



ISSN: 0975-833X

RESEARCH ARTICLE

THE RELATIONSHIP BETWEEN THE ORAL HYGIENE PRACTICES AND THE DENTAL CARIES STATUS OF STUDENTS OF THE BAYELSA STATE COLLEGE OF HEALTH TECHNOLOGY, OTUOGIDI, OGBIA – TOWN

*¹Ephraim-Emmanuel, Benson Chukwunweike, ²Ideede Victor, ³Dotimi, Doris Atibinye, ³Vincent Prescilia, ¹Baraka Bodeiwari and ¹Udeaja Chidi

¹Department of Dental Health Sciences, Bayelsa State College of Health Technology, Otuogidi, Ogbia

²Department of Medical Laboratory Sciences Bayelsa State College of Health Technology, Otuogidi, Ogbia

³Department of Community Health Sciences, Bayelsa State College of Health Technology, Otuogidi, Ogbia

ARTICLE INFO

Article History:

Received 25th February, 2014
Received in revised form
10th March, 2014
Accepted 20th April, 2014
Published online 31st May, 2014

Key words:

Dental caries status,
Oral hygiene practices.

ABSTRACT

Background: This research was aimed at determining the relationship between the oral hygiene practices and the dental caries status of students of the Bayelsa State College of Health Technology, Otuogidi, Ogbia – Town.

Method: A cross-sectional survey assessing their dental caries status as well as their oral hygiene practices was carried out.

Results: Majority of the students presented with a low dental caries status, with mean (DMFT) Index of 0.26 ± 0.97 S.D. The use of toothbrush and toothpaste were the most commonly used oral hygiene aids. Majority of the students, $n=167$ (52.8%) clean their teeth once daily. Majority of the students, $n=77.2\%$, also had never visited the dental clinic. Our study further revealed that dental caries status is dependent on the number of times in a day that the mouth is cleaned.

Conclusion: The dental caries status of the students of the Bayelsa State College of Health Technology is low and is dependent on the number of times in a day that their mouths are cleaned. Recommendations of improved oral health services, oral health education and awareness not just among these students but to all Nigerians and the world at large were made.

Copyright © 2014 Ephraim-Emmanuel, Benson Chukwunweike et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The achievement of good oral health for all can no longer be over-emphasized as through the years, it has been shown that neglect of oral hygiene had its own adverse effects not just in the mouth of an individual but affecting the entirety of an individual in terms of the general health and wellbeing of an individual. This on its own is grossly dependent on the provision of adequate knowledge of how to effectively achieve and maintain good oral health which can be effectively provided by first of all getting to know the deficiencies in the knowledge of good oral health in a populace and strongly make efforts at all levels, both individually and collectively to tackle the menacing problems and deficiencies. (Cheah *et al.*, 2010; Olusile, 2010; Sofola, 2010; Joyson, Rangeeth, and Gurunathan, 2011; Punitha and Sivaprakasam, 2011; Chandra Shekar, Reddy, Manjunath and Suma, 2011). Just as learning becoming ineffective if not put into practice to effect positive change in one's oral health behaviour and attitude can occur in professional institutions, it can also take place in our immediate environments. We must be apt to learn and adopt

what is taught to bring about better oral health and hygiene conditions. With dental caries manifesting in varying degrees among differing populations, socio-economic strata and so on, it has become prerogative to deliver oral health awareness in every nook and cranny; at schools, in public places, at health facilities, the mass media, offices and so on. (Akpata, 2004; Chachra, Dhawan, Kaur and Sharma, 2011; Kaira, Srivastava, Giri and Chopra, 2012; Rao *et al.*, 2013). Frequently prevalent oral diseases in our world today include dental caries, trauma as well as periodontal disease, however, as a result of programmes targeted at improving oral health as well as increased use of fluoride-containing toothpastes, the epidemiological prevalence of dental caries has been reduced over the years which clearly shows that by controlling the risk factors attributable to dental caries including the exposure to cariogenic foods coupled with poor oral hygiene practices as well as poor dental health knowledge, dental caries can indeed become an extinct phenomenon as far as the principles guiding its prevention are strictly adhered to. (Sogi and Bhaskar, 2002; Caamaño and Fernández-Riveiro, 2007; Amin and Al-Abad, 2008; Gaiao *et al.*, 2009; Agustsdottir *et al.*, 2010; Shirazi, Naz and Yousuf, 2013). With little or no research work done to study the relationship between the dental caries status and the oral hygiene practices of students of the Bayelsa State

*Corresponding author: Ephraim-Emmanuel, Benson Chukwunweike
Department of Dental Health Sciences, Bayelsa State College of Health
Technology, Otuogidi, Ogbia.

College of Health Technology, Otuogidi, Ogbia – Town, as well as with a prevailing presence of dental caries among these students, it has become necessary to determine the dental caries status and practices of the students of the Bayelsa State College of Health Technology and to determine the relationship between both. Carrying out this research provided information on the dental caries status and oral hygiene practices of our study population as well as further reveal the need for improved efforts targeted at provision of adequate dental services as well as oral hygiene education and awareness among students of the Bayelsa State College of Health Technology, Otuogidi-Ogbia town and indeed to all countries of the globe.

METHODS

A cross-sectional study design was utilized in determining the relationship between the oral hygiene practices and the dental caries status of students of the Bayelsa State College of Health Technology, Otuogidi, Ogbia – Town. Permission to carry out this research work was gotten from the management of the College via the Research and Manpower unit of the College and the decision to be involved in this study was completely voluntary. Closed-ended questionnaires assessing oral hygiene practices were then distributed to 316 students who were selected by a stratified random sampling method after the total number of students in the College was gotten from the Registry department. Oral examination of the students to assess their dental caries status was also performed by qualified and experienced dental health professionals and the Decayed, Missing Filled Teeth index was used to determine the dental caries status of the students. Data gotten from the respondents/subjects was analyzed using the Statistical Package for Social Sciences (SPSS) version 20.

RESULTS

A total of 316 respondents/subjects comprising n=124 (39.3%) male and n=192 (60.7%) female respondents were involved in this study. Most of the students were single; n=293 (92.7%) with a modal age range of 20 – 25 years of age; n=185 (58.5%), and majority of the respondents were of the Ijaw-speaking tribe of Nigeria; n=233 (73.7%). Table 1 shows these results.

Table 1. Demographic data of respondents

Parameter	Frequency	Percentage (%)
1. Gender:		
• Male	124	39.3
• Female	192	60.7
2. Age:		
• 15 – 19 years	67	21.2
• 20 – 25 years	185	58.5
• 26 years and above	64	20.3
3. Marital status:		
• Married	23	7.3
• Single	293	92.7
• Divorced	–	–
• Widow/widower	–	–
4. Ethnic group:		
• Ijaw	233	73.7
• Igbo	17	5.4
• Yoruba	–	–
• Hausa	–	–
• Others	66	20.9

Dental caries status of the students

Using the Decayed, Missing, Filled Teeth Index, a mean DMFT score of 0.26 ± 0.97 S.D was gotten. Altogether 313 (99.1%) students presented with a low dental caries status. [male: 123 (38.9%), female: 190 (60.2%)]; 2 (0.6%) students presented with medium dental caries status [male: 1 (0.3%), female: 1 (0.3%)]; and 1 (0.3%) student presented with a high dental caries status [male: 0 (0.0%), female: 1 (0.3%)]. These are shown in Table 2.

Table 2. Dental caries status (using the decayed, missing, filled teeth index) of the students of the Bayelsa State College of Health Technology

Dental caries status	0 – 4 (LOW)	5 - 9 (MEDIUM)	> 9 (HIGH)
Male	123 (38.9%)	1 (0.3%)	0 (0.0%)
Female	190 (60.2%)	1 (0.3%)	1 (0.3%)
Total	313 (99.1%)	2 (0.6%)	1 (1.3%)

Oral hygiene practices of the students

Considering the oral hygiene practices of the students involved in this study, 314 (99.3%) of the students cleaned their mouths using toothbrush and toothpaste, others used charcoal as well as chewing stick; majority of the students cleaned their mouths once daily n=167 (52.8%). A good number of the students clean their mouths only in the morning before eating 136 (43.0%), although certain others also clean their mouths last thing at night even after doing so in the morning before eating 100 (31.7%). 244 (77.2%) of the students in this study had never visited the dental clinic for routine dental check-up. This data is shown in Table 3.

Table 3. Frequency and percentages arrangement not tallying with corresponding oral hygiene practices

Oral Hygiene Practices	Frequency	Percentage (%)
1. Type of oral hygiene practice used:		
• Use of toothbrush and toothpaste	314	99.3
• Charcoal and water	1	0.3
• Chewing stick and water	1	0.3
2. Number of times mouth is cleaned daily:		
• Once	167	52.8
• Twice	145	47.2
3. Time of the day when mouth is cleaned:		
• In the morning before eating only.	136	43.0
• In the morning after eating only.	31	9.8
• In the morning before eating and last thing at night.	100	31.7
• In the morning after eating and last thing at night.	45	15.5
4. Number of times dental clinic is visited for routine check-up:		
• Only when there is a problem	47	14.9
• Once yearly	7	2.2
• Twice yearly	16	5.1
• Thrice yearly	1	0.3
• > thrice yearly	1	0.3
• Never visited	244	77.2

Relationship Between The Number Of Times In A Day When The Mouth Is Cleaned And The Dental Caries Status Of The Students Of The Bayelsa State College Of Health Technology

When tested using the chi-square test, it was found in this study that the dental caries status of the students of the Bayelsa State College of Health Technology was dependent on the number of times they clean their mouths daily (p-value<0.0001). This is shown in Table 4.

Table 4. Relationship between the number of times in a day when the mouth is cleaned and the dental caries status of the students of the Bayelsa State College of Health Technology

Dental caries Status	Morning before eating only	Morning after eating only	Morning before eating and last thing at night	Morning after eating and last thing at night
0 – 4 (GOOD)	134 (42.4%)	31 (9.8%)	100 (31.7%)	49 (15.5%)
5 – 9 (FAIR)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
>9 (POOR)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

The dental caries status of the students of the bayelsa state college of health technology is dependent on the number of times in a day when they clean their mouths (p-value<0.0001)

Table 5. Relationship between how often the dental clinic is visited and the dental caries status of the students of the Bayelsa State College of Health Technology

Dental caries Status	Only when there is a tooth problem	Once yearly	Twice yearly	Thrice yearly	>thrice yearly	Never visited
0 – 4 (good)	46 (14.6%)	7 (2.2%)	16 (5.1%)	1 (0.3%)	1 (0.3%)	243(76.9)
5 – 9 (fair)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)
>9 (poor)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

The dental caries status of the students of the bayelsa state college of health technology is not dependent on how often they visit the dental clinic

DISCUSSION

Students of the Bayelsa State College of Health Technology have a good Decayed, Missing, Filled Teeth (DMFT) mean score of 0.26 ± 0.97 S.D. Generally most of the students: n = 313 (99.1%) presented with a low dental caries status associated with oral hygiene practices which still need to be improved upon. Dental caries, a formerly high ranking disease condition is indeed on the decrease worldwide both in developing and industrialized countries of the world. This is mainly attributable to the increase in the use of fluoride especially as a tooth remineralizing agent. However, this decreasing prevalence has been found to be associated with socio-economic status in children in which those from a high socio-economic background experience better social conditions that enables them practice better oral hygiene methods as well as make good dietary decisions. (Joyson, Rangeeth and Gurunathan, 2011; Oliveira, Sheiham and Bo`necker, 2008; Miyake *et al.*, 2010; Ephraim-Emmanuel *et al.*, 2013). In our study, participating students presented with a rather low dental caries status of 0.26 ± 0.97 S.D when assessed using the DMFT index. This finding may indeed be a result of the significant and proper use of fluoride-containing toothpaste as an oral hygiene aid during tooth brushing among our study population as an excessive intake or use may have on its own led to dental fluorosis. This result is however much more lower than other results gotten in other areas in which higher mean DMFT scores of 1.38 ± 0.54 and 3.27 ± 3.00 were gotten. (Buzalaf *et al.*, 2001; Mustahsen, Mahmood and Rehman, 2008; Shirazi, NazandYousuf, 2013). Of the 313 subjects in our study whom presented with a low dental caries status, 190 (60.7%) were females and 123 (39.3%) were males.

This goes to show that more female than male students in our study area have a low dental caries status. This is not however corroborated by a study carried out by Mustahsen *et al.* 2008 in which more females presented with dental caries than males. Regarding the oral hygiene practices of our study population, majority of the respondents majority of the respondents n= 314 (99.3%) maintain their oral hygiene using toothbrush and toothpaste with the minority 2 (0.6%) using charcoal and water as well as chewing stick and water as oral hygiene aids. This goes to show that the students involved in this study are

motivated to maintain good oral health and hygiene. Previous studies done agree with this finding of toothbrush and toothpaste, being used by the majority to maintain good oral hygiene. (Almas *et al.*, 2003; Al-Kheraif and Al-Bejadi, 2008; Cheah *et al.*, 2010; Kaira *et al.*, 2012; Azodo and Amenaghawon, 2013). However, the use of charcoal in this present study is corroborated with previous studies in which charcoal as well as chewing stick was used as oral hygiene aids. (Almas *et al.*, 2003; Punitha and Sivaprakasam, 2011). This study also revealed that majority of the students n=167 (52.8 %), cleaned their mouths only once a day (in the morning) which was before or after having breakfast. This result is supported by previous findings that reported that majority practices once daily tooth-cleaning. (Baral *et al.*, 2009; Punitha and Sivaprakasam, 2011; Azodo and Amenaghawon, 2013). However, 145 (47.2 %) cleaned their mouths twice in day; which was before or after their morning meals or last thing at night.

This is less than what was reported by Mustahsen, Mahmood and Rehman in 2008, whom reported that 50% of the students in their study used toothbrush before bedtime.

Students in our study area however did not take routine visits to the dental clinic as a preventive practice of avoiding oral diseases as a major concern. It was recorded that 77.2% of the students had never visited the dental clinic and infact 14.9% of the students only visited the dentist only when they had a dental-related problem. This low turn-out was also reported in other studies, with low oral hygiene awareness, illiteracy, low socio-economic status, absence of a structured oral health policy as well as a low dentist: population ratio being among

the implicated causes for such a low turn-out. (Taiwo and Omokhodoin, 2006; Sofola, 2010; Olusile, 2010; Punitha and Sivaprakasam, 2011; Chachra et al., 2011; Panchbhai, 2012; Ojahanon, Akionbare and Umoh, 2013; Azodo and Amenaghawon, 2013). An interesting relationship was found between the dental caries status of our study population and the time of the day they clean their mouths as well as how often they visit the dental clinic. None of the students who cleaned their mouths in the morning as well as at night (twice daily) presented with a fair/poor dental caries status, which was not the case with 2 students who brushed only before eating in the morning. This goes to show the importance of a twice-daily cleaning of the mouth as a means of preventing dental caries as well as other diseases. (Cypriano et al., 2008). This study also showed that 243 students (76.9%) whom had never visited the dental clinic presented with a low dental caries status. This does not however absolve them from having other manifestations of oral diseases, especially those related to poor oral hygiene such as bad breath, inflamed gums and so on. This further shows the existence of a lack of perceived need among our study population as well as a possible inadequacy of dental facilities and personnel to meet their dental treatment needs. (Akpata, 2004; Taiwo et al., 2004; Taiwo and Omokhodoin, 2006; Taiwo et al., 2007; Gaiao et al., 2009; Sofola, 2010; Chandra Sheka et al., 2011; Taiwo et al., 2012).

Conclusion

The dental caries status of the students of the Bayelsa State College of Health Technology is low amidst the presence of oral hygiene practices which still require to be stepped up in order to be able to meet up with the proper standards for maintaining good oral hygiene. It is highly recommended that reinforced oral health and oral hygiene awareness programmes be carried out among the students of the Bayelsa State College of Health Technology as well as the provision of free dental examination for these students and indeed ensuring that adequate dental facilities and personnel to effectively meet the dental needs of the populace not just in our study area but in all parts of the world be made a reality.

REFERENCES

Agustsdottir H., Gudmundsdottir H., Eggertsson H., Jonsson S.H., Gudlaugsson J.O., Saemundsson S.R., Eliasson S.T., Arnadottir I.B. and Holbrook W.P., 2010. Caries prevalence of permanent teeth: a national survey of children in Iceland using ICDAS. *Community dentistry and oral epidemiology*; 38(4):299-309.

Akpata E.S., 2004. Oral Health In Nigeria. *International Dental Journal*;54(6 Suppl 1):361-366. Retrieved from: www.who.int/oral_health/publications/orh_idj54_06_akpat_a.pdf

Al-Kharaif A.A., Al-Bejadi S.A., 2008. Oral hygiene awareness among female Saudi school children. *Saudi Med J.*; 29(9):1332-6. PMID:18813422

Almas K, Al-Hawish A, Al-Khamis W. Oral Hygiene Practices, Smoking Habits, and Self-Perceived Oral Malodor Among Dental Students. *J Contemp Dent Pract* 2003 November;(4)4:077-090.

Azodo C.C, Amenaghawon O.P. 2013. Oral hygiene status and practices among rural dwellers. *Eur J Gen Dent.*;2:42-5. Available from: <http://www.ejgd.org/text.asp?2013/2/1/42/106806>

Baral P., Bhattari C., Poudel P. P., Banstola D., Roy S., Hada S., Hiremath S.S. 2009. A study on Oral Hygiene Practice among school Children of Pokhara Municipality, *Journal of GMC – Nepal*; 2(2); 37-38.

Buzalaf, M.A.R., Cury, J.A, andWhitford, G. M., 2001. Fluoride exposures and dental

Chachra S., Dhawan P., Kaur T., Sharma A.K., 2011. Most effective way of improving oral health.*Journal of Indian Society of Pedodontics and Preventive Dentistry.* 29(3);216-221.

Cheah W. L., Tay S. P., Chai S. C., Bong C. S., Luqmanul K. B., Zhuleika B. J. C. 2010. Oral Health Knowledge, Attitude and Practice among Secondary School Students in Kuching Sarawak, *Archives of Orofacial Sciences*, 5(1): 9 – 16.

Cypriano S., Hoffmann R.H.S., Sousa M.L.R., Wada R.S., 2008. Dental Caries Experience in 12-year-old Schoolchildren in Southeastern Brazil *Journal of Applied Oral Science*; 16(4):286-92

fluorosis: a literature review. *Rev. FOB* 9, (1/2):1-10. Retrieved from <http://sddinforma.files.wordpress.com/2010/07/2001101.pdf>

Gaião L.R., Leitão de Almeida M.E., Filho J.G.B., Leggat P., and Heukelbach J., 2009. Poor Dental Status and Oral Hygiene Practices in Institutionalized Older People in Northeast Brazil. *International Journal of Dentistry.* DOI:10.1155/2009/846081

Joyson M., Rangeeth B.N. andGurunathan D., 2011. Prevalence Of Dental Caries, Socio-Economic Status And Treatment Needs Among 5 To 15 Year Old School Going Children of Chidambaram. *Journal of Clinical and Diagnostic Research*, Vol-5(1):146-151.

Mustahsen M.R., Mahmood N., Rehman B., 2008. The Relationship Of Caries With Oral Hygiene Status And Extra-Oral Risk Factors. *J Ayub Med Coll Abbottabad*; 20(1). Available at <http://www.ayubmed.edu.pk/JAMC/PAST/20-1/Mustehsen.pdf>

Ojahanon P.I., Akionbare O., Umoh A.O., 2013. The Oral Hygiene Status Of Institution Dwelling Orphans In Benin City, Nigeria. *Niger J ClinPract*; 16:41-4. Available from: <http://www.njcponline.com/text.asp?2013/16/1/41/106732>

Olusile A.O., 2010. Improving Low Awareness and Inadequate Access to Oral Health Care in Nigeria: The Role of Dentists, the Government and Non-Governmental Agencies. *Niger Med. J.* Vol. 51, No. 3, 134-136. Retrieved from: www.nigeriamedj.com/temp/NigerMedJ513134338802_092440.pdf.

Panchbhai A.S., 2012. Oral Health Care Needs in the Dependant Elderly in India (Review article). *Indian Journal of Palliative Care.* 18:1; 19-26. DOI: 10.4103/0973-1075.97344

Punitha V.C., andSivaprakasam P., 2011. Oral Hygiene Status, Knowledge, Attitude and Practices of Oral Health among Rural Children of Kanchipuram District, *Indian Journal of Multidisciplinary Dentistry*, 1:2; 115-118.

- Rao A., Mitra D., Ashok K.P., Soni S., Ahmed S., Arya S., 2013. Oral hygiene status in the outpatient, Department of Vyas Dental College and Hospital, Jodhpur. *Dental Impact*; 5(2): 101-104. ISSN 2249-5436.
- Saimadhavi N., Raju M.A.K.V., Reddy R.S., Ramesh T., Tabassum D.A., Ramya k., 2013. Impact of Oral Diseases on Quality of Life in Subjects attending Out-patient Clinic of a Dental Hospital in India. *Journal of Orofacial Sciences*, Volume 5, Issue 1, 27-31. Retrieved from: www.jofs.in/temp/JOrofacSci5127-3672422_101204.pdf DOI: 10.4103/0975-8844.113690.
- Smyth E., Caamano F. and Fernández-Riveiro P., 2007. Oral health knowledge, attitudes and practice in 12-year-old schoolchildren. *Med Oral Patol Oral Cir Bucal*, 12(8): E614-E620.
- Sofola O.O., 2010. Implications of Low Oral Health Awareness in Nigeria. *Niger. Med. J.*; 51(3):131-133. Retrieved from: www.nigeriamedj.com/temp/NigerMedJ513131-3441936_093339.pdf
- Sogi G.M, Bhaskar D.J., 2002. Dental caries and oral hygiene status of school children in Davangererelated to their socio-economic levels: an epidemiological study. *J Indian SocPedoPrev Dent* 20 (4): 152-157.
- Taiwo J.O., Ibiyemi O., Bankole O., 2012. Oral Health Attitudes and Practices of the Elderly People in South East Local Government Area (SELGA) In Ibadan. *Journal of Biology, Agriculture and Healthcare* Vol. 2, No. 4. Retrieved from:www.iiste.org ISSN 2224-3208 (Paper) ISSN 2225-093X (Online).
- Taiwo J.O., Jeboda S.O., Motayo T.O., Obiechina A.E., 2004. Periodontal Health of the Elderly People in South East Local Government Area in Ibadan, Nigeria. *Afr J Med Med Sci.*; 33(4):285-91. Retrieved from:www.ncbi.nlm.nih.gov/pubmed/15977433
- Taiwo J.O., Omokhodoin F., 2006. Pattern of Tooth Loss in an Elderly Population from Ibadan, Nigeria. *Gerodontology* 23(2):117-22. Retrieved from:www.ncbi.nlm.nih.gov/pubmed/16677186
- Taiwo J.O., Onyeaso C.O., Kolude B.O., Ibiyemi O., 2007. Dental Caries Experience among the Elderly Population in South East Local Government Area in Ibadan, Nigeria. *Odontostomatol Trop.* 2007; 30(118):31-6. Retrieved from:www.ncbi.nlm.nih.gov/pubmed/17933359
