

ORAL HEALTH KNOWLEDGE AND ORAL HYGIENE PRACTICES AMONG SECONDARY SCHOOL STUDENTS IN BAYELSA STATE: A COMPARATIVE ANALYSIS

ABSTRACT

Objective: In the availability of documented negative attitudes to oral health care by a populace, there have also been documented reports of an inadequacy of oral health care services despite a high demand for these services in Nigeria. This study set out to assess the oral health knowledge and practices of students in different areas in Bayelsa State having an availability and scarcity of oral healthcare services. Significant differences in the oral health knowledge and hygiene practices of these students in the perspective of availability or scarcity of oral health care services were also sought for.

Methods: A cross-sectional survey was conducted in which a multistage sampling technique was utilized in selecting 1357 respondents from 6 secondary schools located within the study areas. Close-ended self-structured questionnaires seeking to determine the level of oral health knowledge (using a 4-point likert scale) as well as oral hygiene practices of respondents was used as our instrument for data collection. Positive and negatively skewed questions were asked in order to effectively determine their level of oral health knowledge.

Results: Majority of students within the Bayelsa East Senatorial District 878 (91.0%) with a mean score of 16.35 ± 1.95 and students within the Yenagoa metropolis 346 (88.3%) with a mean score of $15.87 + 1.70$ had good knowledge of oral health. Concerning oral hygiene practices of the students in both study areas, majority of students were shown to have good oral hygiene practices including the use of toothbrush and toothpaste, cleaning their mouths twice a day as well as changing their toothbrushes every 1 – 3 months. Most of the students had however never visited the dental clinic. **Conclusion:** The availability or scarcity of oral health care services is not a determinant of good oral health knowledge or the practice of good oral hygiene in this study.

Keywords: Oral Health Knowledge, Hygiene Practices, Secondary School Students, Bayelsa

INTRODUCTION

The oral cavity is one whose health must be constantly maintained at optimal levels. This has become a necessity seeing that the oral cavity is used in the carrying out of various essential

functions that impact on an individual physically, mentally as well as socially^[1,2]. Harmful agents could some of the time; find their way into the oral cavity and end up affecting an individual's oral and general health. The need to thus maintain good oral hygiene in order to have sound general health can never be over-emphasized.^[3-6] Having good knowledge of oral health as well as the practice of good oral hygiene methods have been shown to ensure the achievement of good oral health as individuals are now armed with a knowledge of what to do and what not to do in the event of oral health diseases; including visiting a dentist and not quacks, following the dentist's prescriptions as opposed to the application of herbs or other hazardous substances, maintaining dental hygiene as opposed to oral neglect amongst others.^[7-9]

Good oral health knowledge and oral hygiene practices can thus be applied in ensuring the prevention of oral diseases rather than application of curative measures to get rid of the oral disease.^[10,11] A good oral health knowledge and attitude implies that an individual understands the importance of maintaining good oral health and is also disposed to having the proper perceived oral health needs. Despite the high proportion of populations requiring dental treatment, the utilization of dental health care facilities remains poor. Individuals though having an oral health problem do not perceive they have a problem until the later stages of such a problem through the manifestation of pain or gross damage to structures in the mouth.^[12-14]

When an oral health care problem is perceived, certain others prefer to treat by themselves by using non-orthodox methods rather than visiting the dental clinic for expert care.^[8] This may however be due to illiteracy or an individual's socio-economic status as it has been found that dental clinic attendance increases with increasing level of education as well as high socio-economic status.^[15,16] However, a high socio-economic status has also been linked to higher levels of occurrence of oral diseases.^[17] Certain reasons including a pre-emptive feeling of pain from dental procedures, dental phobia, lack of time to visit the dental clinic, non-accessibility of dental health care facilities, unavailability of dental health care facilities, financial constraints amongst others have been given as reasons for not visiting the dental clinic either routinely or when an oral health problem has occurred.^[18-20]

In view of the revised national oral health policy in 2012 which is “*to promote optimal oral and general health for all Nigerians, reduce the morbidity and mortality rate, as well as reverse the increasing prevalence and incidence of oral diseases; to meet the global targets*

70 *on the elimination and eradication of oral diseases and significantly ensure the maintenance*
 71 *of complete set of dentition through life, thus promoting general health for all Nigerians”^[12],*
 72 *the provision of oral health care facilities and services in all states of the federation should be*
 73 *the focus of government at all levels. Despite documented negative attitudes to oral health*
 74 *care by a populace, there have also been documented reports of an inadequacy of oral health*
 75 *care services despite a high demand for these services in Nigeria.^[12,21]The need to ensure that*
 76 *these services are provided and made readily accessible to the entire populace; whether*
 77 *young or old, through implementation of this policy is of absolute importance, including*
 78 *availability to all social strata within the rural, semi-urban and urban areas of all regions. This*
 79 *is so because everyone must be able to easily access dental health care services at any point*
 80 *in time in order to ensure that optimal oral health is maintained at all points of one’s life and*
 81 *in so doing ensure good general health and its attendant benefits not just to the individual but*
 82 *to the productivity of the entire populace.^[22-25]*

83 Could the availability or scarcity of dental health care facilities and services be a factor
 84 affecting the level of knowledge of oral health as well as the oral hygiene practices of
 85 secondary school students in Bayelsa State? Observations have been made that within the
 86 Yenagoa metropolis which is the capital of Bayelsa State and which is located in the Yenagoa
 87 Local Government Area of the State, there is the presence of more and better equipped public
 88 and privately-owned dental care facilities providing dental health care services to the
 89 populace. This is however not the case in all other Local Government Areas of the State in
 90 which these services are lacking. This study thus developed an interest in assessing the oral
 91 health knowledge and hygiene practices of secondary school students in Yenagoa, Bayelsa
 92 State as well as in 3 other Local Government Areas (LGAs) namely Ogbia, Nembe and Brass
 93 which make up the Bayelsa East Senatorial District. These assessments were carried out in
 94 order to ascertain if there were any differences in the oral health knowledge and hygiene
 95 practices of secondary school students in the perspective of availability or scarcity of
 96 adequate oral health care services within these study areas.

97 MATERIALS AND METHODS

98 A cross-sectional survey was conducted in determining the oral health knowledge and oral
 99 hygiene practices of secondary school students within the Bayelsa East Senatorial District
 100 and the Yenagoa Metropolis of Bayelsa State. The Bayelsa East Senatorial District comprises
 101 Ogbia, Nembe and Brass Local Government Areas of Bayelsa State. This senatorial district

occupies a land mass of about 2, 516 km². The people are predominantly Christians with their main occupation being farming and fishing.^[26] Yenagoa is the capital of Bayelsa State located within the Yenagoa Local Government Area of Bayelsa State. Being an urban area, the concentration of dental facilities in Bayelsa State can be found within the Yenagoa metropolis. However, an observation of other Local Government Areas of Bayelsa State (including those located within the Bayelsa State East Senatorial District) showed a very low number of dental facilities and services in relation to the population. The population of study involved secondary school students attending school within the Bayelsa East Senatorial District and the Yenagoa Metropolis. A multistage sampling technique was utilized in selecting respondents from 6 secondary schools located within the study areas. Close-ended self-structured questionnaires seeking to determine the level of oral health knowledge (using a 4-point likert scale) as well as oral hygiene practices of respondents was used as our instrument for data collection. Positive and negatively skewed questions were asked in order to effectively determine their level of oral health knowledge. Content validity of the questionnaire to adequately determine the level of oral health knowledge as well as oral hygiene practices was ensured and confirmed by a competent dental professional. Informed consent was duly gotten from the respondents and the decision to complete the questionnaires was completely voluntary. Due permission to carry out this study was also gotten from relevant authorities. Collated data was analyzed by using the GraphPad Prism statistical software. Means and standard deviations of the levels of oral health knowledge were calculated and significance of the predominant level of oral health knowledge (good/bad) was tested using the unpaired t-test. In testing relationship between level of oral health knowledge and oral hygiene practices, the chi-squared test was utilized and statistical significance was set at the .05 level of significance for both analyses.

RESULTS

Demographic Data

In all, 1357 secondary school students were involved in this study. 965 of this number included students attending school within the East Senatorial District of Bayelsa State. The remainder of 392 respondents attended school within Yenagoa metropolis. Male and female students were involved in this study and all 6 arms of secondary schools (JSS 1 – SSS 3). All respondents were Christians within the East senatorial district and in Yenagoa, most of the

respondents were also Christians. The demographic data of study respondents' is shown in Table 1.

Table 1: Demographic data of respondents

	Bayelsa East Senatorial District		Yenagoa (State capital)	
	965		392	
Demographics	Frequency	Percentage (%)	Frequency	Percentage (%)
1. Gender				
• Male	299	31.0	192	49.0
• Female	666	69.0	200	51.0
2. Religion				
• Christianity	965	100.0	350	89.3
• Islam	0	0.0	26	6.6
• Paganism	0	0.0	6	1.5
• Others	0	0.0	10	2.6
3. Educational Level				
• JSS 1	128	13.3	80	20.4
• JSS 2	119	12.3	72	18.4
• JSS 3	136	14.1	41	10.5
• SSS 1	189	19.6	69	17.6
• SSS 2	231	23.9	75	19.1
• SSS 3	162	16.8	55	14.0

Source of Oral Health Knowledge

On the source of knowledge concerning dental health in our study, most of the respondents from the Bayelsa East Senatorial District gained this knowledge from instructions given by dentists (29.4%) and from television broadcasts (26.8%). In Yenagoa metropolis however, majority of respondents got this knowledge from television broadcasts (43.4%). Others gained the knowledge from posters, oral health outreaches carried out by oral health care personnel amongst others. The various sources of dental health knowledge in our study areas are shown in Table 2.

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Table 2: Sources of dental health knowledge

Sources of Oral Health Knowledge	Bayelsa East Senatorial District		Yenagoa (State capital)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
•Radio broadcasts	130	13.5	56	14.3
•Television broadcasts	259	26.8	170	43.4
•Newspapers	24	2.5	16	4.1
•Magazines	21	2.2	11	2.8
•Posters	37	3.8	20	5.1
•Dentist's instruction	284	29.4	62	15.8
•Oral health outreaches	173	17.9	55	14.0
•None	37	3.8	2	0.5

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150 Assessment of the Level of Knowledge about Oral Health

151 Analysis of the Likert scale used to assess the level of oral health knowledge of the
 152 respondents within the Bayelsa East Senatorial District showed that 878 (91.0%) of the
 153 respondents with a mean summated score of 16.35 ± 1.95 showed that they had good
 154 knowledge about oral health, however 87 respondents (9.0%) with a mean summated score of
 155 10.89 ± 1.35 had poor knowledge about oral health. Similar Likert analysis of responses given
 156 by respondents within Yenagoa showed that 346 (88.3%) of the respondents with a mean
 157 summated score of $15.87 + 1.70$ showed that they had good knowledge about oral health,
 158 however, 46 (11.7%) respondents with a mean summated score of 10.83 ± 1.36 had poor
 159 knowledge about oral health. Unpaired t-test of individual summated scores of the
 160 respondents showed a good overall level of oral health knowledge within both study areas
 161 which was statistically significant. This distribution is shown in Figure 1.

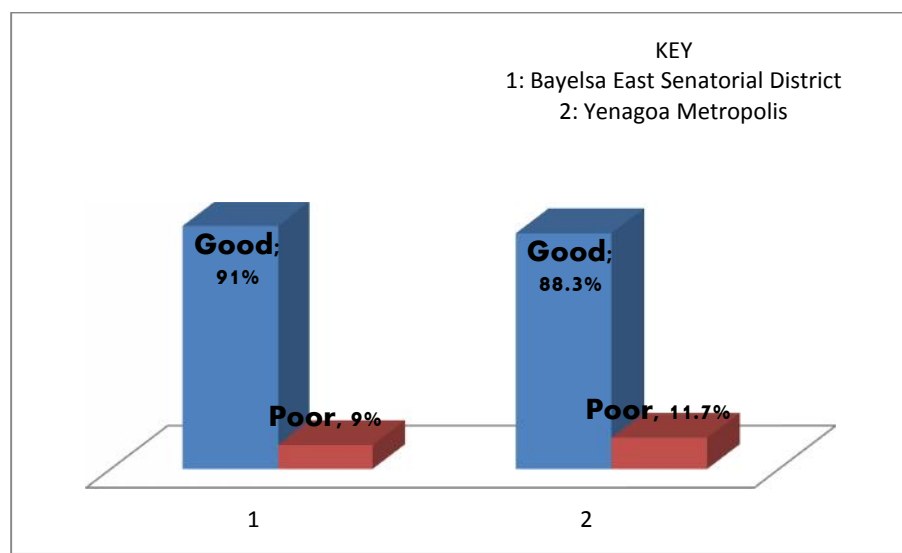


Figure 1: Distribution of level of oral health knowledge among respondents
p-value: <0.0001

Oral Hygiene Practices of Respondents

Concerning oral hygiene practices of the respondents in this study, the use of toothpaste and toothbrush in cleaning the mouth was predominant, which accounted for 857 (88.8%) within the East Senatorial District and 326 (83.2%) in Yenagoa Metropolis. Other mouth cleaning agents including chewing stick as well as the use of toothbrush combined with powder, sand etc were used by the respondents in cleaning their mouths. A predominant proportion of the respondents within both study areas changed their toothbrushes every 1 – 3 months and mouth cleaning was mostly done twice daily. Majority of the respondents had also never visited the dental clinic. 51.9% of the respondents within the Bayelsa East Senatorial District however used dental floss as an interdental cleaning aid while only 30.9% used this within the Yenagoa Metropolis. Concerning respondents whom had visited the dental clinic, the majority (50.0% & 55.1%) within the Bayelsa East Senatorial District and Yenagoa Metropolis respectively visited as a result of dental pain. The oral hygiene practices as well as the reasons for visit to the dental clinic in our study area are shown in Tables 3 and 4 respectively.

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Table 3: Oral Hygiene Practices of respondents

	Bayelsa East Senatorial District		Yenagoa (State capital)	
Oral Hygiene Practices	Frequency	Percentage (%)	Frequency	Percentage (%)
1. Oral hygiene aid for mouth cleaning				
• Toothbrush/Toothpaste	857	88.8	326	83.2
• Toothbrush/Powder	68	7.0	55	14.0
• Chewing Stick	23	2.4	6	1.5
• Sand	5	0.5	3	0.8
• Charcoal	11	1.1	2	0.5
• Others	1	0.1	0	0.0
2. Frequency of change of toothbrush				
• Every 1 – 3 months	804	83.3	244	62.2
• Every 4 – 6 months	94	9.7	72	18.4
• Every 7 – 12 months	21	2.2	27	6.9
• Yearly	46	4.8	49	12.5
3. Frequency of mouth cleaning daily				
• Once	227	23.5	106	27.1
• Twice	609	63.1	211	53.8
• > Twice	129	13.4	75	19.1
4. Frequency of dental clinic attendance				
• Once yearly	83	8.6	55	14.1
• Twice yearly	263	27.3	60	15.3
• Only when I have a problem	256	26.5	119	30.3
• Never visited	363	37.6	158	40.3
5. Use of dental floss				
• Yes	501	51.9	121	30.9
• No	464	48.1	271	69.1

No statistically significant difference was found when the oral hygiene practices of respondents of both study areas were comparatively assessed. (All p-values were above 0.05)

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Table 4: Reasons for dental clinic visit

Reasons	Bayelsa East Senatorial District		Yenagoa (State capital)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
• Dental pain	301	50.0	129	55.1
• Mouth odour	41	6.8	36	15.4
• Bleeding gums	62	10.3	42	18.0
• Routine check-up	198	32.9	27	11.5

**RELATIONSHIP BETWEEN THE LEVEL OF ORAL HEALTH KNOWLEDGE
AND ORAL HYGIENE PRACTICES OF RESPONDENTS**

A statistically significant relationship was found between the use of toothbrush/toothpaste as a means of maintaining oral hygiene and having a good knowledge about oral health within the Bayelsa East Senatorial District and Yenagoa Metropolis. This is shown in Tables 5 and 6.

Table 5: Relationship between the Level of Oral Health Knowledge and the use of Toothbrush / Toothpaste (Bayelsa East Senatorial District)

Level of oral health knowledge →	Good	Poor
1. Use of toothbrush and tooth paste	783	72
2. Use of toothbrush and powder	63	5
3. Use of Chewing stick	20	3
4. Use of Charcoal	7	3
5. Use of Sand	1	4
6. Others	1	0

χ^2 : 37.13, p-value < 0.0001

Table 6: Relationship between the Level of Oral Health Knowledge and the use of Toothbrush / Toothpaste (Yenagoa Metropolis)

Level of oral health knowledge →	Good	Poor
1. Use of toothbrush and tooth paste	294	32
2. Use of toothbrush and powder	42	13
3. Use of Chewing stick	5	1
4. Use of Charcoal	2	0
5. Use of Sand	3	0

χ^2 : 9.49, p-value = 0.05

210 DISCUSSION

211 The increasing burden of oral diseases which some have called a “*silent epidemic*” despite
212 improved global efforts to tackle it is indeed worrisome. Continuous efforts have constantly
213 been put in to ensure that there is a change in direction regarding the oral disease burden. It is
214 however to note that for these efforts to yield worthwhile results, all parties involved must act
215 concertedly towards achieving the goal of improved and sustained global oral health. This
216 can be achieved by ensuring that as much as policies are laid down to tackle the prevalence of
217 oral diseases, they must also be implemented to the letter. Necessary funding and resources
218 to drive these policies should also be made available and efficiently utilized to achieve this
219 goal.^[28-30]

220 As the knowledge of oral health and oral diseases increases, so does the level of practice of
221 oral hygiene and vice versa. The populace must be educated and awareness increased using
222 all necessary methods of approach such that the needed oral health education is far-reaching
223 and not just concentrated to one region or populace. All efforts must be concerted. It is also
224 necessary to draw up modalities to ensure that this drive is sustained and constantly modified
225 to ensure global oral health and thus improved general health.^[31-33]

226 In this study, the level of oral health knowledge was significantly good with a vast majority
227 of both study populations having a good understanding of what oral health was about. This is
228 despite the observation that the provision of dental health services in one study area was far
229 less as compared to the other. This finding is supported by findings of authors who showed
230 good level of oral health knowledge in the studied populations.^[34, 35] Although the reports of
231 other authors was contrary to this finding as there was a gross ignorance about good oral
232 hygiene practices.^[36] Our study pointed out that 43.4% respondents residing within the
233 Yenagoa metropolis gained this knowledge of oral health from television broadcasts which
234 could have been during oral health adverts or oral education programmes shown on
235 television. This was also the case in previous research which stated that television broadcasts
236 were the main sources of oral health education^[37]. Within the Bayelsa East Senatorial
237 District however, majority of the respondents (29.8%) gained the knowledge of oral health
238 from the instruction given by dentists and was closely followed by television broadcasts
239 (26.8%). The proportion who gained their knowledge from dentists’ instructions could have
240 been the proportion of the population that visited the available dental health care facilities and
241 were able to gain adequate oral health education. It is thus very important to note that in the

242 delivery of oral health information to a populace, apart from utilizing the mass media,^[38] it is
243 also essential to ensure that dental health care facilities and services are adequately provided
244 to serve all parts of the population such that those who readily utilize these services can be
245 effectively educated on issues regarding oral health.^[30,39] It can thus be deduced that the
246 availability or scarcity of oral health care facilities or services is not a determinant of the level
247 of knowledge of oral health seeing that our study areas had statistically significant levels of
248 knowledge despite the scarcity of dental services in one of both study areas. However, for
249 improved oral health education and promotion, it is necessary to ensure the availability of
250 oral health care services.^[40]

251 Assessment of the oral hygiene practices of respondents in both study areas showed that good
252 oral hygiene was practiced by majority of respondents. These included the use of toothpaste
253 and toothbrush as oral hygiene mouth cleaning aids which has been found to be one of the
254 most effective ways to remove oral debris and prevent the occurrence of oral diseases
255 although chemical control of dental plaque has been advocated for use among certain groups
256 of impaired individuals,^[41-43] changing of toothbrushes between one and three months of use
257 as well as cleaning the mouth twice or more than twice a day. This result is corroborated by
258 previous findings in which good oral hygiene was being practiced by the majority of their
259 study populations.^[38,44,45] Although, some other findings have shown the prevalence of poor
260 oral hygiene practices including brushing teeth once daily, never having visited the dental
261 clinic or only visiting the dental clinic when there was a dental – related problem.^[32,46-48]
262 This study presented with such findings in which the majority of respondents in both areas
263 had never visited the dental clinic which may have been as a result of unavailability or
264 inaccessibility of dental clinics especially within the Bayelsa East Senatorial District, fear of
265 the dental clinic or dental instruments or procedures known as dental phobia, unfavourable
266 previous recounted experiences of those whom had visited the dental clinic, expensive cost of
267 dental treatments amidst financial constraints experienced by patients needing such
268 treatments, coming from a poor family background, misconceptions and wrong beliefs
269 regarding oral health and dental treatments e.t.c.^[29,47,49-53] For respondents whom had visited
270 the dental clinic, majority of them had done so as a result of dental pain which has been
271 reported to be a major reason for dental visits around the world. This practice should be
272 strongly discouraged and the populace should be made to understand the reason for routine
273 visits to the dental clinic which is far more effective in maintaining oral health through
274 prevention or prompt treatment of oral diseases.^[35,40,48,54,55]

This study also showed a statistically significant relationship between having good knowledge of oral health and the good oral hygiene practice of toothbrushing using the proper toothbrush and toothpaste. This has also been reported by other researchers.^[56] When comparatively assessed, there was no statistically significant difference between the good oral hygiene practices of respondents of both study areas in this study, thus enabling the conclusion that the availability or scarcity of oral health care facilities or services is not a determinant of the practice of good oral hygiene or level of knowledge of oral health within the areas studied in this research.

In Nigeria, there has to be a continuous concerted drive to achieve maximal implementation of the oral health policy. Oral health promotion efforts should be stepped up as much as possible targeting all members of the society from children to the elderly. The populace should be made aware of the importance of maintaining optimal oral health by maximally utilizing oral health services and abstaining from self treatment of oral diseases using harmful means, more Nigerians should be encouraged to register in the National Health Insurance Scheme (NHIS), more oral health care services should be incorporated into the health insurance scheme to encourage increased utilization of these services. The promotion of optimal oral and general health, the reduction of cases of illness or death due to oral diseases and attainment of global targets in tackling oral diseases and maintaining oral health and thus improved general health can be and will be ultimately achieved in Nigeria when all play their vital roles in fulfilling this dream. ^[33,48,49,57,58]

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