

ORAL HEALTH STATUS AND TREATMENT NEEDS OF A SCREENED UNIVERSITY POPULATION IN PORT HARCOURT, RIVERS STATE

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ABSTRACT

BACKGROUND: Inadequate oral health facilities coupled with poor utilization of oral services engender poor oral health and hygiene status among the population. The study aimed to describe the oral health status and identify the oral health needs of a screened university community.

METHODS: The study was a descriptive analytic study involving 215 attendees of free oral screening at the two campuses of the University of Port Harcourt. Data was collected using self-administered questionnaire and oral examination. Analysis of data was done using statistical package for social sciences version 20 (IBM SPSS Armonk, New York). Association between variables was tested using Chi-square and significance determined at 0.05 alpha level.

RESULTS: Of the total participants, 128 (59.5%) were females and 87 (40.5%) were males. Majority of the respondents 164 (76.3%) were students, 161(74.9%) of the participants had fair oral hygiene and the oral hygiene was significantly ($p<0.001$) poor among the older subjects. Almost all the participants 214(99.5%) used toothbrush and toothpaste to clean the teeth. Calculus, stains, gingivitis and halitosis were detected in 67.4%, 66.0%, 67.0% and 66.5% of the participants respectively. Calculus ($p=0.03$) and stains ($p=0.001$) were significantly more in the older subjects than younger subjects. The population mean DMFT was 0.86. None of the respondents had filled teeth. Only 12(5.6%) of the respondents had toothache which was significantly ($p=0.02$) more in older age than the younger age group. The treatment and tooth fatality indices were 52.7%.

CONCLUSION: The oral hygiene of the participants was fair and the prevalence of gingivitis and halitosis was high. Decayed and missing teeth accounted for the mean DMFT observed in this study. These findings indicate a high level of unmet dental treatment need among the participants.

KEYWORDS: Dental care, gingivitis, Halitosis, Oral health, Oral hygiene.

INTRODUCTION

One of the global goals for oral health 2020, is to minimise the impact of oral disease on health and psychosocial development emphasising oral health promotion.^[1] The 2020 oral health target which was designed with the theme ‘think globally but act locally’; empowered researchers to focus on the needs and primary characteristics of their local and immediate environment,^[1] but that has not been established in the developing nations including Nigeria. It was reported that Nigerian populations have diverse oral diseases more than what presented to hospitals with the burden of these oral diseases more in the underserved and poverty-stricken population groups.^[2,3] It therefore means that there are more unmet health needs in our environment than expressed needs. The utilisation of dental services is poor in our environment, despite that it is an indispensable facilitator of oral health.^[3-5] Dental care utilization was reported to be more discretionary in nature and influenced by non-disease factors than medical care utilisation.^[6]

The reasons for the poor attitude to seeking oral care and poor utilisation of dental services included economic difficulties, dwindling health financing, poor perceived oral needs, inadequate facilities, shortage of dental personnel and competing demands.^[7-9] Dental service utilisation research is said to improve health outcome of individuals and society at large,^[10] and should be advocated. To accomplish the goals and objectives of the global oral health 2020, there is need to assess and quantify the oral conditions prevalent in each community since the goals are community-dependent.

Screening is the process of identifying healthy people who may be at risk of disease or condition or identifying diseases that are both asymptomatic as well as symptomatic in individuals, populations or groups. The common oral diseases; dental caries, gingivitis and periodontitis are insidious in onset and do present symptomatically mostly at advanced stages. Most individuals with these diseases are not aware of their existence; neither do they present for early detection and prompt intervention. It is known that in developing climes, most patients only present on account of oral pain or its associated symptoms.^[2] The widespread nature of oral diseases that are asymptomatic and reduced utilisation of oral services militate against the actualisation of the global goals of oral health 2020; as setting the national baseline values appears almost herculean.

Realising the global 2020 goals in a particular community will only be possible if the baseline data is determined, which is employed in setting the objectives and the ensuing evaluation of the oral health status of the population. The individuals with oral conditions who are unaware of them will ultimately come down with the advanced stages; resulting to possible extraction of the affected teeth and increased burden of those conditions thus marring the realisation of the targets of the 2020 goals. Screening will aid the reduction of disparities in accessing effective therapeutic and preventive services. The aim of the study therefore was to assess the oral health status and oral hygiene practices of a screened university population. The study further identifies the unmet oral health needs of the population.

MATERIALS AND METHODS

The study was a descriptive analytic study involving 215 participants. The screening was done as part of the oral health outreach programme organised during the annual week-long 3rd Dentistry Day celebration by the Faculty of Dentistry, University of Port Harcourt. The oral health public awareness campaign held on January 26 and 27, 2016 at the Choba and Abuja Main Campuses of the University respectively. The targeted population included students, staff both academic and non-academic, general public with business interests within the university environment including traders, transport workers, bank customers and other visitors to the university. The venue of the outreach was strategic, at a central point within the park and the business areas within the university. The study participants were selected by convenience sampling. Data was collected through self-administered questionnaire, on the demographics (age, sex and occupation) of the participants and the oral health practices (cleaning method, brushing frequency, use of fluoride-containing toothpaste). Oral examination was done for each participant to record the oral hygiene, teeth present; missing and carious teeth; teeth tender to percussion; presence or absence of calculus, stains, halitosis, tooth fracture and attrition. This was done with the aid of wooden spatula and patient sitting in an upright chair. The simplified oral hygiene index of Greene and Vermillion (1964) was employed for the oral hygiene assessment.^[11] The collected data was collated, processed and analysed with statistical package for social sciences (SPSS) version 20 (IBM SPSS Armonk, New York). The results of the analysis were expressed as means and standard deviations for the numerical data and proportions for the

categorical data. Association between variables was tested using Chi-square and significance determined at 0.05 alpha level.

RESULTS

Demographic Data

The study had a total of 215 participants, out of which 128 (59.5%) were females and 87 (40.5%) were males. The male to female ratio was 1:1.5. The age of the respondents ranged from 17-62 years and mean age was 26.9 years (SD=9.8). The majority 169 (78.6%) of the participants were less than 30 years old and only 13 (6.0%) were more than 49 years old. Out of the entire study subjects, 164 (76.3%) were students and approximately equal proportion of the remaining one-quarter comprised university staff (11.6%) and others (12.1%) including artisans, transport owners and workers on campus, people with business interests on campus, bank customers and visitors to the university. [Table 1]

Oral Hygiene Status

Regarding the oral hygiene status of the respondents, majority 161 (74.9%) had fair oral hygiene whereas good and poor oral hygiene was observed in 25 (11.6%) and 29 (13.5%) of the participants respectively. The oral hygiene status was significantly ($p < 0.001$) poorer in the older age group than the younger age group. The calculus was recorded in 145 (67.4%) of the study sample and 144 (67.0%) showed obvious physical signs of gingivitis. The presence of stains and halitosis was found in 142 (66.0%) and 17 (7.9%) of the respondents respectively. The older age group was significantly more likely to have calculus, stains and halitosis than other age groups ($p = 0.035$, 0.002 and 0.005 respectively). [Table 2]

Dental Status

Table 3 shows the dental status of the participants' including standing, missing, and carious teeth, teeth tenderness, attrition and fracture of the teeth. Majority 166 (77.2%) of the respondents had the full complement of the dentition and the others 49 (22.8%) had between 31 and 26 teeth present. Of the whole respondents with missing teeth, 75.5% had 1–2 missing teeth, whereas 22.5% and 2.0% had 3–4 and 5–6 missing teeth respectively. Only 12 (5.6%) of the subjects had teeth tender to percussion; 26 (12.1%) and 16 (7.4) had attrition and fracture of the teeth respectively. The older participants were significantly more likely to have dental caries, tender tooth, attrition and fracture than the other age groups ($p=0.006$, 0.016 , 0.000 and 0.003 respectively).

Dental caries was detected in 44 (20.5%) of the respondents, out of which half (50.0%) of them had only one carious tooth and only one (2.3%) subject had five carious teeth. The others, 6 (13.6%) had three and four carious teeth each and 20.5% had two carious teeth. The decayed and missing teeth components of the population were 87 and 97 respectively, with no filled component. The mean DMFT of the population was $(87 + 97/215)$ 0.86. The treatment need of the population was $(87/184)$ 0.5, the population treatment index $(97 + 0/184 \times 100)$ was 52.7% and the tooth fatality index $(97/184 \times 100)$ was also 52.7%. The care index and the restorative index was 0% as there was no filled component among the respondents [Table 4].

The Oral health Practices

Table 5 presents the oral health practices of the respondents. About two-third 143 (66.5%) of the study sample brushed their teeth once daily and 72 (33.5%) brushed

twice daily. There was no significant difference in the brushing frequency between female and male participants ($p=0.38$). The use of fluoride-containing toothpaste was reported by almost all 201 (93.5%) of the screened subjects and approximately equal proportion of the females (93%) and males (94.3%) use fluoride-containing toothpaste ($p=0.785$). All but one of the screened participants use tooth brush and toothpaste to clean their teeth. Only one (0.5%) of the participant used chewing stick as the preferred method of cleaning the teeth. There was also no gender difference with the method of cleaning the teeth ($p=1.000$).

DISCUSSION

The establishment of effective and efficient oral hygiene practices remains the critical tool identified for achieving good oral health.^[12,13] Good oral health reduces mortality and morbidity associated with oral diseases. Reduction in mortality and morbidity associated with oral diseases is one of the major objectives of the 2020 oral health goals.^[1] The objectives of the 2020 oral health goals will be difficult to evaluate in Nigeria, as the country has not been able to establish the national baseline values against which the objectives are determined.

The present study shows that 99.5% of the study participants use toothbrush and toothpaste. This is in agreement with the 100% that use toothbrush and paste reported among urban population in Port Harcourt,^[2] but higher than 86.4% reported among rural dwellers in Edo state^[14] and 73.9% of screened school children in Lagos state^[15]. The oral hygiene status of the respondents seemed to be consistent with findings of other studies,^[14,16] with a greater proportion of the population having a fair oral hygiene

status. About one-third (33.5%) of the respondents brushed their teeth twice daily; a national survey in Nigeria reported that 33% of their research subjects brushed their teeth twice daily.^[12] However, this is higher than the findings from other Nigerian studies.^[2,17,18] It is reported that persons with higher education and socioeconomic status, exhibit better oral hygiene practices^[19,20] and this may be the reason for the high proportion of the study participants that brush twice daily as most of them are students and/or staff in the university. This finding when compared with the reports from developed countries indicate that twice daily brushing recorded in this study is lower than that reported from developed countries.^[21,22] Though twice daily tooth brushing seems to be an established practice in several industrialised countries,^[23] this practice is far from being realised in several other countries.^[24]

The prevalence of dental caries was 20.5% and no filled teeth were recorded indicating that decayed and missing teeth accounted for the prevalence of dental caries observed in this study. Again, all the carious lesions were untreated, suggesting unmet dental treatment needs. This indicates poor utilisation of dental care services among the study population. The poor utilisation of dental care services may be due to poor perceived need for oral care. The findings of this study are in agreement with other studies. Recent oral health researches using the decayed, missing and filled teeth (DMFT) index, showed a low prevalence of dental caries less than 30%, yet dental caries still remains a public health concern because most carious lesions remain untreated.^[25-27] In addition, other studies reported missing and decayed teeth as the major contributors to the population DMFT score in the developing climes.^[2,17,28] Other

unmet oral care needs observed in the population included presence of tooth deposits, extrinsic stains, gingivitis, halitosis, attrition, toothache/tenderness and fracture. Despite all these dental problems, most of the study participants never had a prior dental visit. The results of this study indicated that the older subjects tend to have more of these dental problems and this is in line with other studies.^[29,30] Furthermore, the oral health practices of the screened population was not associated with the gender of the respondents.

CONCLUSION

The oral hygiene of the participants was fair and the prevalence of gingivitis and halitosis was high. Decayed and missing teeth accounted for the mean DMFT observed in this study. These findings indicate a high level of unmet dental treatment need among the participants. The majority of the screened participants like other population groups in most developing nations have interaction with dental professionals for the first time during the free oral screenings. Therefore, regular screenings are recommended as this would help to identify unmet dental needs and motivate the individuals to seek and utilise oral care services. Good oral hygiene practices when adopted and sustained by the population would result in the reduction in the prevalence and burden of oral diseases.

Table 1: Demographic variables of the screened population

| Characteristics | Frequency (N) | Percent (%) |
|---------------------|---------------|-------------|
| Age in years | | |
| < 30 years | 169 | 78.6 |
| 30-49 years | 33 | 15.3 |
| > 49 years | 13 | 6.0 |
| Gender | | |
| Female | 128 | 59.5 |
| Male | 87 | 40.5 |
| Occupation | | |
| Students | 164 | 76.3 |
| Staff | 25 | 11.6 |
| Others | 26 | 12.1 |

Table 2: Oral hygiene measures according to age of the respondents

| Variables | Frequency N (%) | | | Total N (%) | P-value |
|----------------------------|------------------|------------------|-----------------|-------------|---------|
| | < 30 yrs (N=169) | 30-49 yrs (N=33) | > 49 yrs (N=13) | | |
| Oral hygiene status | | | | | |
| Good | 25 (14.8) | 0 (0.0) | 0 (0.0) | 25 (11.6) | .000 |
| Fair | 129 (76.3) | 28 (84.8) | 4 (30.8) | 161(74.9) | |
| Poor | 15 (8.9) | 5 (15.2) | 9 (69.2) | 29 (13.5) | |
| Calculus | | | | | |
| Present | 110 (65.1) | 22 (66.7) | 13 (100.0) | 145 (67.4) | .035 |
| Absent | 59 (34.9) | 11 (33.3) | 0 (0.0) | 70 (32.6) | |
| Gingivitis | | | | | |
| Present | 111 (65.7) | 22 (66.7) | 11 (84.6) | 144 (67.0) | .376 |
| Absent | 58 (34.3) | 11 (33.3) | 2 (15.4) | 71 (33.0) | |
| Halitosis | | | | | |
| Present | 12 (7.1) | 1 (3.0) | 30.8 | 17 (7.9) | .005 |
| Absent | 157 (92.9) | 32 (97.0) | 9 (69.2) | 198 (92.1) | |
| Stains | | | | | |
| Present | 102 (60.2) | 27 (81.8) | 13 (100.0) | | .002 |
| Absent | 67 (39.6) | 6 (18.2) | 0 (0.0) | 142 (66.0) | |
| | | | | 73 (34.0) | |

Table 3: The oral health status of the study participants

| Variables | Frequency N (%) | | | Total N (%) | P-value |
|-----------------------------------|---------------------|---------------------|--------------------|----------------|---------|
| | < 30 yrs (N=166) | 30-49 yrs (N=36) | > 49 yrs (N=13) | | |
| Teeth present | | | | | |
| 26 | 1 (0.6) | 0 (0.0) | 0 (0.0) | 1 (0.5) | .477 |
| 28 | 7 (4.1) | 1 (3.0) | 0 (0.0) | 8 (3.7) | |
| 29 | 2 (1.2) | 0 (0.0) | 1 (7.7) | 3 (1.4) | |
| 30 | 15 (8.9) | 1 (3.0) | 2 (15.4) | 18 (8.4) | |
| 31 | 17 (10.1) | 1 (3.0) | 1 (7.7) | 19 (8.8) | |
| 32 | 127 (75.1) | 30 (90.9) | 9 (69.2) | 166 (77.2) | |
| Missing teeth | | | | | |
| None | 127 (75.1) | 30 (90.9) | 9 (69.2) | 166 (77.2) | .111 |
| Present | 25.3 | 9.7 | 4 (30.8) | 49 (22.8) | |
| Teeth tender to percussion | | | | | |
| None | 162 (95.9) | 31 (93.9) | 10 (76.9) | 203 (94.4) | .016 |
| Present | 7 (4.1) | 2 (6.1) | 3 (23.1) | 12 (5.6) | |
| Attrition | | | | | |
| Absent | 160 (94.7) | 25 (75.8) | 4 (30.8) | 189 (87.9) | .000 |
| Present | 9 (5.3) | 8 (24.2) | 9 (69.2) | 26 (12.1) | |
| Fractured teeth | | | | | |
| Absent | 160 (94.7) | 30 (90.9) | 9 (69.2) | 199 (92.6) | .003 |
| Present | 9 (5.3) | 3 (9.1) | 4 (30.8) | 16 (7.4) | |

Table 4: Prevalence of dental caries among the screened population

| Dental caries indicators | Frequency (N) | Percent (%) |
|--------------------------|---------------|-------------|
| Dental caries present | 44 | 20.5 |
| Dental caries absent | 171 | 79.5 |
| One carious | 22 | 50.0 |
| Two carious teeth | 9 | 20.5 |
| Three carious teeth | 6 | 13.6 |
| Four carious teeth | 6 | 13.6 |
| Five carious teeth | 1 | 2.3 |
| Number of decayed teeth | 87 | 47.3 |
| Number of missing teeth | 97 | 52.7 |
| Number of filled teeth | 0 | 0.0 |

Table 5: Oral health practices of the respondents

| Variables | Percent N (%) | | P-value |
|-------------------------------|---------------|-----------|---------|
| | Female (128) | Male (87) | |
| Brushing frequency | | | |
| Once daily | 82 (64.1) | 61 (70.1) | 0.38 |
| Twice daily | 46 (35.9) | 26 (29.9) | |
| Type of tooth paste | | | |
| Fluoride containing paste | 119 (93.0) | 82 (94.3) | 0.79 |
| Non-fluoride containing paste | 9 (7.0) | 5 (5.7) | |
| Method of Cleaning | | | |
| Tooth brush and paste | 127 (99.2) | 87 (100) | 1.00 |
| Chewing stick | 1 (0.8) | 0 (0.0) | |

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