

ORIGINAL ARTICLE

Dental care knowledge and practices among secondary school adolescents in Ibadan North Local Government Areas of Oyo State, Nigeria

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ABSTRACT

Objective: To assess the dental care knowledge, and practice of secondary school adolescents in Ibadan North Local Government Area of Oyo State, Nigeria. **Methodology:** Four hundred and twelve secondary school adolescents were assessed using interviewer-administered questionnaire. Data on dental care knowledge and practice obtained through the questionnaire were analyzed using descriptive and inferential statistics with level of significance set at 5%. **Result:** Consumption of sticky, sugary and chocolate food items was perceived by a majority (81.8%) as unhealthy to dental health and 66.3% perceived consumption of fruits and vegetables as healthy to the teeth. Vertical brushing technique was mentioned by 69.7% of respondents as the best method of brushing the teeth, and 89.6% stated that teeth should be brushed twice daily. Majority 57.0% of respondents open caps of soft drink bottles with their teeth and 74.3% used toothpicks to remove food trapped in between teeth. Majority (82.8%) perceived that dentist should be visited for check-up once in 6 months, however, only 31.6% of respondents had visited dentists before. There was a statistically significant relationship between tooth brushing technique and type of school attended by the respondents ($P < 0.05$). **Conclusion:** Majority of the respondents have good oral health knowledge but poor dental health practice.

Key words

Adolescents, dental care, dental floss, dental visit, diet, Ibadan, knowledge, Nigeria, practices, tooth brushing

INTRODUCTION

Adolescence can be defined very broadly as a mid-way between childhood and young adults and can be a time of heightened caries activity and periodontal disease due to an increased intake of cariogenic substances and inattention to oral hygiene procedures.^[1]

The importance of good oral health in this critical period cannot be overemphasized. Good oral health can promote good communication, good nutrition, and improve the overall quality of life. Poor oral health, on the other hand, can cause significant pain and infection, which may

negatively affect social behavior or complicate medical conditions and their treatment.^[2]

Periodontal disease and dental caries are the two major oral health problems in Nigeria as in other part of the world. MacGregor and Sheiham^[3] reported presence of deep periodontal pocket in 33% of Nigerian aged 10–19 years, while in a National survey by Adegbembo and el-Nadeef^[4] the prevalence of periodontal pocket (4–5 mm deep) was 39% in 15-year-old adolescents. This indicated that the prevalence of periodontal disease is quite high among Nigerian adolescents. On the other hand, a low caries prevalence and severity were reported among Nigerian adolescents. Umesi and Savage,^[5] in 2002 showed caries prevalence of 17% and a mean DMFT of 0.41; Sofola *et al.*, in 2004^[6] reported caries prevalence of 5.4% and DMFT of 0.10 among 4–16-year-old Urban Nigerian whereas Adekoya-Sofowora *et al.*,^[7] reported caries prevalence of 13.9% and mean DMF of 0.14 among 12-year-old rural dweller. The DMFT scores in all the studies were lower than the global standard of 1.5 according to WHO^[8] standard for the 21 century.

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However, the decayed component was high in all the studies, reflecting poor dental care practice among the adolescents.

Studies^[6,9] on dental care practice by adolescents showed that toothbrush with toothpaste was the most common method of cleaning teeth and majority clean their teeth once daily. Dental visit behavior was poor as 90.6% and 56.8% had never visited a dentist, according to Sofola *et al.*,^[6] and Okoye and Ekwueme^[9] report respectively.

The decline in caries prevalence observed in some developed countries has been attributed to improved oral hygiene practice, use of fluoride tooth paste and effective use of oral health services.^[10-12] Regular tooth brushing was the best way to maintain oral health.^[13,14] The teeth should be brushed at least twice daily—once in the morning and the next before going to bed at night.^[14] Other equally important preventive measures apart from tooth brushing include use of dental floss, use of fluorides and regular visit to the dentist.^[15]

Evidence has showed that good knowledge of oral health is a prerequisite for better oral care practices and those with better knowledge of dental care showed more positive attitude towards oral health care.^[16] Beside the oral health knowledge, other factors related to oral health behavior and practices are: Personality, age, gender, attitude toward general health and access to oral health services.^[17,18]

An appropriate oral health education can enhance healthy oral health behavior and practice.^[16,19] In order to develop such oral health education program, the assessment of current knowledge, and practice of the subjects is essential. The objective of this study therefore was to assess the dental care knowledge, and practice of private and public secondary school adolescents in Ibadan North local Government Area of Oyo State, Nigeria.

METHODOLOGY

This was a descriptive cross-sectional study among 412 adolescents from two randomly selected secondary schools (one public and one private) in Ibadan North Local Government Areas. The Sample size was calculated to be 384 students using the formula $n = Z^2pq/d^2$ ^[20] where: n = the desired sample size, z = the standard normal deviate, set at 1.96 (corresponding to 95% confidence level), P = the proportion in the target population estimated to have a particular characteristic, taken as 50% (i.e. 0.50), $q = 1.0 - p$, d = degree of accuracy desired, set at 0.05 (5%).

One public and one private school were selected to ensure socio-economic balance in the study population and to reduce research cost. Convenience sampling technique

was used and all students that were willing to participate from randomly selected senior secondary school (SSS) years 1–3 were included. Three classes were selected from each year from each school, and an average of 23 students participated from each class. Information was collected from the students, using pretested semi-structured interviewer-administered questionnaire after they gave their assent. The questionnaire contained questions focusing on respondents' demographic status, dental care knowledge (such as food that enhances dental diseases, ideal technique and frequency of tooth brushing) and oral health practice (such as visit to dentist, and use of toothpicks). Alongside the questionnaire, toothbrushes with different shape, size, texture and chewing stick were presented to the respondents for ease of identification of different type of toothbrushes and the techniques of tooth brushing. Approval to administer the questionnaire was obtained from the school authorities, and consents were obtained from the parents. Confidentiality was maintained by asking the respondents not to write their names on the questionnaire. Data collected was imputed into a personal computer and analyzed using Statistical Packages of Social Sciences (SPSS) version 16. Analysis included calculation of percentage, mean and standard deviation. Chi-square was used to test association between categorical variables. The level of significance was set at $P < 0.05$.

RESULTS

A total of 412 secondary school students participated in the study, with 51.0% from a private school and 49.0% from a public school. The mean age of the students was 14.5 ± 1.3 years. Majority 249 (60.4%) were female, and all the respondents were in SSS classes.

Consumption of sticky, sugary and chocolate food items was perceived by 81.8% of respondents as unhealthy to dental care while 9.2% and 2.9% perceived some carbohydrates and soft drinks respectively as unhealthy to the teeth. In the contrary, 66.3% perceived consumption of fruits and vegetables as healthy to the teeth and meat, fish and dairy products were also considered healthy to the teeth by 20.1% of respondents [Table 1].

Table 1: Perceptions on food that has influence on dental health

Foods perceived as unhealthy for teeth	Frequency	Percentage
Sticky, sugary and chocolate food items	337	81.8
Some carbohydrates such as rice	38	9.2
Soft drinks	12	2.9
No response	28	6.1
Foods perceived as healthy for dental care		
Fruits and vegetables	273	66.3
Meat, fish and dairy products	83	20.1
Tea, beverages and some carbohydrates	46	11.2
None response	10	2.4
Total	412	100

Toothbrush and paste were mentioned by 93.0% of the respondents as the materials required for dental care. Stroking the teeth up and down (vertical brushing technique) was mentioned by 69.7% as the best method of brushing the teeth; sideway (horizontal) brushing by 16.7% and 12.9% stated that no specific direction of brushing is required. Majority (89.6%) agreed that teeth should be brushed twice daily (morning and night) and 7.8% stated it should be once daily [Table 2].

Some practices that could have a negative effect on dental health were reported among some of the respondents. Majority 57.0% of respondents crack bones or open caps of bottled drink with their teeth, 68.4% take soft drinks anytime it is available, 30.6% use hard toothbrush for brushing and 74.3% use toothpick for removal of food trapped in between teeth [Table 3].

More than 80% (82.8%) perceived that dentist should be visited for check-up once in 6 months while 9.0% disagreed. However, only 31.6% of respondents had visited dentists before while 66.5% never had [Table 4].

Table 5 shows the distribution of dental service utilization by respondents: Dental care education had been received by 65.5% of respondents while 27.7% stated that they had never received dental care education. Radio and television (63.8%); school teachers (36.7%); health workers/posters (36.7%) were mentioned as sources of information on dental care.

There was no statistically significant relationship between genders and oral health practice in term of technique, frequency of tooth brushing and dental attendance by the respondents ($P > 0.05$). Furthermore, there was no statistically significant relationship between types of school and oral health practice in term of frequency of tooth brushing and regular visits to the dentist by the respondents ($P > 0.05$). However, there was a statistically significant relationship between tooth brushing techniques and types of school attended by the respondents ($P < 0.05$) [Table 6].

DISCUSSION

Majority of the respondents perceived sticky and sugary foods as unhealthy to oral health while foods rich in protein, fruits and vegetables were perceived as good for oral health. This shows a good knowledge of the effect of diet on oral health as foods rich in protein and vitamins have been reported to enhance healthy and strong teeth,^[15,16,21,22] while uncontrolled intake of sticky and sugary foods can predispose to dental diseases especially caries.^[5,6,10,11]

Brushing twice daily with use of tooth brush and paste were the practices adopted by majority (89.6%) of the respondent to achieve good oral hygiene. This is similar

Table 2: Percentage distribution of tooth brushing methods and techniques

Method of brushing teeth	Frequency	Percentage
Stroking up and down	287	69.7
Sideway brushing	69	16.7
No specific direction	56	13.6
Frequency of brushing teeth		
Twice (morning and night)	369	89.6
Once	32	7.8
Others (Not specific, more than twice)	11	2.6
Technique of brushing teeth		
Toothbrush and paste	383	93.0
Chewing stick	8	1.9
Combination of tooth brush/paste and chewing stick	15	3.6
Others (water only, mouth wash, cotton wool/paste)	6	1.4
Total	412	100

Table 3: Practices that endanger oral health

	Frequency	Percentage
Do you crack bones or open cap of bottled drink with your teeth?		
Yes	235	57.0
No	175	42.5
No response	2	0.5
Frequency of consumption of soft drinks		
Daily	51	12.4
Once in a week	76	18.5
Any time	282	68.4
No response	3	0.7
Material use to remove food debris in-between teeth		
Dental floss	50	12.1
Toothpick	306	74.3
Others (broom stick, any pointed objects, match stick etc)	56	13.6
Texture of tooth brush		
Hard	126	30.6
Soft	89	21.6
Moderate (normal)	192	46.6
No response	5	1.2
Total	412	100

Table 4: Perception and practice of routine visit to dentists

	Frequency	Percentage
Is it important to visit dentist once in 6 months for check-up?		
Yes	341	82.8
No	37	9.0
I don't know/I am not sure	34	8.2
Visited a dentist before for examination and/or treatment		
Yes	130	31.6
No	274	66.5
I don't know	8	1.9
Total	412	100

Table 5: Sources of dental education assessed by respondents

	Frequency	Percentage
Ever received dental care education before		
Yes	270	65.5
No	114	27.7
Not sure	28	6.8
Total	412	100.0
Sources of information on dental health		
Television/radio	263	63.8
School/teacher	151	36.7
Health workers	151	36.7
Parents/siblings	112	27.2
Others (books, internet, church etc)	93	22.6
None	10	2.4

*The sum of the frequency distribution for sources of information on dental health is greater than 100% because of multiple responses

Table 6: Relationship between genders, types of school, and oral health practice

Oral health practice	Gender (%)		Total (%)	P value
	M (163/38.6%)	F (249/60.4%)		
Tooth brushing/day				
≥twice	137 (33.3)	232 (55.2)	369 (89.6)	0.019
Once	20 (4.8)	12 (2.9)	32 (7.8)	
Irregular	6 (1.4)	5 (1.2)	11 (2.6)	
Brushing technique				
Vertical	117 (28.4)	170 (41.3)	287 (69.7)	0.893
Horizontal	25 (6.0)	44 (10.7)	69 (16.7)	
Not specific	21 (5.1)	35 (8.5)	56 (13.6)	
Visit dentist within the last 12 months				
Yes	53 (12.9)	77 (18.7)	130 (31.6)	0.810
No	110 (26.7)	172 (41.7)	282 (68.4)	
Oral health practices	Types of school			
	Public	Private		
Tooth brushing/day				
≥twice	191 (46.4)	178 (43.2)	369 (89.6)	0.295
Once	12 (2.9)	20 (4.9)	32 (7.8)	
Irregular	7 (1.7)	4 (1.0)	11 (2.7)	
Brushing technique				
Vertical	151 (36.7)	136 (33.0)	287 (69.7)	0.005
Horizontal	23 (5.6)	46 (11.1)	69 (16.7)	
Not specific	36 (8.7)	20 (4.9)	56 (13.6)	
Visit dentist within the last 12 months				
Yes	65 (15.8)	65 (15.8)	130 (31.6)	0.967
No	145 (35.2)	137 (33.2)	282 (68.4)	

to a study by Muttappillymyalil *et al.*^[17,23] on oral health behavior among adolescents in India in which 84.6% of the respondents claimed to brush their teeth twice a day. But contrary to a study by Peng *et al.* on the pattern of oral health behavior among school children in China, where only 40.0% brushed their teeth twice or more per day.^[18,24]

Stroking up and down (vertical) brushing technique was perceived as ideal for oral health by majority of the respondents. This shows a good knowledge of tooth brushing technique among the participants. However, majority of the respondents brushed their teeth before breakfast in the morning contrary to the Dentist advice of brushing after meal so that food debris does not stay in the mouth for a prolonged period. The reason for this practice may be the need to leave home early in the morning to meet up with school time.

Majority of the respondents engaged in the habits that could physically injure the oral tissue such as cracking bones or open caps of bottled drink with their teeth (57.0%), and consumption of sugary drinks anytime. Furthermore, a lower percentage of the subject uses dental floss normally recommended by dentists for removal of food debris from the teeth. This finding is similar to a previous study in which the use of dental floss was found not common among adolescents.^[17,23] This could be attributed to lack of knowledge on the use of dental floss as oral hygiene aids or the difficulty in the use of the material. Warren and Chater^[16,25] reported that patients found flossing difficult especially when there are tight contacts between adjacent teeth and concluded that inter-dental cleaning with dental floss was not a common oral hygiene practice. Although, majority of the respondents used toothbrushes with soft or moderate bristles, which are ideal for dental health, a considerable number (30.6%) were using toothbrushes with hard bristles. This may have detrimental effects on the gingival health as the use of hard toothbrush, and excessive application of force has been reported as possible causes of gingival recession.^[19,26]

On visits to the dentist for routine check-up, 82.8% perceived that dentists should be visited once in 6 months showing a good knowledge of routine dental check-up. This finding is similar to report of a previous study in which greater proportion showed good knowledge of routine dental check-up.^[20,27] However, this good knowledge did not translate to good practice as very few (31.6%) had ever visited a dentist. Of the 31.6% that had visited the dentist, only 15.0% did so for routine check-up. Adekoya *et al.*^[6] also reported a poor clinic attendance among 12-year-old sub-urban Nigerian students. The reasons for the discrepancy between knowledge and practice of routine dental visits could be the high cost and poor accessibility to oral health care services, which act as barrier to oral health utilization.^[28] The significance of regular visits to the dentist needs to be emphasized, and dental consultation made more affordable to the people.

Majority of the respondents (65.5%) had received dental care education before and radio and television (63.8%) were the major sources of information on dental education. This finding is similar to previous study^[29] where majority of the subject were informed of dental

care practices through radio and television. This finding attests to the vital roles the media organizations are playing in dissemination of health information. However, it is important that correct oral health information are disseminated to the public through the media.

Relationship between dental care practices in the private and the secondary schools shows better practice among the private secondary school than the public school students. This result is similar to Gupta findings that attending private school was associated with better oral hygiene behavior and regular visit to the dentist for routine check-up.^[30] This might be a reflection of the influence of socioeconomic status on dental health practice as the majority of the parents in private schools are of better socio-economic status than those in public schools.

There was no statistically significant difference between female and male students concerning oral health practices of tooth brushing frequency, technique and visit to dentists. This is contrary to previous studies^[17,18] that reported better oral health practice by female when compared with their males' counterpart. The effect of age was not evaluated in the present study because the majority of the participants were within the age 14 and 15 years.

CONCLUSION

Majority of the respondents shows good oral health knowledge in term of dietary influence, oral hygiene measures and need for routine dental visit, but poor dental health practice in term of poor patronage to dental clinic, unhealthy oral habit of using teeth to open bottled drinks and the use of toothbrush with hard bristle. The important of regular visits to the dentist needs to be emphasized, and dental consultation made affordable to encourage patronage.

Limitation of the study

The main limitation of this study is the selection of subjects from two secondary schools (one public and one private school), which may limit generalization of the result of the study in the local Government. Another limitation of the study is that the result of the study is based on data collected through a questionnaire, which has the possibility of over-reporting of desirable outcome.

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