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Perception of Academic Work Load and Oral Hygiene Practice of Undergraduates in Health-Related Courses in University of Port Harcourt, Nigeria

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This work was carried out in collaboration among all authors. 'Author A' designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. 'Author B' and 'Author C' managed the analyses of the study. 'Author C' managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To evaluate the academic stress and oral hygiene practices among students in health-related profession such as medicine and surgery, nursing, dentistry and pharmacy
Study design: This study was a cross sectional survey done among students in health-related professions
Place and duration of study: Faculties of Medicine and Surgery, Dentistry, Pharmacy and Nursing in College of Health Sciences, University of Port Harcourt between August and September, 2021.
Methodology: Four hundred and twenty-two participants in health-related professions (dentistry, pharmacy, medicine and surgery and nursing) in the penultimate and final year who gave their consents were recruited for the study (266 females, 156 males; age range= 17-37 years). Self-administered questionnaires were used to collect data on demographics, perception of course stress and oral hygiene practices. Data was analyzed using IBM SPSS (statistical package for the social sciences) version 25.
Results: Sample size was 422 and response rate was 100%. P value was set at <0.05.
About two-third of participants reported a high academic stress and said they spend between 9 and 15 hours daily on academic work (p=0.02). Majority of the respondents cleaned their teeth with toothbrush and fluoridated toothpaste. 56.4% of the participants brush twice daily, 49.3% change their toothbrush every 3 months and 18.7% change their toothbrush when it lost its efficiency. 84.8% of the respondents were aware of interdental
Conclusion: The oral hygiene practice among the undergraduates was fair despite their high academic demands. There is however, still the need to motivate them for improved oral hygiene practice.

Keywords: Academic stress; interdental cleaning; oral health; oral hygiene practice.

1. INTRODUCTION

Academic stress has been associated to a number of factors among students in health-related courses. These are frequency of examinations, vastness of academic curriculum and the anxiety about graduating as at when due [1].

World health organisation (Who) had set goals for the year 2020 through recommended oral self-care (rosc) which includes tooth brushing more than once a day, lesser consumption of sugar containing snacks like once daily or rarely ,and regular use of fluoride containing toothpaste [2]. Though dental awareness has significantly increased, the modern dietary lifestyle such as consumption of sugar rich diet, lack of water fluoridation and other socio-environmental factors are posing a greater risk for good oral health [3,4]. The maintenance of good hygiene can prevent dental caries, periodontal diseases, bad breath and other dental problems [5,6] FDI (World Dental Federation) described oral health as being more than a beautiful smile [7]. It is the ability to speak, smile, smell, taste, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex (head, face and oral cavity) [7]. Oral health is an integral and essential component of general health. A number of factors such as oral hygiene status, tobacco smoking, alcohol, nutritional status, systemic health conditions and stress have been reported to be associated with a wide range of oral diseases [8]. To prevent oral diseases, oral hygiene is the most significant factor [9]. The concept, importance and practice of oral hygiene are expected to be easily understood by all literate members of a population [9]. Despite the fact that studies have shown that oral health plays an important role in systemic health, it is unfortunately often Neglected [10,11].

Oral hygiene practices for maintaining a good oral hygiene status includes behavioural factors such as regular tooth brushing, use of dental floss and mouthwashes, a balanced diet and regular visits to oral health professionals [12]. It is believed that good oral hygiene practices will to some extent help in the control of these major oral diseases [13].

The use of oral hygiene as a tool for accessing one's risk of having oral problems depends upon various barriers such as affordability, cultural preferences and lack of adequate services and technology [14].

There is paucity of information about oral health practice amongst students in health-related courses despite the fact that majority of the population present to medical professionals first for their oral health problems rather than the dentists at the primary health care level [15,16]. Furthermore, they come across a large number of patients with different age groups.

This study evaluated the academic stress and oral hygiene practices among students in health-related profession such as medicine and surgery, nursing, dentistry and pharmacy in the University of Port Harcourt, Rivers State, Nigeria.

2. MATERIALS AND METHODS

The study was done in the University of Port Harcourt, a federal university in nigeria located in choba, obi-akpor lga, rivers state. The university has twelve faculties which includes: Faculty of humanities, faculty of social sciences, faculty of education, faculty of engineering, faculty of basic medical sciences, faculty of clinical sciences, faculty of dentistry, faculty of management sciences, faculty of pharmacy, faculty of agriculture, faculty of sciences and faculty of law [18]. The university has an estimated student population of over 40,000 students [18].

This study was a cross sectional survey done among students in health-related professions (pharmacy, medicine, nursing, and dentistry) in the university of port-harcourt, rivers state nigeria. All students in the final year class (600/500level) and the preceding class (500l/400level) in dentistry, medicine, nursing and pharmacy were selected for the study.

Sample size was calculated using Cochran's formula;

N =Z^2/E^2 PQ

Where

N = Desired sample size,

Z =1.96 AT 95% confidence level

P = Population prevalence of oral awareness on oral hygiene practices in

University students (47.7%) = 47.7/100 =0.477

Q = Proportion of non-occurrence = 1-P= (1-0.477) = 0.53

E = Margin of error of 5%=5/100=0.05

Therefore

N = 〖1.96〗^2/ 〖0.05〗^2 ×0.477×0.53=0.95837/0.0025

N =383.35

Using Cochran's Formular With an Error of 5% and Confidence Level of 95%, The Sample Size Was 383.

To Account for Non-Response, The Sample Size will be Increased by 10%

N = 10/100×383.35=38.335

N = 38.335+383.35=421.685 ≅422

Data collection was done with self-administered questionnaires containing on demographic details, perception of participants' work stress and oral hygiene practice. Oral hygiene status was examined with green and vermillion simplified oral hygiene index (OHI-S).

Data were analysed using the ibm statistical package for social sciences version 25.0 (IBM Spss statistics, Armonk New York). Tables and charts were used for data presentation appropriately. Results were expressed in frequency and percentages for the categorical variables (age groups, sex, marital status and level of education). Chi square analysis was done for the categorical variables and statistical significance was set at $p<0.05$.

Note: Review paper may have different types of subsections.

2.1 Subheading

Oral health among undergraduates in medical courses.

3. RESULTS AND DISCUSSION

There is a slight female predominance across all groups and statistical analysis showed this to be statistically significant. The mean age of the study participants was 20.75±3.07 years with an age range of 17-37 years. Majority [209(49.5%)] of the participants were in the faculty of pharmacy while the least [22(5.2%)] were in faculty of dentistry. More than half were in the penultimate year. Most of the participants in all faculties were in the third decade of life (20-29 age group) in all. Majority of the participants from the faculties of dentistry and nursing were in their final year while the reverse is the case in medicine and pharmacy (Table 1).

Over half of the participants from all the faculties said their academic work is demanding and they spend between 9-15 hours daily on course work. No one in dentistry reported to spend over 15 hours on their academics. The daily hours spent on course work showed a statistical significance. Students in the faculty of nursing reported a very high stress of academic work followed by the students in the faculty of dentistry, the least was reported by students in the faculty of medicine and surgery. However, this was not statistically significant (p=0.08) (Table 2).

Two hundred and thirty -eight participants brushed twice daily. More participants from pharmacy brushed once daily. Four hundred and two participants (95.3%) used toothbrush to brush and 308 (73%) used medium textured brushes. No participants in dentistry used hard bristled toothbrush. 27.3% of participants in dentistry used the wrist roll brushing technique this was statistically significant (p=<0.001) (Table 3).

Table 1. Participants' sociodemographic

Variables	Dentistry	Medicine & Surgery	Nursing	Pharmacy	Total	X2	*P*
	N (%)	N (%)	N (%)	N (%)	N (%)		
Gender						**16.34**	**<0.001**
Female	14 (63.6)	67 (50.8)	47 (79.7)	138 (66.0)	266 (63.0)		
Male	8 (36.4)	65 (49.2)	12 (20.3)	71 (34.0)	156 (37.0)		
Age group (years)						**9.43**	**0.15**
10-19	6 (27.3)	59 (44.7)	23 (39.0)	103 (49.3)	191 (45.3)		
20-29	16 (72.7)	72 (54.5)	34 (57.6)	105 (50.2)	227 (53.8)		
>30	0 (0.0)	1 (0.8)	2 (3.4)	1 (0.5)	4 (0.9)		
Mean Age ± Sd (Years)	23.23±3.62	21.13±3.10	21.69±3.49	19.99±2.60	20.75±3.07		
Range (Years)	17-29	17-32	17-30	17-37	17-37		
Level of study						**11.87**	**0.008***
Final Year	16 (72.7)	60 (45.5)	30 (50.8)	79 (37.8)	185 (43.8)		
Penultimate Year	6 (27.3)	72 (54.5)	29 (49.2)	130 (62.2)	237 (56.2)		
Total	**22 (100.0)**	**132 (100.0)**	**59 (100.0)**	**209 (100.0)**	**422 (100.0)**		

Table 2. Participants' perception of their academic work

Variables	Dentistry	Medicine & Surgery	Nursing	Pharmacy	Total	X^2	*P*
	N (%)	N (%)	N (%)	N (%)	N (%)		
Stress of academic work						**15.43**	**0.08**
Low	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.5)	1 (0.2)		
Moderate	2 (9.1)	11 (8.3)	5 (8.5)	15 (7.2)	33 (7.8)		
High	5 (22.7)	44 (33.3)	6 (10.2)	71 (34.0)	126 (29.9)		
Very High	15 (68.2)	77 (58.3)	48 (81.4)	122 (58.4)	262 (62.1)		
Demanding course of study						**24.51**	**0.02***
Agree	6 (27.3)	39 (29.5)	16 (27.1)	84 (40.2)	145 (34.4)		
Disagree	7 (31.8)	35 (26.5)	16 (27.1)	33 (15.8)	91 (21.6)		
Neutral	3 (13.6)	29 (22.0)	9 (15.3)	28 (13.4)	69 (16.4)		
Strongly Agreed	5 (22.7)	28 (21.2)	18 (30.5)	52 (24.9)	103 (24.4)		
Strongly Disagreed	1 (4.5)	1 (0.8)	0 (0.0)	12 (5.7)	14 (3.3)		
Daily hours spent on academic work						**38.74**	**<0.001***
5-8	12 (54.5)	52 (39.4)	15 (25.4)	52 (24.9)	131 (31.0)		
9-12	7 (31.8)	44 (33.3)	29 (49.2)	83 (39.7)	163 (38.6)		
13-15	3 (13.6)	31 (23.5)	9 (15.3)	59 (28.2)	102 (24.2)		
15-20	0 (0.0)	5 (3.8)	6 (10.2)	15 (7.2)	26 (6.2)		
Total	**22 (100.0)**	**132 (100.0)**	**59 (100.0)**	**209 (100.0)**	**42(100.0)**		

Table 3. Oral hygiene practice of participants

Variables	Dentistry	Medicine & Surgery	Nursing	Pharmacy	TOTAL	X^2	*P*
	N (%)	N (%)	N (%)	N (%)	N (%)		
Frequency of brushing						**32.30**	**0.04***
After every meal	1 (4.5)	0 (0.0)	3 (5.1)	5 (2.4)	9 (2.1)		
Once	9 (40.9)	58 (43.9)	15 (25.4)	92 (44.0)	174 (41.2)		
Twice	12 (54.5)	74 (56.1)	40 (67.8)	112 (53.6)	238 (56.4)		
Rarely	0 (0.0)	0 (0.0)	1 (1.7)	0 (0.0)	1 (0.2)		
Brushing aid						**59.32**	**<0.0001***
Both	0 (0.0)	0 (0.0)	11 (18.6)	6 (2.9)	17 (4.0)		
Chewing stick	0 (0.0)	0 (0.0)	3 (5.1)	0 (0.0)	3 (0.7)		
Toothbrush	22 (100.0)	132 (100.0)	45 (76.3)	203 (97.1)	402 (95.3)		
Toothbrush texture						**19.52**	**0.003***
Hard bristled	0 (0.0)	11 (8.3)	5 (8.5)	18 (8.6)	34 (8.1)		
Medium bristled	20 (90.9)	96 (72.7)	32 (54.2)	160 (76.6)	308 (73.0)		
Soft bristled	2 (9.1)	25 (18.9)	22 (37.3)	31 (14.8)	80 (19.0)		
Method of brushing						**49.52**	**<0.001***
Scrub	0 (0.0)	1 (0.8)	1 (1.7)	11 (5.3)	13 (3.1)		
Vertical (V)	5 (22.7)	29 (22.0)	6 (10.2)	19 (9.1)	59 (14.0)		
Horizontal (H)	1 (4.5)	14 (10.6)	10 (16.9)	21 (10.0)	46 (10.9)		
V+H	10 (45.5)	85 (64.4)	41 (69.5)	148 (70.8)	284 (67.3)		
Wrist roll	6 (27.3)	3 (2.3)	1 (1.7)	10 (4.8)	20 (4.7)		
Type of paste						**18.46**	**0.03***
Charcoal	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.0)	2 (0.5)		
Herbal toothpaste	0 (0.0)	4 (3.0)	6 (10.2)	26 (12.4)	36 (8.5)		
Salt	0 (0.0)	0 (0.0)	2 (3.4)	3 (1.4)	5 (1.2)		
Toothpaste with fluoride	22 (100.0)	128 (97.0)	51 (86.4)	178 (85.2)	379 (89.8)		
Daily brushing						**9.62**	**0.14**
After every meal	0 (0.0)	0 (0.0)	2 (3.4)	3 (1.4)	5 (1.2)		
Once	9 (40.9)	73 (55.3)	22 (37.3)	105 (50.2)	209 (49.5)		
Twice	13 (59.1)	59 (44.7)	35 (59.3)	101 (48.3)	208 (49.3)		
When do you change brush						**13.99**	**0.30**
Every 3 months	15 (68.2)	69 (52.3)	29 (49.2)	95 (45.5)	208 (49.3)		
Every 6 months	3 (13.6)	32 (24.2)	18 (30.5)	55 (26.3)	108 (25.6)		
Every month	0 (0.0)	0 (0.0)	1 (1.7)	4 (1.9)	5 (1.2)		

Variables	Dentistry	Medicine & Surgery	Nursing	Pharmacy	TOTAL	X^2	*P*
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**		
Once a year	1 (4.5)	11 (8.3)	1 (1.7)	9 (4.3)	22 (5.2)		
When tooth brush loses its efficiency	3 (13.6)	20 (15.2)	10 (16.9)	46 (22.0)	79 (18.7)		
Interdental cleaning						**17.34**	**0.001***
No	2 (9.1)	34 (25.8)	8 (13.6)	20 (9.6)	64 (15.2)		
Yes	20 (90.9)	98 (74.2)	51 (86.4)	189 (90.4)	358 (84.8)		
Interdental cleaning aids						**33.67**	**0.01***
None	2 (9.1)	33 (25.0)	7 (11.9)	20 (9.6)	62 (14.7)		
Dental floss	12 (54.5)	30 (22.7)	21 (35.6)	63 (30.1)	126 (29.9)		
Interdental brush	0 (0.0)	8 (6.1)	6 (10.2)	24 (11.5)	38 (9.0)		
Thread	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.5)	1 (0.2)		
Toothbrush	0 (0.0)	2 (1.5)	0 (0.0)	0 (0.0)	2 (0.5)		
Toothpick	8 (36.4)	59 (44.7)	25 (42.4)	101 (48.3)	193 (45.7)		
Food debris removing aid						**27.29**	**0.001***
Hands	5 (22.7)	26 (19.7)	12 (20.3)	16 (7.7)	59 (14.0)		
Match/broomstick	1 (4.5)	0 (0.0)	4 (6.8)	3 (1.4)	8 (1.9)		
Toothbrush	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.0)	2 (0.5)		
Toothpick	16 (72.7)	106 (80.3)	43 (72.9)	188 (90.0)	353 (83.6)		
Total	**22(100.0)**	**132(100.0)**	**59(100.0)**	**209(100.0)**	**422(100.0)**		

Two participants (1.0%) in pharmacy used charcoal to brush. Only participants in nursing (3.4%) and pharmacy (1.4%) used salt for brushing. No participant in dentistry used herbal toothpaste to brush but 4(3.0), 6(10.2), and 26(12.4) participants from medicine and surgery, nursing and pharmacy respectively used it. Statistical analysis showed this to be significant (p=0.03). Interdental cleaning was high among all faculties but was highest among dental participants. The use of toothpick was least [8(36.4%)] among dental participants compared to participants in medicine [59(44.7%)], nursing [25(42.4%)] and pharmacy [(101(48.3%)]. Statistical analysis showed this to be significant (p=0.01).

3.1 DISCUSSION

The university students are generally considered the most educated people in the community and students in health-related courses are expected to be well informed about issues pertaining to health [10].

Four hundred and twenty-two participants from four faculties were recruited for this study. There is a slight female predominance across all groups. Other studies.

Stress during training in health-related courses are well documented in researches due to the heavy workload as indicated by high number of hours spent on academic work as well as frequency of examinations and high parental expectations [1]. In this study, over half of the participants from all the faculties said their academic work is highly demanding and reported a very high academic load that warrants spending between 9-15 hours daily on course work. This could possibly be the reason why 85.5percent of the participants do not have regular dental visits.

A study by Paudel et al that assessed stress and its relief among undergraduate dental students in tertiary health care center in eastern Nepal reported that the prevalence of stress among the participants was 100percent for all years of study and academic stressors may adversely affect their physical and psychological health [18]. About 83percent of the respondents in their study revealed that compulsory attendance to lectures and the need to please their patients were stressors that could inversely reduce time for other activities including dental visits [18].

Toothbrushing is a personal hygiene practice that is crucial and directly impacts oral hygiene [19]. Brushing twice daily is recommended by dentists in order to improve plaque control. Studies have reported its effectiveness in the maintenance of good oral health [20,21]. In this study, 56.4% of the participants brushed their teeth twice daily while 41.2% brush their teeth once a day. This is a huge improvement compared to a previous study by Bashiru et al among students in the university of Port Harcourt which reported that 90% of the students brushed their teeth once daily and only about 8% brush their teeth twice daily even though about 60% of the respondents knew it has been recommended to brush twice daily [22]. This change could be due to the increasing awareness through social media and advertisements by toothpaste selling companies about enhanced confidence and fresh breath that results from using their products. This improvement may also be linked to oral health campaign in the university of Port Harcourt organized by the faculty of dentistry to celebrate the world oral health day and dentistry day yearly.

Oral hygiene cleaning materials is essential for effective oral hygiene practice. The major factors which influenced the selection of oral hygiene materials in a study done in the university of Port Harcourt revealed that the selection of oral hygiene materials was influenced by the fluoride content, taste and cost of the material [23]. In this study, 95.3% of undergraduate used toothbrush and about 4% used chewing stick in addition to toothbrushes. 89.8% of respondents brushed their teeth using toothpaste with fluoride, 8.5% used herbal toothpaste and less than 2% uses charcoal and salt.

This is comparable to a study by Soroye et al that assessed oral hygiene practice among medical doctors in Port Harcourt that reported that 92.3% of respondents used toothbrush and toothpaste and 7.7% used chewing stick [24]. In Nigeria and other parts of the world the use of chewing sticks has been recognized as a traditional cleaning aid that have beneficial effects on oral health. In contrast, a study by Doshi et al among medical and engineering students reported 100% use of toothpaste and toothbrush only [25].

Studies have reported that if a properly designed brush is used with an effective technique and for a sufficient duration of time, plaque control can be achieved [26,27]. Toothbrush bristles can be soft, medium or hard. Hard bristled toothbrush

can lacerate the gum and cause gingival recession. This study showed that greater than half (73%) of the respondents used medium-sized bristles, 19% used soft bristles and 8.1% used hard bristles toothbrush. This is similar to a study by Azodo et al among dental technologist and dental therapists in training which reported that 78.9% of the respondents used medium textured brush [28]. A study on the effect of toothbrushing patterns on dental tissues that was carried out amongst Obafemi Awolowo University students revealed that gingival recession was found in 31% of subjects that employed hard textured toothbrush [29].

It is recommended that toothbrushes should be changed once in 3 months or when the bristles are frayed as by then the bristles' ability to clean become less effective [30]. Almost half (49.3%) of the respondents replaced their toothbrush every 3 months, 25.6% of respondents replaced after 6 months and 18.7% replaced when the tooth brush loses its efficiency. This is an improvement in knowledge compared to results by Azodo et al which showed that two-fifth of their respondents replaced their toothbrushes every 3 months [28]. In this study, fraying of toothbrush bristles was the most common reason for toothbrush replacement. This could be due to oral health education during (CODEH) organized by PUDSA (Port Harcourt University Dental Students' Association during their dental health week in the school environment yearly.

Pertaining to brushing techniques, the roll and bass technique is preferred since it causes minimal trauma to gingival tissues. In this study only 4.7% of the students used the roll technique which is slightly higher than the 3.2% result reported in a study by Soroye et al in Port-Harcourt and 0.0% reported in a study by Iba and Adamu in Benue state Nigeria [24,31]. However, most of this study participants (67.3%) used both horizontal and vertical brushing technique which is similar to the result reported (63.5%) by Soroye et al. [24].

Less than two-third of the participants in a study carried out in the university of Port Harcourt by Umanah et al cleaned their teeth twice daily and none of the participants used interdental cleaning aids.23 however, in this study, majority (84.8%) of the respondents practiced interdental cleaning and about 15.2% did not. The use of dental floss was 29.9%, toothpick 45.7%, and interdental brush 9%. A study reported that participants who frequently brushed and flossed had better oral health knowledge than those who do not [31]. Other previous studies showed that improved knowledge was correlated with good oral health and behavior.

4. LIMITATIONS OF THE STUDY

This study had some limitations. First, the research was performed on the basis of self-reported data of which participants could have made errors in interpreting the questions correctly.

Secondly, the study did not examine participants oral cavity. This could have aided our assessment objectively of the level of oral hygiene and ascertain the oral health status of the participants which could have been used to correlate their responses; as many might have not reported what they actually practice.

Despite the limitations of this study its result however, can be used in planning oral health awareness among undergraduate students in the university of port harcourt. It can also contribute to literature database that is used for national oral health policy.

5. CONCLUSION

This study demonstrated that participants in health-related fields showed a better awareness of oral health and oral hygiene practices. The participants in dentistry had better dental awareness perhaps because it is their course of study.

Although dental awareness has improved it is still not at its best. Every dental personnel therefore must be involved in promoting dental awareness and educating people on oral hygiene practices and the need for routine dental checkups.

6. RECOMMENDATIONS

This study assessed dental awareness amongst participants in pharmacy, medicine, nursing and dentistry. These are few compared to several other departments and faculties in the university. We recommend that postings in dentistry be added to the flowchart of students in health-related courses so as to expose them to dentistry and the various dental treatments. This first exposure and possibly the oral health education given to them during this rotation will help increase their oral health awareness.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

All participants gave their informed consent after the objectives of the study was explained to them

ETHICAL APPROVAL

Ethical approval was given by the ethics and research committee of the university of Port Harcourt.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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