Caries experience and oral hygiene status of freshman undergraduate students in a Nigerian University.

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ABSTRACT

Objectives: Dental caries is an important public health problem across the world with plaque removal showed to be an important element of oral health in order to prevent dental caries, with good oral hygiene being an important primary preventive measure to prevent dental caries. To access the caries experience and oral hygiene status of freshman undergraduate student.

Methods: This study adopted an analytic cross-sectional study of freshman students at the University of Benin. 100 male students and 100 female students participated in the study. Caries experience was assessed using the WHO caries assessment method (DMFT). Oral hygiene status was assessed using the Simplified Oral Hygiene Index (OHI-S) by Greene and Vermillion.

Results: The mean DMFT was 1-80 ± 2.04 among the study population. majority (91.0%) of the respondents had oral hygiene index of >1.2-3.0 (Fair oral hygiene). Caries experience was observed in 51.5% of the study population however, a higher proportion (93.2%) of those who had dental caries had fair oral hygiene. There was no statistically significant association between caries experience and oral hygiene status of the respondents, (p=0.175). A higher proportion of male participants had fair oral hygiene while only 4 female participants had poor oral hygiene and this was statistically significant (P=0.02). There was no statistically significant association between DMFT Scores and oral hygiene status among the participants, P=0.18

Conclusion: Caries experience was high however, there was no statistically significant association between caries experience and oral hygiene status among freshman undergraduate students.

KEYWORDS: Dental caries, oral hygiene status, freshman, Students.

INTRODUCTION: Dental caries is a chronic disease which can affect an individual at any age and if untreated can lead to pain, discomfort and finally loss of teeth. The disease is not self- limiting and without adequate intervention the process can continue until the tooth is destroyed. The term caries denotes both the disease process and its' consequences.[1]Dental caries is multifactorial in etiology in which there is an interplay of four main factors; Host (saliva and tooth), the micro flora, (plaque), and substrate (diet) and fourth factor time. It is believed that an environment with its typical culture, socioeconomic status, lifestyle and dietary pattern can have a greater impact on caries resistance and development.[1-3]

Dental caries is an important public health problem across the world with plaque removal showed to be an important element of oral health in order to prevent dental caries, with good oral hygiene being an important primary preventive measure to prevent dental caries.[4,5]The association between oral hygiene status and caries has been investigated in

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different groups with varied reports. No relationship was found to exist between OHI-S and DMFT in children aged 11-14years.[6,7] While another study among elementary school children observed an association between dental caries and oral hygiene status.[8] During undergraduate years of study, knowledge, attitude and practice regarding oral health can be developed and modified.[9] It is of relevant concern for dental health professional to impart a positive oral health knowledge and behavior in society in order to promote health and reduce disease burden as everyone is susceptible to tooth decay throughout their life time.[10] Studies have assessed the relationship between oral hygiene and caries experience in young children.[7,8] with varying reports. Furthermore, there is paucity of studies among fresh undergraduates. Hence, this study was design to assess the caries experience and oral hygiene status of first year undergraduate students.

METHODS

This was an analytic cross-sectional study of freshman students at the University of Benin. Participants for this study were selected from the single gender hostels (2 male hostels and 2 female hostels) within the campus. 100 male students 50 each from the male hostels and 100 female students 50 each from the female hostels. Convenient sampling technique was used to pick students as they came into hostel for the second semester. Inclusion criteria was fresh man year students who gave consent to participate in the study.

Data collected were sociodemographic characteristics of the participants and included a dental examination with the participants seated on an office chair in a corner of the common room. The mouth was examined under adequate illumination using pen torch, face masks, latex examination gloves and tongue depressors.

Oral hygiene status was assessed using the Simplified Oral Hygiene Index (OHI-S) by Greene and Vermillion [11] OHI-S scores obtained were subsequently graded as follows: Good = 0.0 -1.2; Fair = >1.2- 3.0 and Poor >3.0 as done in a previous study.[12] The number of teeth which had caries, been filled or missing were recorded. This data was used to determine caries experience using the WHO caries assessment method as follows; Decayed, Missing and Filled teeth (DMFT). DMFT of 0 was regarded as no caries experience and DMFT of 1 and above was regarded as caries experience.

All data were retrieved, sorted, screened for completeness, coded, collated and analysed using IBM SPSS version 26.0. categorical variables were expressed as frequencies and percentages while numerical variables were expressed as mean and standard deviation. Chi square test was used todetermine association between categorical variables as applicable **and** Independent t-test and ANOVA was used to determine association for continuous variables with P set at 0.05.

RESULTS

A total of 200 freshman students were recruited for this study. The age range of the participants was between 15 – 23 years with the mean age being 18.12 ± 4 years. The 15-17 years age group and the 18-20 years age group were equally represented (45.0%) while the remaining 10.0% belonged to the 21-23 years age group. Both genders were equally represented. More than one-third (37.5%) of the participants were indigenes of Edo state and less than a quarter (21.5%) were indigenes of delta state. The faculties of Law and Humanities made up 35.5% of participants while medical and health sciences made up 12.0% of the participants. Majority (94.5%) of the participants are Christians (Table 1).

The mean DMFT was1.80±2.04 among the study population. Less than half (48.5%) had no DMFT score, 16.0%) had a DMFT score of 1-2 while 21.0% had a DMFT score of 5 and above. Majority (91.0%) of the respondents had oral hygiene index of >1.2-3.0 (Fair oral hygiene). (Table 2). Caries experience was observed in 51.5% of the study population (Figure 1) although a higher population (93.2%)of those who had dental caries had fair oral hygiene, there was no statistically significant association between caries experience and oral hygiene status of respondent,p=0.175 (figure 2)

Although there was no statistically significant association between gender and caries experience (P=0.38), the odds of a male freshman having caries experience was 0.818 times the odds of a female freshman. Also, there was no

statistically significant association between age of the participants and caries experience, P=0.91 as well as faculty of study of the participant and caries experience P= 0.48 (Table 3).

A higher proportion of male participants had fair oral hygiene while only female participants had poor oral hygiene and this was statistically significant (P=0.02). A higher proportion of participants whose faculty of study was Social Science and Education had good oral hygiene. No participant from Physical and Life Sciences had poor oral hygiene. The faculty with the least proportion of those with fair oral hygiene was Social Science and Education followed by Medical and Health Sciences and this was statistically significant (P=0.03). There was no statistically significant association between DMFT Scores and oral hygiene status among the participants, P=0.18 (Table 4). There was no statistically significant association between DMFT Score and gender of the participants (P=0.62), as well as age of the participants (P=0.26)and faculty of study of the participants, P=0.44 (Table 5).

Table 1: Socio dempgraphic characteristics of the participants

Characteristics	Frequency	Percent	Confidence Interval
Age group (years)			
15-17	90	45.0	38.0-52.0
18-20	90	45.0	37.5-52.0
21- 23	20	10.0	6.0- 14.5
State of origin			
Edo	75	37.5	30.5-44.0
Delta	43	21.5	16.0-27.0
Others	82	41.0	34.5-48.0
Faculty of study			
Social Sciences & Education	44	22.0	16.0-27.5
Law & Humanities	71	35.5	28.5-42.5
Physical & Life Sciences	61	30.5	24.5-37.5
Medical & Health Sciences	24	12.0	8.0- 17.0
Religion			
Christian	189	94.5	91.0-97.5
Muslim	11	5.5	2.5-9.0
Total	**200**	**100.0**	

DISCUSSION

The oral cavity, teeth, and other oral structures are an integral part of the human body, so oral health cannot be ignored as it has an effect on overall body health. This study evaluated the oral hygiene status and caries experience among freshman undergraduate students in a Nigerian university. The age range recorded in this study is same as that recorded in a previous Nigerian study on freshman undergraduate students[13] and corresponds to age range for undergraduate students in general.[12,14] Furthermore, the highest priority risk group for dental caries has been reported to be between 11–14 years of age.[15] Therefore, the ages of 15 to 23 years observed in this study is a good age to assess caries experience for possible preventive interventions to reduce the incidence of dental caries and its sequelae. The mean age 18.12 ± 4 years documented in this study is similar to the 18.13 ±4.99 years reported in a previous Nigerian study.[13] There was equal representation of both genders in this study which is different from other studies that reported higher female participation.[12,16] This is because this study recruited equal numbers of male and female freshmen. The faculties of Law and Humanities were most represented in this study a finding different from a previous Nigerian study where faculty of social sciences was the most represented[12] Similarly, the least represented faculty in this study was medical and health sciences which is at variance with a previous study that reported environmental design and management.[12] The finding of this study is due to the fact that a larger number of students are admitted into other faculties while medical and health sciences have a smaller number of students admitted due to the limit on admission quota imposed by accreditation bodies for these professional courses. The mean DMFT of 1-80±2.04 recorded in this study is far higher than the 0.32±1.05 reported among freshmen in a previous Nigerian study[13] and higher than other studies that reported mean DMFT ranging from 0.14 to 1.6[17-22] However, the mean DMFT recorded in this study was lower than the 3.7±3.0 reported among children aged 11-14 years in Ahu Dhabi[23] and other studies that documented mean DMFT ranging from 2.93 to 4.6.[7,24-28] The

prevalence of dental caries observed in this study using the DMFT Index of 51.5% was far higher than the 10.6% recorded in a previous Nigerian study[13] and also higher than the 45.4% reported among 14- to 15-year-old teens in Australia.[21] Although a higher population (93.2%) of those who had dental caries had good oral hygiene, there was no statistically significant association between caries experience and oral hygiene status of respondent. Although, good oral hygiene practice is believed to play a significant role in prevention of dental caries,[11,29,30] this may not translate to reduced prevalence of dental caries. This shows that dental caries is multifactorial and maintaining good oral hygiene may not be enough to reduce incidence of dental caries. This study reported no statistically significant association between gender and caries experience a finding similar to a previous report.[13] This is different from reports of previous studies that girls have higher dental caries experience rate than boys of same chronological age.[22,31,32]Girls experiencing caries more has been attributed to the fact that the teeth of girls erupt earlier than those of boys with consequent longer exposure to the factors which influence the occurrence of the disease.[32,33] No statistically significant association was observed between age group of the participants and caries experience in this study. This is in contrast to a previous report on freshman undergraduate students of a private Nigerian university[13] and in a national survey in China[22] where a statistically significant association was observed between age group and caries experience but similar to another report on primary school children.[34] With regards to oral hygiene status, fair oral hygiene was most prevalent in this study a finding similar to a previous study[23] and at variance with a study on undergraduate students that documented good oral hygiene in majority of the study participants.[12] This may be attributed to the fact that the freshman students are just gaining independence and leaving their homes and still maintain the oral hygiene practices instilled in them by their parents or guardians and may also still be under parental guidance. A higher proportion of male participants had fair oral hygiene while only female participants had poor oral hygiene and this was statistically significant (P=0.02). this is consistent with a previous study that observed that males have better oral hygiene status when compared to females. The better oral hygiene status reported among males has been attributed to the better oral health care seeking behavior exhibited by males as compared to that of females.[35] This is contrary to previous studies that showed that females generally have better oral health knowledge and exhibit greater interest in oral health than their male counterparts.[36-45] Also, it has been observed that females act more positively towards oral health than males in tooth brushing, dental flossing, and tongue brushing which results in better oral hygiene, furthermore females tend to always care about their appearance.[42,44,45] It was observed that a higher proportion of participants whose faculty of study was Social Science and Education had good oral hygiene compared to other faculties. This may be due to the fact that they have more time to carry out oral hygiene measures as their course load may be less than others. There was no statistically significant association between DMFT Scores and oral hygiene status in this study a finding similar to previous studies.[23,45]This goes to show that good oral hygiene may not translate to lower caries experience. Although, a previous study showed that poor oral hygiene in children was associated with caries experience.[46] The multifactorial nature of dental caries is evident as contrary reports was observed from previous studies.

Table 2: DMFT index and OHI S index among the participants

Index	Frequency	Percent	Confidence Interval
DMFT Score			
0	97	48.5	41.5-55.5
1-2	32	16.0	11.0-21.5
3-4	29	14.5	9.5-19.0
>4	42	21.0	15.5-27.0
OHI			
Good	14	7.0	4.0-10.5
Fair	182	91.0	87.0-94.5
Poor	4	2.0	0.5-4.5
Total	200	100.0	

Table 3: Association between socio-demographic characteristics and caries experience among the participants

Characteristics	Caries Experience		Total
	No	Yes	
Gender			**P=0.48**
Male	46 (46.0)	54 (54.0)	100 (100.0)
Female	51 (51.0)	49 (49.0)	100 (100.0)
Age group (years)			**P=0.91**
15-17	45 (50.0)	45 (50.0)	90 (100.0)
18-20	43 (47.8)	47 (52.2)	90 (100.0)
21-23	9 (45.0)	11 (55.0)	20 (100.0)
Faculty of study			**P=0.48**
Social Sciences & Education	20 (45.5)	24 (54.5)	44 (100.0)
Law & Humanities	35 (49.3)	36 (50.7)	71 (100.0)
Physical & Life Sciences	27 (44.3)	34 (55.7)	61 (100.0)
Medical & Health Sciences	15 (62.5)	9 (37.5)	24 (100.0)
Total	97 (48.5)	103 (51.5)	200 (100.0)

Therefore, while encouraging good oral hygiene other factors associated with dental caries formation should be intercepted to reduce caries experience to the barest minimum.

Table 4: Association between sociodemographic characteristics, DMFT scores and OHIS scores among the participants

Characteristics	Oral hygiene			Total
	Good	Fair	Poor	
Gender				***P=0.02**
Male	4 (4.0)	96 (96.0)	0 (0.0)	100 (100.0)
Female	10 (10.0)	86 (86.0)	4 (4.0)	100 (100.0)
Age group (years)				***P=0.09**
15-17	5 (5.6)	84 (93.3)	1 (1.1)	90 (100.0)
18-20	8 (8.9)	81 (90.0)	1 (1.1)	90 (100.0)
21-23	1 (5.0)	17 (85.0)	2 (10.0)	20 (100.0)
Faculty of study				***P=0.03**
Social Sciences & Education	7 (15.4)	36 (81.8)	1 (2.3)	44 (100.0)
Law & Humanities	3 (4.2)	67 (94.4)	1 (1.4)	71 (100.0)
Physical & Life Sciences	3 (4.9)	58 (95.1)	0 (0.0)	61 (100.0)
Medical & Health Sciences	1 (4.2)	21 (87.5)	2 (8.3)	24 (100.0)
DMFT SCORE				***P=0.18**
0	10 (10.3)	86 (88.7)	1 (1.0)	97 (100.0)
1-2	2 (6.3)	29 (90.6)	1 (3.1)	32 (100.0)
3-4	1 (3.4)	26 (89.7)	2 (6.9)	29 (100.0)
>4	1 (2.4)	41 (97.6)	0 (0.0)	42 (100.0)
Total	14 (7.0)	182 (91.0)	4 (2.0)	200 (100.0)

*Fischer's Exact

Figure 2: Association between caries experience and oral hygiene among the participants

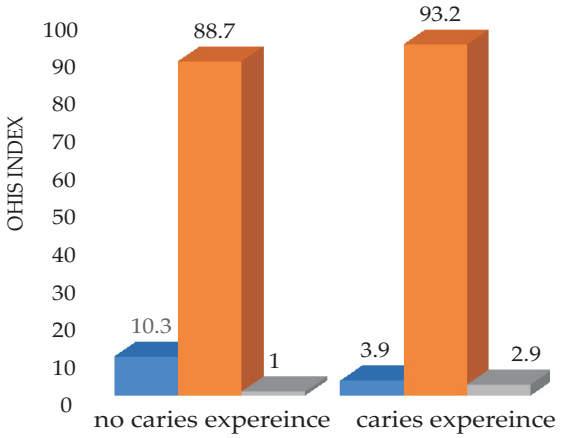

Table 5: Association between sociodemographic characteristics and DMFT Score among the participants

Characteristics	DMFT SCORE				Total
	0	1-2	3-4	>4	
Gender					**P= 0.62**
Male	46 (46.0)	19 (19.0)	13 (13.0)	22 (22.0)	100 (100.0)
Female	51 (51.0)	13 (13.0)	16 (16.0)	20 (20.0)	100 (100.0)
Age group (years)					**P=0.26**
15-17	45 (50.0)	17 (18.9)	13 (14.4)	15 (16.7)	90 (100.0)
18-20	43 (47.8)	13 (14.4)	10 (11.1)	24 (26.7)	90 (100.0)
21-23	9 (45.0)	2 (10.0)	6 (30.0)	3 (15.0)	20 (100.0)
Faculty of study					**P=0.44**
Social Sciences & Education	20 (45.5)	9 (20.5)	6 (13.6)	9 (20.5)	44 (100.0)
Law & Humanities	35 (49.3)	12 (16.9)	13 (18.3)	11 (15.5)	71 (100.0)
Physical & Life Sciences	27 (44.3)	7 (11.5)	8 (13.1)	19 (31.1)	61 (100.0)
Medical & Health Sciences	15 (62.5)	4 (16.7)	2 (8.3)	3 (12.5)	24 (100.0)
Total	97 (48.5)	32 (16.0)	29 (14.5)	42 (21.0)	200 (100.0)

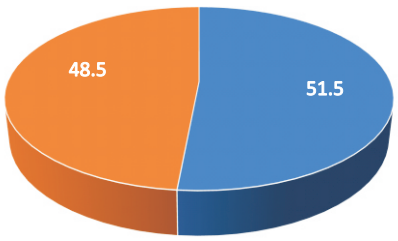

Figure 1: Pattern of Caries experience among the participants

CONCLUSION

Caries experience was high among the freshman undergraduate students in this study. However, there was no statistically significant association between caries experience and oral hygiene status among freshman undergraduate students. This supports the multifactorial nature of the aetiology of dental caries.

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