Relationship Between Self-Perceived Oral Health Problems and Oral Care Practices among Secondary School Students in Ibadan

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ABSTRACT

Objective: Some methods of oral care adopted by individuals may be the cause of their self-perceived oral health problems. The objective of this study was to determine the effect of oral care practices on self-perceived oral health problems among secondary school students in Ibadan.

Methods: A 14-item structured questionnaire seeking information on self-perceived oral health problems and oral care practices was filled by each participant under supervision. The data was analysed using IBM SPSS version 21.0. Descriptive statistics was performed on the variables and their associated factors. Significant association between variables was tested using chi-square and the results were presented in tables and charts.

Results: Out of 250 questionnaires administered, only 246 provided adequate information for analysis. The age range of the respondents was between 12 and 23years, with 67.5% being within 15-17years. The males were 102(41.5%), and the females were 144 (58.5%). Some of the respondents (45.5%) reported experience of one oral health problem or the other in the past one year, and 91.9% of the respondents believed their oral health could be improved. Statistically significant relationship was found between several self-perceived oral health problems and oral care practices such as tool used for tooth cleaning, type of dentifrice used, technique of brushing employed, time of tooth cleaning and exposure to dental health education.

Conclusion: This study showed that there is a relationship between several self-perceived oral health problems and some oral care practices employed by the respondents.

Keywords: self-perceived oral health problems, practices.

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CLINICAL IMPLICATIONS

This study provided information on some influence of personal oral care practices on self-perceived oral care problems. Thus, during counselling and motivation of patients, the results of this study offer evidence-based information that the dentist can share with the patient concerning personal oral-care.

INTRODUCTION

Oral health refers to a condition of the mouth and its related tissues which enables an individual to eat, speak and socialize without disease, discomfort or embarrassment, and contributes to general well-being.[1] Self-perceived oral health refers to an individual's subjective measure of his or her oral health condition.[2] Studies have shown that poor oral health in both children and adults impacts their eating, sleeping, physical activities, emotional stability, self-expression, and subsequently their social interactions.[3-6] Apart from these, the self-perceived oral health problems may be caused or influenced by the methods of oral care adopted by individuals. It will be useful to find out if the commonly adopted oral care practices relate to the presence of certain oral health challenges. This is particularly important considering such findings that many people, when they perceive that they have oral problems like pain, cavities, aesthetic issues and difficulty in chewing, tend to get to a distressing state, before they seek professional care. Also, it is possible that some may resort to non-professional means of solving their oral health challenges, which could worsen the problem.

Pinelli et al.[7] demonstrated that self-perceived oral health was found a substantially reliable indicator for oral condition. Its validity was good at detecting dental conditions and temporomandibular joint disorders, though more sensitive than specific to detect the presence of periodontal disease. An almost perfect agreement was found for self-perceived temporomandibular joint and periodontal conditions. Also, the findings of Atchison et al. suggest that perceived oral health can be a useful outcome measure in dentistry because of its relation to predisposing socio-demographics and dental utilization.[8] One of the goals of the World Health Organization is to ensure increased uptake of preventive oral care.9 Oral care practice refers to methods of keeping the mouth and its related structures healthy and clean.[10] The essence of such efforts is to pr event and to treat associated oral diseases such as gingivitis, periodontitis, halitosis, and dental caries. Also, recent studies have associated poor oral care with systemic conditions like cardiovascular disease and pre-term low birth weight infant.[11,12]

Before the modern toothbrush was invented, selected sticks were chewed and used to clean the teeth and tongue, and in many developing countries, such traditional practice have persisted.[13,14] The World Health Organization and other institutions have recognized and encouraged the use of these traditional devices, owing to the evidences that they help in promoting oral health.[15] Healthy oral self-care habits of significant importance include cleaning the mouth twice daily,[16] use of medium textured toothbrushes,[17] and Fluoride toothpastes,[18] using interdental cleaning devices, such as dental floss and interdental brushes.[19] and restriction in consumption of refined carbohydrate in-between meals.[20] A combination of these approaches is important for successful self-dependent interventions. In addition, it is important to supplement such self-care with regular dental check-ups.[10]

In Nigeria, young persons and adolescents constitute 55% and 23% of the population respectively; and about thirty million children (62.1% and 44.1% of eligible primary and secondary school students) are in schools.[21] A secondary school is a school that is intermediate in level between elementary school and college. It usually offers general, technical, vocational and/or college-preparatory classes.22 These students, mostly adolescents, are usually under the care of parents/carers who support them financially and otherwise. They also spend considerable time in school, making it an important environment for the development of healthy behaviours. When school oral health programmes are developed with the above facts in mind, they will be effective in improving the oral health awareness and behaviour, as well as oral health status of these young people.[23]

The objective of this study was to determine the effect of oral care practices on self-perceived oral health problems among secondary school students in Ibadan.

MATERIALS AND METHODS

Study Design and Scope

This was a cross-sectional study using a 14-item structured questionnaire, designed to pick up coded data.

Study Location The study was conducted in the city of Ibadan, Oyo state, Nigeria.

Study Population

The study population was selected senior secondary school students in Ibadan.

Ethical approval

This was obtained from the University of Ibadan /University College Hospital Ethics Review Committee. Permission to conduct the study was gotten from the Commissioner for Education, and from the principals of selected schools. Informed consent was obtained from the parents and students who were 18 years and above; assent was also gotten from students less than 18 years of age.

Sample Size Calculation

The sample size was determined using the formula:[24] $n=z^2[pq]/d^2$. A prevalence of 82.5% from a related study[25] was used.

Data Collection

Using the multistage random sampling technique, 250 copies of a 14-item structured questionnaires were distributed to eligible students. The questionnaire sought information on self-perceived oral health problems and oral care practices, as well as their age and gender.

Data analysis

The data was analysed using IBM SPSS version 23.0. Frequency counts were run to detect missing cases while the data underwent cleaning. Age, a continuous variable, was sorted into age-groups, and summarized using mean, standard deviation, and confidence interval, then compared using student t-test while gender, self-perceived oral health problems and oral care practices, which are categorical variables were summarized using proportions and percentages, then compared using chi square statistics. The relationship between self-perceived oral health problems and oral care practices was analyzed using Pearson's correlates. The level of significance was set at P less than 0.05.

RESULTS

Out of 250 questionnaires distributed, 246 provided adequate information for analysis, giving a response rate of 98.4%. The age range of the respondents was between 12 and 23years, with 166 (67.5%) being within 15-17years. Forty students (16.3%) were in the age range of 12-14years while 2 (0.8%) were within 21-23years. (Figure 1). The males were 102(41.5%), and the females were 144 (58.5%), (Figure 2).

Forty-five-point five percent of the respondents reported experience of one oral health problem or the other in the past one year. Ninety-one-point nine percent of the respondents were of opinion that their oral health can be improved (Table 1). Table 2 depicted the oral health practices among the respondents (Table 2). Statistically, there was no significant relationship between the Self-perceived experience of oral health problem and age group (p = 0.207) (Table 3), neither was there any apparent trend in the distribution of Self-perceived experience of oral health problem among the groups. Statistically, there was not a significant relationship between the opinion on whether oral health can be improved and age group (p = 0. 219)

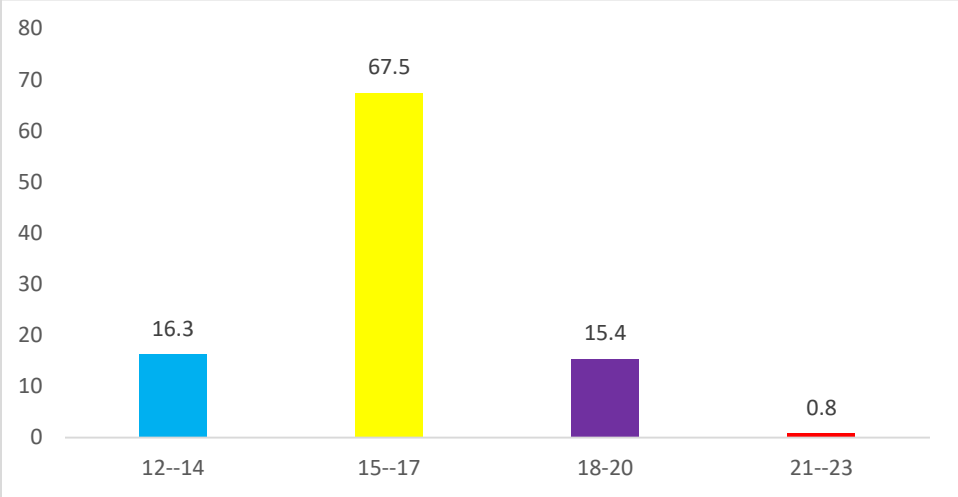

Figure 1: Bar chart showing the percentage distribution of the age groups of the respondents.

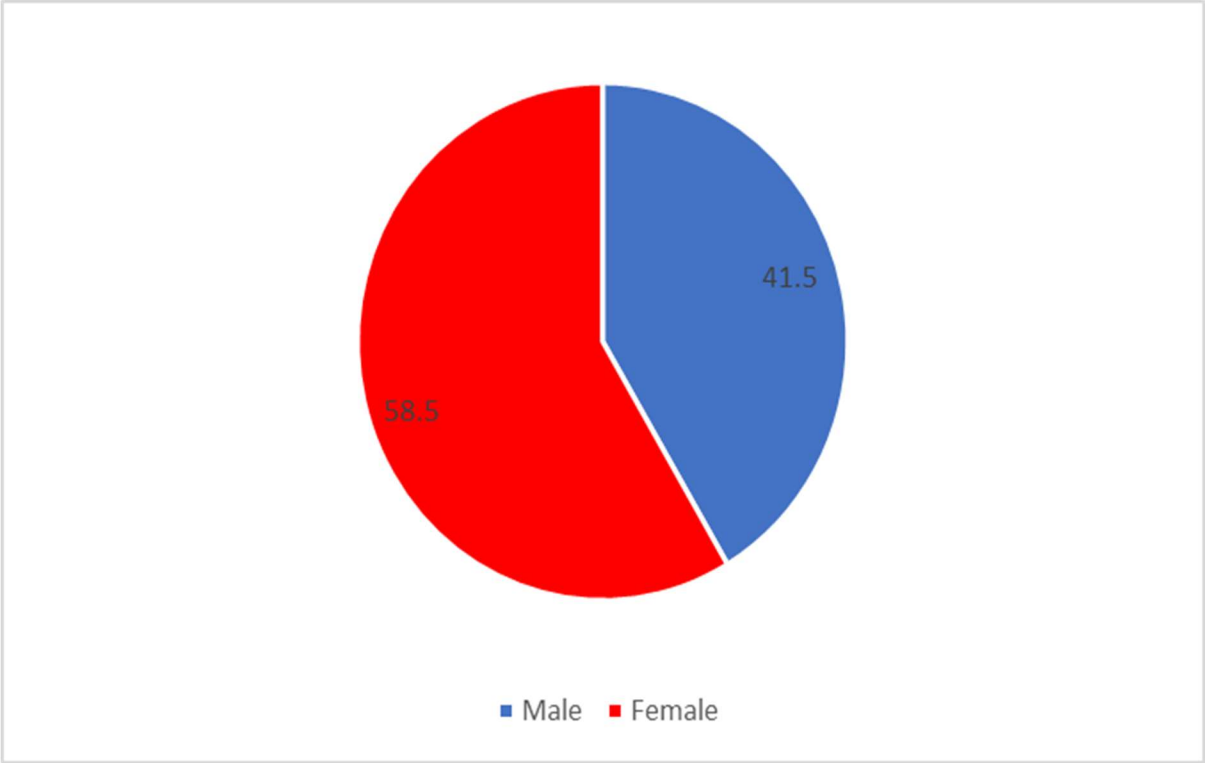

Figure 2: Pie chart showing the gender distribution of the respondents.

Table 1: Frequency distribution of Self-perceived experience of oral health problems

Self-perceived oral health problems	n (%)
Self-perceived experience of oral health problem	
Yes	112 (45.5)
No	134 (54.5)
Self-perceived experience of toothache	110 (44.7)
Self-perceived experience of shaking tooth	29 (11.8)
Self-perceived experience of pain in the gum	77 (31.3)
Self-perceived experience of bleeding from the gum	110 (44.7)
Self-perceived experience of swelling of the gum	55 (22.4)
Positive self-perception that oral health can be improved	224 (91.1)
Opinion on whether oral health can be improved	
Yes	224 (91.1)
No	22 (8.9)

The analysis for association between the self-perceived oral health problems and the oral health practices, as presented in Table 4, showed that statistically significant relationship exists between self-perceived experience of oral health problem in the past one year and variables such as the tool used for tooth cleaning ($p = 0.024$), the type of dentifrice used ($p = 0.002$), the technique of brushing employed ($p = 0.031$), the time of tooth cleaning ($p = 0.002$), and exposure to dental health education ($p = 0.001$).

Table 2: Frequency distribution of oral care practices by respondents

Oral care practices	n (%)
Frequency of tooth cleaning	
Once a day	130(52.8)
Twice a day	83(33.7)
More than twice a day	33(13.4)
Tool used for daily tooth cleaning	
Toothbrush	236(95.9)
Chewing stick and toothbrush	2(0.8)
Chewing stick	8(3.3)
Texture of brush used	
Medium	108(43.9)
Soft	74(30.1)
Hard	64 (26.0)
Type of dentifrice used	
Fluoride Containing	194(78.9)
Fluoride Containing and Non-Fluoride Containing	44(17.9)
Non-Fluoride Containing	8(3.3)
Technique of brushing employed	
Up and down(vertical) strokes	119(48.4)
Combined (vertical+ horizontal) strokes	52(21.1)
Side to side(horizontal) strokes	75(30.5)
Time of daily tooth cleaning	
Before breakfast	225(91.5)
After breakfast	15(6.1)
After dinner	6(2.4)
Tongue brushing	
Yes	233(94.7)
No	13(5.3)
Dental service utilization in the past 1 year	
Yes	15(6.1)
No	231(93.9)
Exposure to dental health education in school	
Yes	85(34.6)
No	161(65.4)

Statistically significant relationship was also found between self-perceived pain in the gum and practices like frequency of daily tooth cleaning (p = 0.036), technique of brushing employed (p = 0.002), and tongue brushing (p = 0.012). (Table 5). From Table 6, self-perceived toothache showed a statistically significant relationship with time of daily tooth cleaning (p = 0.050).

Self-perceived tooth mobility related significantly with exposure to dental health education in school (p = 0.038), as well as with dental service utilization in the past 1 year (p = 0.021) (Table 7).

In Table 8, self-perceived bleeding from the gum is shown to also relate significantly with time of tooth cleaning (p = 0.050). Self-perceived swelling of the gum showed statistically significant relationship with both texture of brush used (p = 0.008), and the technique of brushing employed (p = 0.011) (Table 9).

Table 3: Comparison of self-perceived oral health problems among age groups

Self-perceived oral health problems	12-14 n (%)	15-17 n (%)	18-20 n (%)	21-23 n (%)	x^2	P-value
Self-perceived experience of oral health problem					4.563	0.207
Yes	22 (55.0)	73 (44.0)	15 (39.5)	2 (100.0)		
No	18 (45.0)	93 (56.0)	23 (60.5)	0 (0.0)		
Toothache	24(60.0).	73 (44.0)	13(34.2)	0 (0.0)	7.131	0.068
Mobile teeth	8 (20.0)	17 (10.2)	4 (10.5)	0 (0.0)	3.301	0.347
Pain in the gum	17 (42.5)	52 (31.3)	8 (21.1)	0 (0.0)	5.100	0 .165
Bleeding from the gum	24 (60.0)	73 (44.0)	13 (34.2)	0 (0.0)	7.131	0.068
Swelling of the gum	8 (20.0)	41 (24.7)	6 (15.8)	0 (0.0)	2.173	0.537
Opinion on whether oral health can be improved					4.425	0.219
Yes	39(97.5)	151(91.0)	32(84.2)	2 (100.0)		
No	1(2.5)	15(9.0)	6 (15.8)	0 (0.0)		

Table 4: Comparison of self-perceived oral health problems among patients with oral health practices

Oral Health Practices	Self-perceived experience of oral health problem Yes n (%)	No n (%)	Total n (%)	x^2	P value
Frequency of daily tooth cleaning				0.605	0.739
Once a day	61(46.9)	69(53.1)	130 (100.0)		
Twice a day	38(45.8)	45(54.2)	83 (100.0)		
More than twice a day	13(39.4)	20(60.6)	33 (100.0)		
Tool used for tooth cleaning				7.457	0.024
Tooth brush	105(44.5)	131(55.5)	236 (100.0)		
Toothbrush and Chewing stick	0 (0.0)	2(100.0)	2 (100.0)		
Chewing stick	7 (87.5)	1 (12.5)	8 (100.0)		
Texture of brush used				0.991	0.609
Medium	53 (49.1)	55 (50.9)	108 (100.0)		
Soft	32 (43.2)	42 (56.8)	74 (100.0)		
Hard	27 (42.2)	37 (57.8)	64 (100.0)		
Type of dentifrice used				12.347	0.002
Fluoride	78 (40.2)	116(59.8)	194 (100.0)		
Fluoride and others	27 (61.4)	17 (38.6)	44 (100.0)		
Others	7 (87.5)	1 (12.5)	8 (100.0)		
Technique of brushing employed				6.916	0.031
Up and down(vertical) strokes	48 (40.3)	71 (59.7)	119 (100.0)		
Combined (vertical+ horizontal) strokes	32 (61.5)	20 (38.5)	52 (100.0)		
Side to side(horizontal) strokes	32 (42.7)	43 (57.3)	75 (100.0)		
Time of tooth cleaning				12.309	0.002
Before breakfast	95(42.2)	130 (57.8)	225 (100.0)		
After breakfast	13 (86.7)	2 (13.3)	15 (100.0)		
After dinner	4 (66.7)	2 (33.3)	6 (100.0)		
Tongue brushing				0.276	0.409
Yes	107 (45.9)	126 (54.1)	233 (100.0)		
No	5 (38.5)	8 (61.5)	13 (100.0)		
Exposure to dental health education				10.967	0.001
Yes	51 (60.0)	34 (40.0)	85 (100.0)		
No	61 (37.9)	100 (62.1)	161 (100.0)		
Dental service utilization in the past 1 year				0.392	0.358
Yes	8 (53.3)	7 (46.7)	15 (100.0)		
No	104 (45.0)	127 (55.0)	231 (100.0)		

Table 5: Comparison of self-perceived pain in the gum with selected oral health practices

Oral Health Practices	Experience of Pain in the Gum				
	No n (%)	Yes n (%)	Total n (%)	X^2	P value
Frequency of daily tooth cleaning				6.665	0.036
once a day	80 (61.5)	50 (38.5)	130 (100.0)		
Twice a day	63 (75.9)	20 (24.1)	83 (100.0)		
More than twice a day	26 (78.8)	7 (21.2)	33 (100.0)		
Tool used for tooth cleaning				0.483	0.785
Chewing stick	5 (62.5)	3 (37.5)	8 (100.0)		
Tooth brush	163 (69.1)	73 (30.9)	236 (100.0)		
Chewing stick and toothbrush	1 (50.0)	1 (50.0)	2 (100.0)		
Texture of brush used				4.955	0.084
Medium	77 (71.3)	31 (28.7)	108 (100.0)		
Soft	55 (74.3)	19 (25.7)	74 (100.0)		
Hard	37 (57.8)	27 (42.2)	64 (100.0)		
Type of dentifrice used				1.576	0.455
Fluoride	137 (70.6)	57 (29.4)	194 (100.0)		
Fluoride and others	27 (61.4)	17 (38.6)	44 (100.0)		
Others	5 (62.5%)	3 (37.5)	8 (100.0)		
Technique of brushing employed				012.03	0.002
Up and down(vertical) strokes	94 (79.0)	25 (21.0)	119 (100.0)		
Combined (vertical+ horizontal)	28 (54.9)	23 (45.1)	51 (100.0)		
strokes	47 (61.8)	29 (38.2)	76 (100.0)		
Side to side(horizontal) strokes					
Time of tooth cleaning				1.625	0.444
Before breakfast	157 (69.8)	68 (30.2)	225 (100.0)		
After breakfast	9 (60.0)	6 (40.0)	15 (100.0)		
After dinner	3 (50.0)	3 (50.0)	6 (100.0)		
Tongue brushing				6.254	0.012
Yes	156 (67.0)	77 (33.0)	233 (100.0)		
No	13 (100.0)	0 (0.0)	13 (100.0)		
Exposure to dental health Education				0.963	0.326
Yes	55 (64.7%)	30 (35.3%)	85 (100.0)		
No	114 (70.8%)	47 (29.2%)	161 (100.0)		
Dental service utilization in the past 1year				0.562	0.314
Yes	9 (60.0)	6 (40.0)	15 (100.0)		
No	160 (69.3)	71 (30.7)	231 (100.0)		

DISCUSSION

This study assessed for relationship between the self-perceived oral health problems and oral care practices among secondary school students in Ibadan. Almost half (45.5%) of the respondents reported that they experienced one oral health problem or the other within the past 1 year. This is close to the report from China, where 41% of the adolescents they studied claimed they had experienced toothache or other symptoms during the previous 12 months.[26] Also, a study in Tanzania showed that substantial proportions of their students reported experience of oral problems which had impacts on eating and teeth cleaning.[27]

Table 6: Comparison of self-perceived toothache with selected oral health practices

Oral Health Practices	Experience of Toothache			X^2	P value
	No n (%)	Yes n (%)	Total n (%)		
Frequency of tooth cleaning				4.867	0.088
Once a day	65 (50.0)	65 (50.0)	130 (100.0)		
Two times a day	54 (65.1)	29 (34.9)	83 (100.0)		
Three times a day	17 (51.5)	16 (48.5)	33 (100.0)		
Tool used for tooth cleaning				1.086	0.581
Tooth brush	132 (55.9)	104 (44.1)	236 (100.0)		
Chewing stick and toothbrush	1 (50.0)	1 (50.0)	2 (100.0)		
Chewing stick	3 (37.5)	5 (62.5)	8 (100.0)		
Texture of brush used				1.890	0.389
Medium	63 (58.3)	45 (41.7)	108 (100.0)		
Soft	36 (48.6)	38 (51.4)	74 (100.0)		
Hard	37 (57.8)	27 (42.2)	64 (100.0)		
Type of dentifrice used				3.432	0.180
Fluoride	113 (58.2)	81 (41.8)	194 (100.0)		
Fluoride and others	20 (45.5)	24 (54.5)	44 (100.0)		
Others	3 (37.5)	5 (62.5)	8 (100.0)		
Technique of brushing employed				4.441	0.109
Up and down(vertical) strokes	74 (62.2)	45 (37.8)	119 (100.0)		
Combined (vertical+ horizontal) strokes	25 (49.0)	26 (51.0)	51 (100.0)		
Side to side(horizontal) strokes	37 (48.7)	39 (51.3)	76 (100.0)		
Time of daily tooth cleaning				5.986	0.050
Before breakfast	120 (53.3)	105 (46.7)	225 (100.0)		
After breakfast	10 (66.7)	5 (33.3)	15 (100.0)		
After dinner	6 (100.0)	0 (0.0)	6 (100.0)		
Tongue brushing				1.080	0.228
Yes	127 (54.5)	106 (45.5)	233 (100.0)		
No	9 (69.2)	4 (30.8)	13 (100.0)		
Exposure to Dental health education				1.159	0.173
Yes	43 (50.6)	42 (49.4)	85 (100.0)		
No	93 (57.8)	68 (42.2)	161 (100.0)		
Dental service utilization in the past 1 year				0.837	0.261
Yes	10 (66.7)	5 (33.3)	15 (100.0)		
No	126 (54.5)	105 (45.5)	231 (100.0)		

Among the various self-perceived oral health problems recorded, the most frequent was toothache: (44.7%). The studies of Schuch et al, Mashoto et al, and Jiang et al also showed that dental pain was prominent among the oral problems experienced by their subjects.[26-28] García-Cortés et al.[29] documented that younger subjects were more likely to report toothache. Having oral pain is one of the most important predictors of perceived oral health problem noted by Atchison et al. [8,] and Schuch et al. [28] Thus, the finding that toothache was the most frequent recorded oral health problem perceived among the students in this study could have contributed to the relatively high report of self-perceived oral health problems.

Table 7: Comparison of self-perceived tooth mobility with selected oral health practices

Oral Health Practices	Experience of Tooth Mobility			X^2	P value
	No n (%)	Yes n (%)	Total n (%)		
Frequency of tooth cleaning				1.254	0.534
Once a day	113 (86.9)	17 (13.1)	130 (100.0)		
Two times a day	73 (88.0)	10 (12.0)	83 (100.0)		
Three times a day	31 (93.9)	2 (6.1)	33 (100.0)		
Tool used for tooth cleaning				1.393	0.498
Chewing stick	8 (100.0)	0 (0.0)	8 (100.0)		
Tooth brush	207 (87.7)	29 (12.3)	236 (100.0)		
Chewing stick and toothbrush	2 (100.0)	0 (0.0)	2 (100.0)		
Texture of brush used				2.447	0.294
Medium	97 (89.8)	11 (10.2)	108 (100.0)		
Soft	67 (90.5)	7 (9.5)	74 (100.0)		
Hard	53 (82.8)	11 (17.2)	64 (100.0)		
Type of dentifrice used				1.602	0.449
Fluoride	169 (87.1)	25 (12.9)	194 (100.0)		
Fluoride and others	40 (90.9)	4 (9.1)	44 (100.0)		
Others	8 (100.0)	0 (0.0)	8 (100.0)		
Technique of brushing employed				1.929	0.381
Up and down(vertical) strokes	104 (87.4)	15 (12.6)	119 (100.0)		
Combined (vertical+ horizontal) strokes	43 (84.3)	8 (15.7)	51 (100.0)		
Side to side(horizontal) strokes	70 (92.1)	6 (7.9)	76 (100.0)		
Time of tooth cleaning				1.786	0.409
Before breakfast	199 (88.4)	26 (11.6)	225 (100.0)		
After breakfast	12 (80.0)	3 (20.0)	15 (100.0)		
After dinner	6 (100.0)	0 (0.0)	6 (100.0)		
Tongue brushing				1.834	0.176
Yes	204 (87.6)	29 (12.4)	233 (100.0)		
No	13 (100.0)	0 (0.0)	13 (100.0)		
Exposure to dental health education				4.287	0.038
Yes	70 (82.4)	15 (17.6)	85 (100.0)		
No	147 (91.3)	14 (8.7)	161 (100.0)		
Dental service utilization in the past 1 year				7.130	0.021
Yes	10 (66.7)	5 (33.3)	15 (100.0)		
No	207 (89.6)	24 (10.4)	231 (100.0)		

Self-perceived toothache related significantly with time of daily tooth cleaning (p = 0.050) in this study. Majority of the participants performed their daily tooth cleaning before breakfast. Less than 3% of them brushed after dinner, and there was a statistically significant relationship between self-perceived experience of oral health problem and time of tooth cleaning (p = 0.002). In this study also, statistical analysis showed an association between the report of self-perceived experience of oral health problems and tool used for tooth cleaning: (p = 0.024). Though reviews of several studies showed evidence that traditional devices like the chewing stick help in promoting oral health leading to the recognition and encouragement of their use by WHO and other institutions,[15] it may be necessary to assess how these traditional tools are used among these individuals and ensure that proper techniques are adopted for good results.[30,31]

Table 8: Comparison of self-perceived bleeding from the gum with selected oral health practices

Oral Health Practices	Bleeding from the Gum			X^2	P
	No n (%)	Yes n (%)	Total n (%)		
Frequency of tooth cleaning	65 (50.0)	65 (50.0)	130(100.0)	4.867	0.088
Once a day	54 (65.1)	29 (34.9)	83 (100.0)		
Two times a day	17 (51.5)	16 (48.5)	33 (100.0)		
Three times a day					
Tool used for tooth cleaning				1.086	0.581
Chewing stick	3 (37.5)	5 (62.5)	8 (100.0)		
Tooth brush	132(55.9)	104(44.1)	236(100.0)		
Chewing stick and toothbrush	1(50.0)	1(50.0)	2(100.0)		
Texture of brush used				1.890	0.389
Medium	63 (58.3)	45 (41.7)	108(100.0)		
Soft	36 (48.6)	38 (51.4)	74 (100.0)		
Hard	37 (57.8)	27 (42.2)	64 (100.0)		
Type of dentifrice used				3.432	0.180
Fluoride	113(58.2)	81 (41.8)	194(100.0)		
Fluoride and others	20 (45.5)	24 (54.5)	44 (100.0)		
Others	3(37.5)	5(62.5)	8(100.0)		
Technique of brushing employed				4.441	0.109
Up and down(vertical) strokes	74 (62.2)	45 (37.8)	119(100.0)		
Combined (vertical+ horizontal) strokes	25 (49.0)	26 (51.0)	51 (100.0)		
Side to side(horizontal) strokes	37 (48.7)	39 (51.3)	76 (100.0)		
Time of tooth cleaning				5.986	0.050
Before breakfast	120 (53.3)	105 (46.7)	225(100.0)		
After breakfast	10 (66.7)	5 (33.3)	15 (100.0)		
After dinner	6(100.0)	0(0.0)	6(100.0)		
Tongue brushing				1.080	0.228
Yes	127(54.5)	106(45.5)	233(100.0)		
No	9(69.2)	4(30.8)	13(100.0)		
Exposure to Dental Health Education				1.159	0.173
Yes	43 (50.6)	42 (49.4)	85 (100.0)		
No	93 (57.8)	68 (42.2)	161(100.0)		
Dental service utilization in the past 1 year				0.837	0.261
Yes	10 (66.7)	5 (33.3)	15 (100.0)		
No	126(54.5)	105(45.5)	231(100.0)		

Self-perceived experience of oral health problem was also found to be related to the type of dentifrice used ($p = 0.002$). However, Fluoride containing toothpastes were the predominant dentifrices used by these students, with above 72% of the subjects reporting use of Fluoride dentifrices among all the age groups, and less than 26% using non-Fluoride dentifrices either solely or in combination with Fluoride containing ones. This is higher than the observation of Jiang et al,[26] among the Chinese adolescents they studied: only 48% of their students used fluoridated toothpaste. The highest record of mobile teeth: 20.0%, was from among age group 12-14. This could be because the common cause of tooth mobility among children is exfoliation of primary teeth, which is more likely to be found among the youngest age group in this study. There was however no statistically significant relationship between tooth mobility and the assessed age groups. In this study, the records of pain in the gum and bleeding from the gum showed an inverse relationship with increasing age among these students. Pain in the gum, as well

as bleeding from the gum, (which among this population, is often caused by gingivitis),32 could be diminishing with increasing age as the students' personal oral hygiene measures improved with increasing maturity. Among the Chinese adolescents studied by Jiang et al, 9% of the students reported having "poor" or "very poor" gums. [26]

Table 9: Comparison of self-perceived swelling of the gum with selected oral health practices

Oral Health Practices	Swelling of the Gum				
	No n (%)	Yes n (%)	Total n (%)	X^2	P-value
Frequency of tooth cleaning	99 (76.2)	31 (23.8)	130 (100.0)	0.519	0.771
Once a day	65 (78.3)	18 (21.7)	83 (100.0)		
Two times a day	27 (81.8)	6 (18.2)	33 (100.0)		
Three times a day					
Tool used for tooth cleaning	4 (50.0)	4 (50.0)	8 (100.0)	4.588	0.101
Chewing stick	186 (78.8)	50 (21.2)	236 (100.0)		
Tooth brush	1 (50.0)	1 (50.0)	1 (100.0)		
Chewing stick and toothbrush					
Texture of brush used	91 (84.3)	17 (15.7)	108 (100.0)	9.709	0.008
Medium	59 (79.7)	15 (20.3)	74 (100.0)		
Soft	41 (64.1)	23 (35.9)	64 (100.0)		
Hard					
Type of dentifrice used	152 (78.4)	42 (21.6%)	194 (100.0)	3.669	0.160
Fluoride	35 (79.5)	9 (20.5)	44 (100.0)		
Fluoride and others	4 (50.0)	4 (50.0%)	8 (100.0)		
Others					
Technique of brushing employed				8.952	0.011
Up and down(vertical) strokes	102 (85.7)	17 (14.3)	119 (100.0)		
Combined (vertical+ horizontal) strokes	37 (72.5)	14 (27.5)	51 (100.0)		
Side to side(horizontal) strokes	52 (68.4)	24 (31.6)	76 (100.0)		
Time of tooth cleaning				0.275	0.872
Before breakfast	175 (77.8)	50 (22.2)	225 (100.0)		
After breakfast	11 (73.3)	4 (26.7)	15 (100.0)		
After dinner	5 (83.3)	1 (16.7)	6 (100.0)		
Tongue brushing				1.701	0.169
Yes	179 (76.8)	54 (23.2)	233 (100.0)		
No	12 (92.3)	1 (7.7)	13 (100.0)		
Exposure to Dental Health Education				0.103	0.433
Yes	65 (76.5)	20 (23.5)	85 (100.0)		
No	126 (78.3)	35 (21.7)	161 (100.0)		
Dental service utilization in the past 1 year				1.109	0.225
Yes	10 (66.7)	5 (33.3)	15 (100.0)		
No	181 (78.4)	50 (21.6)	231 (100.0)		

The report of self-perceived pain in the gum was found to have a statistically significant relationship with tongue brushing (p = 0.012). Considering studies which demonstrated that tongue brushing produced statistically significant reductions in salivary mutans streptococci counts plaque levels,[33,34] it could be inferred that relatively higher plaque accumulation in those who did not brush their tongue could have resulted in the higher occurrence of gingival inflammation. Statistically significant relationships were observed between self-perceived pain in the gum and the technique of tooth brushing employed (p = 0.002); between self-perceived swelling of the gum and texture of brush used (p=0.008); and between self-perceived pain in the gum and frequency of daily tooth cleaning (p = 0.036).

Previous studies have shown that overly vigorous tooth brushing, using wrong brush texture or technique often leads to gingival irritation among other problems.

There was a significant relationship between age group and the frequency of tooth cleaning (p = 0.001), with more of the younger age groups brushing once daily, and more of the older age groups brushing twice daily. Olusile et al.[35] noted that age was significantly related to frequency of tooth cleaning. Age was also one of the predictive factors found by Folayan et al.[25] for the application of the components of the oral self-care measures. Similar to the report of Oke et al.[36] that many people in the cities of Nigeria used toothbrushes, toothbrushes were employed for cleaning by most of the children in this study. Lawal et al.'s study in Ibadan,[37] also showed that among their participants, 50.3% used toothbrush solely to clean their teeth, 30.5% used both toothbrush and chewing stick while 18.5% used chewing sticks alone.

Less than half of the subjects reported being taught dental health education in school, and there was a significant relationship between self-perceived experience of oral health problems and exposure to dental health education (p = 0.001). According to Maida et al.[38] one of the most significant predictors of perceived oral health is education. These students spend considerable time in school, making it an important environment for the inculcation and development of healthy oral health practices. School programmes should be scheduled to effectively impact oral health awareness and behaviour, so as to improve the oral health status of these young people.

Ninety-one-point nine percent of the respondents were of opinion that their oral health can be improved, yet across all the age groups, the report of utilization of dental services within the past 1 year was very poor (less than 8%). As found in other studies in developing nations, even when people perceive that they have oral problems like pain, they tend to self-manage the situation till it gets to a distressing state before they seek professional care. In fact, Oke et al,[36] documented that in both rural and urban low- to- middle socio-economic classes in parts of Nigeria, consultation with traditional oral healthcare practitioners was a practice commonly observed in all the study sites; ill defined "worms" were said to be the causative agents of all the oral health problems; and the dental care remedies used included herbal preparations and battery water.

The percentage of the participants in this study that utilized Dental services is even lower than in the report of Folayan et al.[25] in which 12.7% of their respondents had visited the dental clinic for a check-up in the last one year; and that of Jiang et al,26 where 26% of the Chinese adolescents they studied visited a dentist during the previous 12 months. Lawal et al.[37] reported that nearly all of their participants knew that oral health services are available in most hospitals, yet only few had ever visited a Dentist. Also, according to Ogunrinde et al.[39] among secondary school adolescents in Ibadan, only few respondents had visited dentists before. Meanwhile, Azodo et al.[40] had indicated the positive outcomes of utilizing Dental services by students: they noted that many of the students who visited the dentist complied with the dentist instruction, and chose toothpaste following dentist recommendations.

The findings of this study are limited by the fact that 1. This study did not exhaust all the known self-perceived oral health problems and oral care practices possible among this population. 2. Being a cross sectional survey, control of possible confounders was not done and 3. The students filled out the questionnaire themselves; so untrue answers, intentional or non-intentional, may have been given.

CONCLUSION

This study showed that there is a relationship between several self-perceived oral health problems and oral care practices employed by secondary school students in Ibadan. Such practices include tool used for tooth cleaning, type of dentifrice used, technique of brushing employed, time of tooth cleaning and exposure to dental health education.

RECOMMENDATIONS

To achieve the World Health Organization goal of ensuring increased uptake of preventive oral care,9 healthy oral self-care habits should be taught, provided for, and ensured among all age groups, and for the school children. It will be important to include cleaning the mouth twice daily, use of medium textured toothbrushes and Fluoride toothpastes.18 In addition, it is important to encourage supplementation of such self-care with regular dental check-ups. A cohort study design is also

recommended and may give an even better picture of the types of associations between these factors.

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