Knowledge, Attitude and Practice Towards Periodontal Oral Hygiene Practices among Adolescents in Egor, Benin City

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ABSTRACT

Aim: To Assess the Oral Hygiene Practice Among Adolescents in Private and Public Secondary School in Egor Local Government Area, Benin City Edo State Nigeria

Methods: This is a descriptive cross-sectional study conducted among adolescents in private and public secondary schools in Egor, Benin City. Data were collected using a self-administered questionnaire and analyzed with SPSS version 26. Frequency and cross-tabulation was done and level of significant (P) set at 0.05.

Results: Data of three hundred and eighty-five (385) study participants were recorded and analyzed. The age ranged from 12 to 18, with a mean age of 15+ 1.65. Three hundred and thirty-two (85.9%) participants use toothbrush and toothpaste, and majority (88%) of the study participants belong to the Fair category of the oral hygiene status. A strong relationship exists between age, class, father's occupation and oral hygiene status which was statistically significant. P<0.05

Conclusion: This study has shown that tooth brush is the most commonly used cleaning aid for oral hygiene practices among adolescence and majority of them brush twice daily mainly before breakfast and majority have never visited the dentist and have fair oral health status.

Keywords: oral hygiene, practices, adolescence

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CLINICAL IMPLICATIONS

The findings of this study highlight important gaps in adolescents' oral health practices and service utilization, with direct implications for clinical care and public health interventions. Despite widespread use of toothbrushes, suboptimal brushing frequency, inappropriate timing, and low use of fluoride toothpaste indicate a need for targeted oral health education during dental visits and school-based programs. The high proportion of adolescents who have never visited a dentist underscores the importance of promoting routine preventive dental check-ups rather than symptom-driven care. Clinicians should adopt age-specific, behavior-focused counseling and engage parents and schools to reinforce proper oral hygiene practices and early preventive interventions, particularly among younger adolescents and those from lower socio-economic backgrounds.

INTRODUCTION

Oral health is an essential component of a person's health and the oral health of children in general would determine the future oral health of a state and the nation at large. The American Dental Association described oral health, as a functional, structural,

aesthetic, physiologic, and psychosocial state of well-being which is essential to an individual's general health and quality of life.[1] World Health Organization (WHO) reported that about 60 to 90% of children and nearly every adult in the world have dental cavities.[2]

Historically, adolescence typically spans from 12-18years of age, which roughly corresponds to the time from pubertal onset (i.e, specific hormonal changes) to guardian independence.[3] Adolescence refers to the period of life between 10 and 19 years old, according to criteria set by the World Health Organization (WHO). During this time of life, individuals are in a constant biological, psychological and social development, which make them more vulnerable and in need of greater attention to health.[4,5] Currently, there is an extension of this life stage as a result of early puberty, longer schooling period, and late entry into the labor market; hence, this leads to a long period of intense growth and development, with varying health needs that require specific actions.[6] Adolescence is a stage in which general health is presented at its best, though it is a period of increased risk to oral health because of the greater independence with regard to the consumption of sugary foods and a certain revulsion regarding oral hygiene.[4]

About 22.3% of Nigerian population are adolescents according to UNICEF. The adolescent patient is recognized as having distinctive needs,[7] due to the tendency for poor nutritional habits, a potentially high caries rate during this period. There is also an increased risk for traumatic injury, periodontal disease and an increased esthetic desire and awareness, potential use of tobacco, alcohol, and other drugs, increased risk of unwanted pregnancy, eating disorders, unique social and psychological needs and dental phobia.[8] Treatment of the adolescent patient can be multi-faceted and complex. Accurate, comprehensive, and up-to-date medical and social histories are necessary for correct diagnosis and effective treatment planning. Familiarity with the patient's medical history is essential for decreasing the risk of aggravating a medical condition while rendering dental care. If the parent is unable to provide adequate details regarding a patient's medical history, consultation with the medical health care provider may be indicated. The practitioner also may need to obtain additional information confidentially from an adolescent patient.[9]

Periodontal diseases are estimated to affect nearly 10% of the global population.[10] Dental caries and periodontal diseases have historically been considered the most important global oral health burdens. At present, the distribution and severity of oral diseases vary in different parts of the world and within the same country or region. The significant role of socio-behavioral and environmental factors in oral disease and health is demonstrated in a large number of epidemiological surveys.

Oral diseases are a major public health concern globally,[11] and profoundly impact the wellbeing and daily social lives of people.[12] Worldwide, 3.9 billion people are affected by oral diseases.[13] Adolescence marks a period of significant caries activity for many individuals. Moreso, immature permanent tooth enamel, a total increase in susceptible tooth surfaces, and environmental factors such as diet, independence to seek care or avoid it, a low priority for oral hygiene, and additional social factors also may contribute to the upward slope of caries during adolescence.[14]

Many adolescents are exposed to and consume high quantities of refined carbohydrates and acid-containing beverages.[15] Hence, they will benefit from diet analysis and modification which is recommended for maximal general and dental health as part of an adolescent's dental health management.[16]

Adolescence can be a time of heightened caries activity and periodontal disease due to an increased intake of cariogenic substances and neglect of the oral hygiene procedure.[17]Therefore, there is need for emphasis on the positive effects that fluoridation, professional topical fluoride treatment, routine professional care, patient education, and most especially adolescent personal oral hygiene. The role of these factors in counteracting the changing pattern of caries and periodontal conditions in the adolescent population cannot be overemphasized.[14]

Although studies have been carried out in relation to the oral hygiene practices among adults[18-19] there seems to be a paucity of information on oral hygiene practices among adolescents in Nigeria.

Hence, this study assessed the oral hygiene practices among adolescents in private and public secondary schools in Egor Local Government Area, Benin City.

MATERIAL AND METHODS

This study was a descriptive cross-sectional study carried out among Adolescence in both private and

public secondary school in Egor, Benin City, Edo state. Included in the 3–month study duration period were children aged 12-18 years at the last birthday as well as those give that consented to be part of the study.

$N = Z^2pq/d^2$

Where:n= minimum sample size, Z^2= normal deviate for two-tailed alternative hypothesis at 5% level of significance), p = the prevalence or proportion of event of interest for the study, d= degree of detectable difference. P at -50% i.e p=50/100=0.5, Z=1.96, d=0.05, n=0.5, q=1-0.5 Taking p to be 0.5 Therefore,$n=(1.96)^2 \times 0.5 \times (1-0.5)=$

$0.9604/0.0025/(0.05)^2 = 384.16$

Data from Ministry of Education shows that Egor local government Area has 138 secondary school (One hundred and thirty-five (135) private and thirteen (13) public secondary schools). For a near equal representation among the private and government schools, the total sample size was ratio at 46% to 54% each from private and public schools will be the participants

A simple random sampling was used to select 5 schools each from private and public schools in Egor. (From a ballot of all the private schools on one hand and public schools on the other) and for equal representation between each of the 5 selected private and public secondary school selected, the total number 168 and 217 respectively were be divided by five. As such thirty four and forty three students in private and public schools were selected. Moreso, for an even representation in any selected school and to be able to sample the age group (12-18) selected for this study. Five classes were selected (JSS 2, 3, SS1, 2 and 3) and the total number per students 168 and 217 was divided by the number of class (5). Hence, a total of six and eight students in private and public school class was selected. A Systemic random sampling was used to select the study participants. K=N/n, =43/8=5. With the class register for each class as the sample frame, the first participant that met the inclusion will be selected by simple random sampling and the subsequent ones will be selected after every 5th child in the sample frame. This continued until the sample size for the class, school and the study is complete.

A self-administered questionnaire was utilized to answer the objectives in this study which includes biodata, the assessment method for personal oral hygiene practices, rate at which personal oral hygiene practices are carried out, the utilization of professional dental service and the oral hygiene status of the respondents.

An intra-oral examination was carried out to assess the oral hygiene status using simplified oral hygiene by Greene and vermillion 1964. The standard six tooth surfaces (16, 11, 21, 26, 36, 31, 46) for each respondent will be recorded in a chat. The average individual debris and calculus index will be subsequently determined and added to obtain the simplified oral hygiene for each participant. The state of oral hygiene among the patient were then graded into three groups. Good for those with oral hygiene value of 0-1.2, Fair with oral hygiene value of 1.3-3, poor with oral hygiene value of 3.1-6.0 and utilized tools were Facemask, Hand gloves and Wooden spatula

The questionnaire was pre-tested using 10% of the initial sample size in Uniben demonstration secondary school, Egor local government, Edo State. This was done to enhance the validity and reliability of data tools.

Quantitative data analysis

The filled questionnaires were scrutinized for inconsistencies and incompleteness, and the data obtained were screened for accuracy. Data coding and cleaning were done and the data entered and analyzed with IBM SPSS version 22.0 software. Univariate analysis was done to assess the distribution of variables. Bivariate analysis also done to determine the association between sex, age, marital status, level of education, Frequency distributions and cross tabulations was computed for categorical variables. The level of significance of all statistical associations is set at $p < 0.05$.

Ethical Considerations

Permission was obtained from the principal of each school as well as from the class teachers. Ethical clearance and approval will be obtained from the University of Benin Research and Ethics Committee. Informed consent got from each respondent; the name and address of respondents will be omitted to ensure confidentiality. The respondents were informed that they have the right to withdraw from the study at any time, and that such withdrawal poses no threat or harm to the respondent.

RESULTS

Data of three hundred and eighty-five (385) study participants were recorded and analyzed. The age ranged from 12 to 18 with a mean age of 15± 1.65. Majority were females 215(55.8%), those aged 16

years 96 (24.9%), in JSS 2 (31.9%), and Christians (93.8%) [Table 1]

In this study, 365(94.8%) use toothbrush and 26(6.8%) use chewing stick. One hundred and eighty-eight (48.8%) use fluoride containing toothpaste while 143(37.1%) used any tooth paste. [Table 2]

Report from this study shows that 295(76.4%) rinse their mouth with water after every meal, ,166(43.1%) brush their teeth at least 2 times daily, and majority (85.5%) brush their teeth before breakfast [Table 3]

The Dental service utilization result show that showed that majority 253(65.7%) have not visited the dentist before. Among those that have visited, 17.4% was pain related while 69(17.9%) was for checkup [Table 4]. Oral hygiene status shows that majority (88%) of the study participants belong to the Fair category of the oral hygiene status. [Fig 1] Bivariate analysis of the oral hygiene status and demographic characteristics revealed the lower aged participants (12years) have poorer oral hygiene status and majority of those aged 15 years have good oral hygiene status. Most females have good oral hygiene status, those in government school participants as well as those whose father is a non-manual worker. A strong relationship exists between age, school, class and father's occupation which was statistically significant. (P<0.05) [Table 5]

Table 1: Socio-Demographic Characteristics of the Respondents

Variable	Frequency (n)	Percent (%)
Age (Years)		
12	28	7.3
13	49	12.7
14	53	13.8
15	87	22.6
16	96	24.9
17	38	9.9
18	34	8.8
Sex		
Male	170	44.2
Female	215	55.8
School		
Private	168	43.6
Government	217	56.4
Class		
JSS 2	123	31.9
JSS 3	56	14.5
SS 1	88	22.9
SS 2	82	21.3
SS 3	36	9.4
Religion		
Christian	361	93.8
Muslim	16	4.2
Traditional	18	2.1
Guardian		
Father and mother	307	79.7
Mother	33	8.6
Father	16	4.2
Guardian	23	6.0
Alone	6	1.6
Father's Occupation		
Non-manual	329	85.5
Manual	3	0.8
Farmer	53	13.8
Mother's Occupation		
Non-manual	340	88.3
Manual	6	1.6
Farmer	39	10.1

Table 2: Oral hygiene cleaning materials/aids of Respondents

Variables	Frequency (n)	Percentage (%)
Chewing stick	26	6.8
Toothbrush	365	94.8
Fluoride containing tooth paste	188	48.8
Any tooth paste	143	37.1
Tooth powder	49	12.7
Other cleaning aids		
Salt	8	2.1
Ash	2	0.5
Tooth pick	152	40
Dental floss	137	35.6
Broom stick	18	4.7
Tongue cleaner	20	5.2
Mouth rinse	42	10.9
Leaves	12	3.1

Table 3: Frequency of Oral Hygiene Practices of respondents

Variables		Frequency (n)	Percentage (%)
Rinse mouth with water after every meal		295	76.4
Frequency of brushing in a day	Once	166	43.1
	Twice	178	46.2
	Thrice	41	10.6
Period of teeth Cleaning			
Before breakfast		329	85.5
After breakfast		96	24.9
Last thing before going to bed		49	12.7
Not specific		12	3.1
Brushing technique			
Horizontal		111	28.8
Vertical		179	46.5
Combination (Horizontal and Vertical)		75	19.5
Circular		17	4.4

Table 4: Dental service utilization

Variable	Frequency (n)	Percentage (%)
Have you visited a Dentist?		
Yes	132	34.3
No	253	65.7
Reason for visit		
Check up	69	17.9
Tooth pain	22	5.7
Tooth decay	19	4.9
Gum pain	26	6.8
Reason for not visiting a Dentist		
No tooth pain	160	41.6
No gum pain	32	8.3

Table 5: Socio-demographic and Oral Hygiene Status

Characteristics		Oral health status				P Value
		Poor N (%)	Fair N (%)	Good N (%)	Total N (%)	
Age (years)	**12**	9(40.9)	19(5.6)	0(0.0)	28(7.3)	0.000
	13	3(13.6)	43 (12.7)	3(12.0)	49(12.7)	
	14	1(4. 5)	47 (13.9)	5(20.0)	53(13.8)	
	15	5(22.7)	73 (21.6)	9(36.0)	87(22.6)	
	16	2(9.1)	90(26.6)	4(16.0)	96(24.9)	
	17	1(4.5)	35(10.4)	2(8.0)	38(9.9)	
	18	1(4.5)	31(9.2)	2(8.0)	34(8.8)	
Sex	Male	9(40.9)	155 (45.9)	6(24.0)	170(44.2)	0.1
	Female	13 (59.1)	183(54.1)	76 (25.0)	215(55.8)	
School	Private	9(40.9)	159(47.0)	0(0.0)	168(43.6)	
	Government	13(59.1)	179(53.0)	25(100.0)	217(56.4)	0.00
Class	JSS2	16(72.7)	104 (30.8)	3(12.0)	123(31.9)	0.00
	JSS3	4(18.2)	49(14.5)	3(12.0)	56(14.5)	
	SS1	0(0.0)	73 (21.6)	15(60.0)	88(22.9)	
	SS2	1(4.5)	77(22.8)	4(16.0)	82(21.3)	
	SS3	1(4.5)	35(10.4)	0(0.00)	36(9.4)	
Religion	Christianity	22(100)	315(93.2)	24(96.0)	361(93.8)	0.697
	Islam	0(0.0)	15(4.4)	1(4)	16(4.2)	
	Traditional	0(0.0)	8(2.4)	0(0.0)	8(2.1)	
Who are you living with	Both Parents	18(81.8)	269(79.6)	20(80)	307(79.7)	0.76
	Mother alone	2(9.1)	30(8.9)	1(4)	33(8.6)	
	Father alone	0(0.0)	15(4.4)	1(4)	16(4.2)	
	guardian	1(4.5)	19(5.6)	3(12.0)	23 (6.0)	
	alone	1(4.5)	5(1.5)	0(0.0)	6(1.6)	
Fathers' occupation	Non- manual	14(63.6)	296(87.6)	19(76.0)	329(85.5)	0.02
	Manual	1(4.5)	1(0.3)	1(4.0)	3(0.8)	
	Farmer	7(31.8)	41(12.1)	5(20.0)	53(13.8)	
Mothers' occupation	Non- manual	15(68.2)	303(89.6)	22(88.0)	340(88.3)	0.09
	Manual	2(9.1)	4(1.2)	0(0.0)	6(1.6)	
	Farmer	5(22.7)	31(9.2)	3(12.0)	39(10.1)	

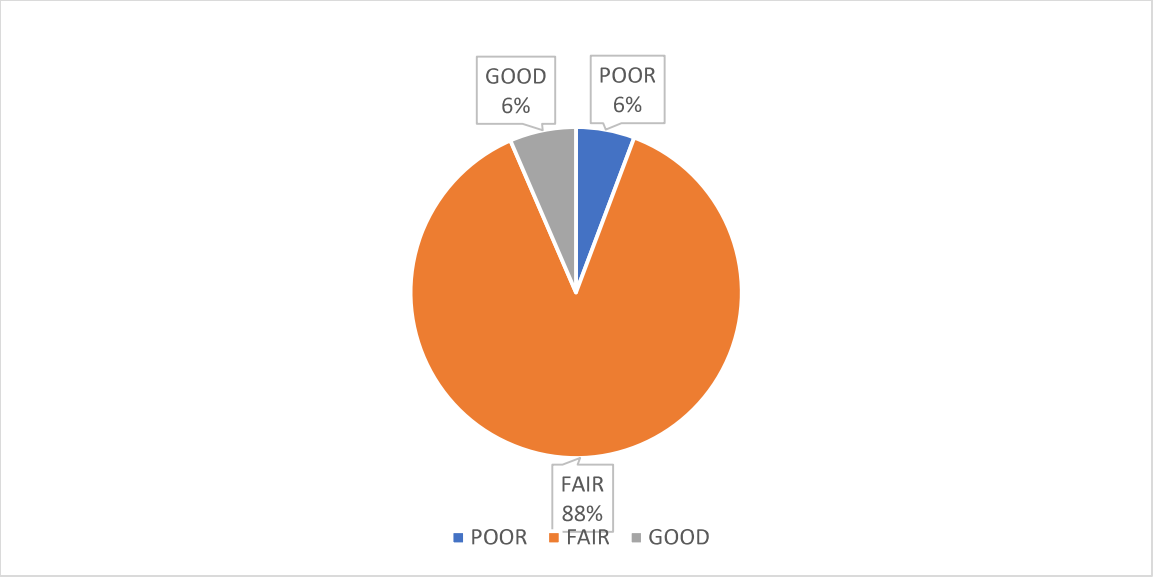

Figure 1: Oral Hygiene Status

This study was carried out among adolescents in Egor local government area of Benin city. Majority of the respondent use toothbrush as a cleaning aid. Tooth brush is one of the effective tooth cleaning materials recommended by the dentist. Findings in the study is similar to several similar studies, [20,21,22] but contrary to that by Blaganna et al, 2018, where the study participants used chewing stick.[23] The huge difference could be due to the fact that the study by Blaganna et al[23] was carried out among rural dwellers and in a rural community unlike this study and other citied previous studies which were carried out among urban dwellers and in urban communities.

The recommended frequency of oral hygiene practice is at least twice in a day, after breakfast and last thing at night. This study revealed that the rate at which oral hygiene practices is carried by the participants with particular emphasis on time of brushing is mostly before breakfast (85.5%). The before breakfast tooth brushing in the study may be related to the believe that brushing teeth before breakfast would remove previous day left-over food and debris in their oral cavity. This is usually carried out along with the early morning routine of body cleanliness before going to school. More so, on the frequency of brushing, close to half of the respondents brush twice in a day. The second most frequent period of brushing, according to this study report, is after breakfast. This could be that the participants, after having eaten a particular meal at breakfast and felt uncomfortable with the state of their oral cavity, went on for a second brushing before leaving the house. The least brushing period herein reported is the last thing at night. This could be that just a few of the study participants take their bath at night and then do the brushing at that period. This finding is similar to a previous study that reported a near percentage for twice daily brushing and that by Onwudi et al, [22] 2017 and Gualie et al,[25] on brushing before breakfast. This is contrary to other studies Ogunride et al[21] and Soroye et al,[22] which reported a high percentage for twice daily brushing. The once brushing in the study may be attribute to poor knowledge of the recommended number of brushing, coupled with the poor purchasing power of the parents of the study participants who according to the report that are in the category of non-manual worker with father occupation, majorly civil servant earning minimum wage.

Dental service utilization showed that 65.7% have not visited the dentist before, this percentage is similar to a study by Ogunride et al which shows that 66.5% had never visited the dentist the reason for the high percentage of non-visitation of dental clinic was mainly due to lack of tooth pain.[21]

This study revealed that age, class of respondents and fathers' occupation influenced the oral hygiene status and the relationship was statistically significant. Oral hygiene status shows that 12 years have poorer oral hygiene status and majority of those age 15 years have good oral hygiene. This could be due to the fact that most students around 12 years of age pay little attention to their oral hygiene while

those around 15 years pay more attention to their hygiene in general. Those aged around 15 years are already in or approaching a senior class and might be given senior class responsibilities in their various schools which includes but not limited to taking care of the junior students. Those in lower class had more poor status which correlated to the age and those whose fathers are a non-manual worker.

With the utilization of the Simplified oral hygiene index (OHIS) which was developed in 1964 by John C. Greene; our finding revealed that most of the respondents belongs to the fair oral hygiene status category. Although majority brushes once, the reason for the high fair oral hygiene status could be linked to the high percentage of water rinsing after every meal which could have help remove all left-over food particles and reduces the chances of plaque formation, coupled with the limitation of the Simplified oral hygiene index. Meanwhile a study by Akinyamoju et al,[26] among 13-18 years, reported 17%, poor, 19% fair and 63% good oral hygiene. The reduction in percentage of good oral health status in this study can be attributed to inadequate knowledge of the proper use of the tooth cleaning aid and also the irregularity in the rate at which the oral hygiene practice is being carried out.

CONCLUSION

Tooth brush is the most commonly used cleaning aid for oral hygiene practices among the study participants and the rate of personal oral hygiene practices is twice in a day brushing and mostly in the morning before and after breakfast and majority of the participants have fair oral hygiene status. There's poor utilization of dental services by the study participants and age, class of respondents and fathers' Occupation influenced the oral hygiene status of the study participants,

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