessing the periodontal health status of Nigerians are available in the literature. ^[11-16] Results obtained from such studies may not reflect the true situation at the community or population level due to Berksonian bias from hospital-based samples. Consequently, community-based studies on the prevalence, treatment need and determinants of the periodontal disease are imperative. Hence, the aim of this study is to evaluate the prevalence of periodontal disease and treatment needs at the community level in Lagos State, Nigeria.

Materials and Methods

A cross sectional study was conducted in four different communities in Lagos state. Five hundred participants enlisted from Epe, Ikeja, Ojo and Akesan communities in Lagos State constituted the study sample. Participation in this study was voluntary. Data was collected through the use of a questionnaire. The socio-demographic data obtained included gender, age, educational status, tooth cleaning frequency. Each participant then had a clinical examination after completing the questionnaire. The periodontal health was assessed with a CPITN epidemiological probe, using the community periodontal index (CPI). The CPI scoring criteria was as follows: absence of bleeding on probing, calculus and periodontal pockets was scored 0; bleeding on probing was

scored 1; presence of calculus (sub/supra-gingival) was recorded as 2, pocket depth 4 to 5 mm was recorded as 3 (shallow pocket); while pocket depth greater than or equal to 6 was scored 4 (deep pocket).^[17]

According to CPI, the participants were categorized, thus, code 0 = healthy periodontium, codes 1 and 2 = gingivitis and codes 3 and 4 = periodontitis.^[17]

Using the TN (Treatment Need) of CPITN the participants treatment needs was determined as follows:^[17]

TN 0 = no treatment (CPI code 0);

TN 1= improvement in personal oral hygiene (CPI code 1);

TN 2 = oral hygiene + scaling (CPI codes 2 and 3);

TN 3 = oral hygiene + scaling + complex treatment (CPI code 4).

Oral hygiene status was assessed by Simplified Oral Hygiene Index (OHI-S), which has two components: The Debris Index-Simplified (DI-S) and the Calculus Index-Simplified (CI-S), which are calculated separately and are summed up to get OHI-S for an individual.^[18] The participants were categorized into clinical oral hygiene (OH) status as follows: good—0 to 1.2, fair—1.3 to 3.0, and poor—3.1 to 6.0.^{18[12]} The examination was carried out using a mouth mirror and CPITN-probe

Ethical Clearance

Ethical approval for the study protocol was obtained from the Health Research and Ethics Committee of Lagos State University Teaching Hospital, Ikeja.

Statistical Analysis

The data were analyzed using SPSS version 20 (IBM SPSS Armonk, New York). Descriptive statistics utilizing frequencies and percentages were used to describe the periodontal health status

of the sample. Chi-square was used to show the association between the periodontal health of the respondents and gender, age, frequency of teeth cleaning and educational status. A significant association between the dependent variable (periodontal health) and independent variables (gender, age, frequency of teeth cleaning and educational status) was determined at p value less than 0.05.

Results

A total of 500 participants were examined. Males accounted for 220(44.0% and females 280(56.0%). The age of the participants ranged from 18 to 80 years. The average age of the participants was 35.2 ± 8.46 . Majority of participants 191(38.2%) were in the age group 20-40years. About 229(45.8%) had tertiary education. Majority of the participants 373 (74.6%) cleaned their teeth once daily while 127 (25.4%) cleaned their teeth twice. (**Table 1**).

Only 74 (14.8%) of the participants had healthy gingiva, that is a score of 0. More than half (312, 62.4%) of the participants had calculus (score 2). Deep pockets (score 4) was recorded in 11 (2.2%) of the participants. The prevalence of periodontal disease was 85.2 %; 375 (75.0%) and

51 (10.2%) had gingivitis and periodontitis, respectively. Majority, 70.4% of the participants required TN 2 (code 2 and 3) while TN 1 (code 1) was required in 12.6% of them. Only a small proportion (2.2%) of the participants required TN 3 (complex treatment for code 4). The oral hygiene status (OHI-S) was good in 161 (32.2%) of the participants, fair in 249 (49.8%), and poor in 90(18.0%) of the participants. **[Table 2]**

The prevalence of periodontal disease, gingivitis and periodontitis was higher in male (87.7%) than female (83.2%) participants and females had higher healthy gingiva than the males. The younger participants had significantly healthier gingiva than their older counterparts($P=0.000$). Contrarily, the older age groups had more gingivitis and periodontitis compared to the younger age groups. Participants, with lower level of education had higher level of gingivitis. Those who engaged in twice daily tooth cleaning had a higher prevalence of gingivitis and periodontitis compared to participants who cleaned their teeth once daily. Gender, educational status and OHI-S score were statistically associated with CPITN. **(Table 3**

Discussion

The prevalence of periodontal disease in the present study was 85.2% while the most prevalent CPITN score was code 2 with (62.4%). The prevalence of periodontal disease in our study was slightly lower than the 100% reported from a similar study in a community in Indonesia where calculus was also more prevalent with 54.25%.^[19] Similarly, a community study from Nepal recorded calculus as the most prevalent with an overall prevalence of 96.46 %.^[20] Also , in a study among adult male population between the ages of 25 to 64 years in Benin City, Nigeria, the prevalence of periodontal disease was 90.8% ^[21] and the most prevalent score in the study was code 2.

In the present study, the prevalence of gingivitis was 75% while that of periodontitis was 10.2%. In the Benin study, ^[21] gingivitis accounted for 75.4% and periodontitis 15.4%. However in other studies, the figures recorded respectively for gingivitis and periodontitis were 55.25% and 44.75%, ^[19]and 60.71% and 43.73%.^[20] Differences in the periodontitis parameters used, subject population, rural and city location, and social status may have accounted for the different results obtained with some previous studies, all of which are known to affect the periodontal health status. Males were more affected with periodontitis as compared to females, and this was also consistent with the other reported studies. ^[16,21] The factors responsible for this finding may be that males are less health conscious, have poor oral hygiene and heavy deposition of plaque and calculus than females. ^[21]

This study also showed that the prevalence and severity of periodontal disease increases with age. This was in line with previous studies which stated that the severity of periodontal disease increases because of the cumulative effect of untreated disease process over a period of time instead of aging process. ^[19, 22-24] Educational status is also documented as a determinant of periodontal disease in a number of studies; participants with lower level of education have higher prevalence of the periodontal disease. ^[16, 25] The result of our study is in agreement with the findings of these studies. The possible explanation for this is that individuals with lower educational status show less concern about their health and have poorer health care seeking behavior.

There was a positive relationship between the level of oral hygiene (OHI-S) and the periodontal status of the participants. Oral hygiene was significantly associated with periodontal status using the CPITN index. Participants with poor oral hygiene also had poor periodontal status. Individuals with poorer oral hygiene or higher plaque score were more likely to have more severe periodontal

disease. In this study, most of the subjects had fair oral hygiene level and CPITN score of code 2. This was comparable to the report of the study of Susanto et al. ^[19]

Periodontal treatment needs in this study population were mostly oral hygiene instruction and oral prophylaxis (TN 2), which were found in 70.4% of the participants. Only 2.2% of the participants needed complex care and this is similar to the report of Susanto et al. ^[18] This result indicated that majority of the research participants population required primary and secondary levels of preventive program to educate, motivate, and instruct people regarding the oral hygiene maintenance, and provide the treatment in its early stage to reduce the chances of initiation or progression of periodontal disease.

CONCLUSION:

The prevalence of periodontal disease was high in this study population. Gender, educational status and OHI-S score were statistically significant in association with CPITN. Most participants required oral hygiene instruction and oral prophylaxis. To prevent or minimize the progression of periodontal diseases, there is need to implement preventive programs that are beneficial to the society.

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Tables

Table 1: Socio-demographic characteristics of the participants

Variables	No %
Gender	
Male	220(44.0)
Female	280(56.0)
Age Group	
<20	96(19.2)
20-40	191(38.2)

41-60	182(36.4)
61-80	31(6.2)
Educational Status	
None	28(5.6)
Primary	60(12.0)
Secondary	183(36.6)
Tertiary	229(45.8)
Frequency of tooth brushing	
Once	373(74.6)
Twice	127(25.4)
Total	500(100)

Table 2: Periodontal health and oral hygiene status of the participants.

Variables	N %
Periodontal Health Status	
Healthy	
CPI code 0	74(14.8)
Gingivitis	
CPI code 1	63(12.6)
CPI code 2	312(62.4)

Periodontitis	
CPI code 3	40(8.0)
CPI code 4	11(2.2)
Treatment Need	
TN (0)	74(14.8)
TN (1) Code 1	63(12.6)
TN (2) Code 2 and 3	352(70.4)
TN (3) Code 4	11(2.2)
Oral hygiene status	
Good	161(32.2)
Fair	249(49.8)
Poor	90(18.0)

Table 3. Relationship between gender, age, educational status, frequency of tooth brushing, Oral hygiene status and periodontal health among the participants.

Variable	Healthy gingiva N %	Gingivitis N%	Periodontitis N%	Total N%	P value
Gender					
Male	27(12.3)	164(74.5)	29(13.2)	220(44.0)	0.077
Female	47(16.8)	211(75.4)	22(7.9)	280(56.0)	
Age group					
<20	29(30.2)	60(62.5)	7(7.3)	96(19.2)	0.000**

21-40	31(16.3)	141(74.2)	18(9.5)	190(38.0)	
41-60	12(6.5)	150(80.0)	24(12.9)	186(37.2)	
61-80	2(7.1)	24(85.7)	2(7.1)	28(5.6)	
Educational status					
None	6(21.4)	21(75.0)	1(3.6)	28(5.6)	0.011**
Primary	8(13.3)	52(86.7)	0(0.0)	60(12.0)	
Secondary	35(19.1)	127(69.4)	21(11.5)	183(36.6)	
Tertiary	25(10.9)	175(76.4)	29(12.7)	229(45.8)	
Frequency of tooth brushing					0.073
Once	63(16.9)	274(73.5)	36(9.7)	373(74.6)	
Twice	11(8.7)	101(79.5)	15(11.8)	127(25.4)	
OHI-S score					0.000**
Good	65(40.4)	89(55.3)	7(4.3)	161(32.2)	
Fair	9(3.6)	223(89.6)	17(6.8)	249(49.8)	
Poor	0(0.0)	63(70.0)	27(30.0)	90(18.0)	
Total	74(14.8)	375(75.0)	51(10.2)	500(100)	

****p<0.05**