

Title of research paper: Oral hygiene aids in a rural community in Nigeria

Osadolor OO¹, Osadolor AJ^{2*}

¹ Department of Child Dental Health, University of Nigeria Teaching Hospital, Ituku- Ozalla, Enugu State, Nigeria

² Central hospital, Benin-City, Edo-State, Nigeria

Abstract

Introduction: The mouth is the portal for life-sustaining water and food. It is also a primary mechanism for human communication. The purpose of using oral hygiene aids like chewing stick and toothbrush is to attain good oral hygiene compatible with good oral health. Unfortunately, the practice when not performed appropriately, may result into unwanted ill effects such as recession of the gingival tissues, trauma to soft tissues and abrasion of dental hard tissues. The most widely used oral hygiene aids are toothbrushes with toothpaste. Other oral hygiene aids include dental floss, chewing stick and interproximal brush. Dental floss is an interdental cleaning agent that is effective for cleaning plaque and debris from interproximal surfaces of the teeth.

Objective: To evaluate the oral hygiene aids used in a rural community in Nigeria.

Methodology: A cross sectional study of 268 participants was carried out at Ozalla model primary health centre, Ozalla health centre and Umueze Awkunanaw health centre, located in Ozalla community and Umueze Awkunanaw community respectively. Ethical clearance for this study was sought and obtained. Permission was sought from the head of each health centre, while individual verbal consent (not written to encourage anonymity) was obtained from the respondents before giving out the pre-tested questionnaire which was interviewer-administered.

Data was analysed using Statistical Package for Social Sciences (SPSS) Version 20.

Results: 82.5% of the participant's uses toothbrush only as oral hygiene aid, 14.5% uses chewing stick while 3% uses toothbrush and chewing stick alternatively. 67.2% of the respondents brushes once a day while 32.8% brushes twice a day. 1% of the respondents uses dental floss as interdental cleaning aid while over 60% uses toothpick. The age of the participants was 18years to 86 years with a mean age of 32.4 ± 13.3 years. The predominant occupation was farming and small scale business/trading. P values < 0.05 were accepted as being statistically significant. P-value = 0.035, P-value = 0.026.

Conclusion: The use of dental floss and other oral hygiene aids is important for the prevention of gingivitis, periodontitis and interproximal caries/ dental caries. The use of dental floss is still not optimal despite its potential benefit. This may be due to lack of knowledge of what dental floss is, knowledge of how it is been used, cost and availability.

Keywords: oral hygiene, hygiene aids, rural, community

Introduction

The mouth is the portal for life-sustaining water and food. It is also a primary mechanism for human communication. The purpose of using oral hygiene aids like chewing stick and toothbrush is to attain good oral hygiene compatible with good oral health ^[1]. Unfortunately, the practice when not performed appropriately, may result into unwanted ill effects such as recession of the gingival tissues, trauma to soft tissues and abrasion of dental hard tissues ^[2]. The promotion of good oral hygiene is advocated and supported by the World Health bodies ^[3-5]. Effective and efficient oral hygiene practices are an essential tool for achieving good oral health ^[6]. The use of dental floss and other oral hygiene aids for the cleaning of contact surfaces is also important for effective plaque removal ^[5]. The most widely used oral hygiene aids are toothbrushes and toothpaste. Other oral hygiene aids include dental floss, chewing stick and interproximal brush. These products are used based on personal choice or advice from oral health-care workers ^[7]. Chewing sticks are commonly used as oral hygiene tool in various parts of the world. The choice of chewing stick depends largely on traditional preference rather than clinical effectiveness. It is an affordable oral hygiene tool and additional benefits are derived from its functional aspect of

chewing as jaw exerciser as well as reflex induction of saliva which is beneficial to the oral hygiene ^[8]. Chewing stick has remained a common and acceptable teeth cleaning agent in different parts of the world, especially in developing countries despite the widespread use of toothbrushes and toothpaste ^[9-10]. Apart from use of the chewing stick for regular mouth cleaning based on availability, cost, socio-cultural and therapeutic reasons, religious reasons have consistently contributed to the increasing prevalence of the use of this form of teeth cleaning agent ^[11]. The use of toothbrush and chewing sticks for teeth cleaning are common in most communities in Cameroon, with chewing stick use appearing to be high in the northern part of Cameroon ^[12].

Dental floss is an interdental cleaning agent that is effective for cleaning plaque and debris from interproximal surfaces of the teeth. It has been found to be effective for the prevention and control of periodontal diseases because of its ability to reduce the level of plaque accumulation. Proper use of interdental cleaning agents is a desirable personal characteristic that should be encouraged among the populace ^[13]. The use of dental floss has been found to be effective in the prevention of gingivitis, periodontitis and interproximal caries ^[14]. The use of dental floss is still not

optimal despite its potential benefit. This may be due to the mixed evidence of its effectiveness, lack of knowledge of what dental floss is, and limited availability^[13].

Various methods of tooth cleaning have been devised to maintain oral hygiene and these methods vary from country to country and from culture to culture^[9]. The oral hygiene measures in certain population are adapted depending on factors, such as cultural background, religious norms, educational level, and socio-economic status. In Africa in particular, the use of chewing stick is very popular, this most times is influenced by certain cultural and religious factors or simply the preference for it^[15-16]. Gender preferences is also a deciding factor among many groups as seen in some communities where the men may use chewing stick while chewing gum Arabic is the preferred choice for the women^[16]. The oral self-care with teeth cleaning agents like toothbrush and toothpaste, or chewing stick varies from country to country, from urban to rural area, and culture to culture^[17-18]. Twice a day tooth brushing and the use of inter-dental cleaning aids are not common features in Africa. The maintenance of optimum oral health is dependent on dental visits and the efficacy of oral self-care, which includes the use of tooth brushes, dental floss and other inter-dental aids^[19].

Report has it that many individuals especially in this part of the world believe that the harder the bristles of their toothbrushes, the more effective the toothbrush as they have the sense of accomplishment after their tooth brushing. While there might be psychological satisfaction from the use of such hard textured toothbrushes^[20], there is the increased danger to both the hard and soft tissue within the mouth as the gingivae will be more predisposed to recession, while the tooth will be more predisposed to cervical abrasion. Some studies have even attempted to compare the effectiveness of chewing sticks in plaque removal to that of the toothbrush. Results of such studies have been highly encouraging, they reported no difference in the cleaning capacities of the toothbrush and chewing sticks^[21]. A previous study in Nigeria shows that, apart from toothbrush and toothpaste, chewing stick, charcoal and ordinary water were the oral hygiene tools that were also used and the choice of cleaning material was found to be associated with their level of education^[22]. Oral hygiene measures have been practiced by different populations globally since antiquity. The oral hygiene measures in certain population are adapted depending on factors, such as cultural background, religious norms, educational level, and socio-economic status the widely used methods for maintaining oral health are toothbrushes and dentifrices. Previous epidemiological studies in Tanzania have shown that Tooth cleaning devices commonly used include plastic toothbrushes (52-68%), chewing sticks (26-32%), both plastic toothbrushes as well as chewing sticks (17.0%), and dental floss (1%)^[23-24]. Most of the rural population that constitutes about 85% of the general population in Tanzania uses chewing sticks rather than the toothbrush^[25].

Younus and Qureshi in 2016 from a study in Pakistan^[26] reported that 90% of the respondents used toothbrush with toothpaste as oral hygiene tool and 51.3% brushed twice a day. Agbor and Azodo in 2013 from a study^[12] conducted in Cameroon reported that 85% of the respondents used chewing stick as oral hygiene aids and was higher among males than females. Umanah and Braimoh in 2017 from a study conducted in Port Harcourt, Nigeria reported^[7] that

63.3 % of the participants brushed twice a day while Osador *et al.*, from a study^[11] conducted in Enugu, Nigeria in 2019 reported that 85.2% of the respondents used toothbrush as oral hygiene aids.

Bukar *et al.*, in 2012 from a study conducted in North-east Nigeria^[27] reported that 89.9 % of the respondents used toothbrush as oral hygiene aids and 55.8% brushed twice a day. Akaji and Uguru in 2010 from a study^[16] conducted in Enugu, Nigeria reported that 48.3 % of the respondents used chewing stick as oral hygiene aids while 42.2% used toothbrush with toothpaste. Braimoh and Ilochonwu from a study in Nigeria reported^[19] that 5.3% of the participants used dental floss as inter-dental cleaning aids, while Opeodu and Gbadebo in 2017 from a study^[20] conducted in Ibadan, Nigeria reported that 94.1% of the participants used toothbrush as oral hygiene aids and 60.4% brushed once daily.

There are various studies and reports of oral hygiene aids used in other parts of the country, Africa and the World. The aim of this study is to determine the oral hygiene aids used in a rural community in order to contribute to the existing data on oral hygiene aids in Nigeria and the West African sub-region. It will also compare findings with published reports from Nigeria and other countries of the World.

Material and Methods

The study was conducted on participants who presented at Ozalla model primary health centre, Ozalla health centre and Umueze Awkunanaw health centre, located in Ozalla community and Umueze Awkunanaw community respectively, at the time of the study. [December 2018 – April 2019] Ozalla model primary health centre, Ozalla health centre and Umueze Awkunanaw health centre are the primary health centre offering primary health care services to Ozalla and Umueze Awkunanaw community respectively. Umueze Awkunanaw town and Ozalla town are part of the thirty- three (33) towns that make up Nkanu -West local Government Area of Enugu State, Nigeria^[28]. The area is largely rural and its inhabitants are primarily farmers, small-scale business people and traders. Nkanu-West Local Government area of Enugu State is one of the seventeen (17) local government areas of Enugu State and has its headquarters at Agbani^[28]. Ethical clearance for this study was sought and obtained. Permission was sought from the head of each health centre, while individual verbal consent (not written to encourage anonymity) was obtained from the respondents before giving out the pre-tested questionnaire which was interviewer-administered. Participants were equally selected from each community. Data were analysed using a computer software programme, Statistical Package for Social Sciences (SPSS) Version 20. P values < 0.05 were accepted as being statistically significant.

Results

A total of 268 participants were seen and examined, 126(47 %) were males and 142(53%) were females (Table 1). The age of the participants was 18years to 86 years with a mean age of 32.4 ± 13.3 years. 82.5% of the participants uses toothbrush only as oral hygiene aid, 14.6% uses chewing stick while 3% uses toothbrush and chewing stick alternatively (Table 2). 67.2% of the respondents brushes once a day while 32.8% brushes twice a day (Table 3). 1 % of the respondents uses dental floss as interdental cleaning aid while over 60% uses toothpick. The predominant

occupation was farming and small scale business/trading.

Table 1: Socio-demographic characteristics of respondents

Variable	Number	Percent
Gender		
Male	126	47
Female	142	53
P-value = 0.035		
Age group (yrs)		
Less than 30	138	51.5
30-49	99	36.9
50-69	23	8.6
70 and above	8	3
	268	100
Level of education		
Primary	39	14.6
Secondary	141	52.6
Tertiary	67	25.0
None	21	7.8
	268	100

Table 2: Oral hygiene aids used by the respondents

Oral hygiene aids used	Number	Percent
Toothbrush	221	82.5
Chewing stick	39	14.5
Toothbrush& chewing stick	8	3
Total	268	100.0

Table 3: Frequency of tooth cleaning

Variable	Number	Percent
Once daily	180	67.2
Twice daily	88	32.8
	268	100

P-value = 0.026

Discussion

Poor oral health reflects social inequalities. Hence, the prevention of oral diseases should be a priority in developed and underdeveloped countries in the world [29]. Several tooth-cleaning materials are employed by people in different parts of the world for personal hygiene purposes. In this study, 82.5% of the participants uses toothbrush only as oral hygiene aid which was slightly less than previous report of 85.2%- 90% [1,26-27]. Inter-dental area is the most common site of plaque retention and the most inaccessible to toothbrush, as a result toothbrush is not enough to remove dental plaque from inter-dental areas; this could be complemented by the use of dental floss daily. The use of dental floss in this study was very low and this is in agreement with previous reports [23-24]. This result indicates that improvement in knowledge toward the use of dental floss is needed. Intervention to increase the knowledge and subsequent use of regular flossing is essential.

Twice a day tooth brushing and the use of inter-dental cleaning aids are not common features in Africa [19]. While twice a day tooth brushing seems to be an established practice in several industrialized countries [31], this practice is far from being realised in several other countries [32] In this study, 67.2% of the respondents brush their teeth once a day, this was less than report of other studies of once a day tooth brushing [19, 30] The importance of good oral hygiene practice in the prevention of periodontal disease and dental caries cannot be overemphasized. Most of the respondents in this study used tooth brush and tooth paste, which is a key

measure in the prevention of periodontal disease and dental caries.

Conclusion

The use of dental floss and other oral hygiene aids is important for the prevention of gingivitis, periodontitis and interproximal caries/ dental caries. The use of dental floss is still not optimal despite its potential benefit. This may be due to lack of knowledge of what dental floss is, knowledge of how it is been used, cost and availability.

Financial support and sponsorship: None

Conflicts of interest: There are no conflicts of interest.

References

- Osadolor OO, Akaji EA, Onyejaka NK, Osadolor AJ. Gingival recession in a Rural Community in Nigeria: A Pilot Study. IOSR Journal of Dental and Medical Sciences. 2019; 18(4):18-21.
- Mumghamba EGS, Honkala S, Honkala E, Manji KP. Gingival Recession, Oral Hygiene and Associated Factors Among Tanzanian Women. East African Medical Journal. 2009; 86(3):125-132.
- Petersen PE. Challenges to improvement of oral health in the 21st century – The approach of the WHO Global Oral Health Programme. Int Dent J. 2004; 54(6):Suppl1:329-43.
- Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ. 2005; 83:661-9.
- World Health Organization. The World Oral Health Report, 2003.
- Geneva: World Health Organization, 2003.
- Petersen PE, Kwan S. Evaluation of community-based oral health promotion and oral disease prevention – WHO recommendations for improved evidence in public health practice. Community Dent Health. 2004; 21(4):Suppl3:19-29.
- Umanah AU, Braimoh OB. Oral hygiene practices and factors influencing the choice of oral hygiene materials among undergraduate students at the University of Port Harcourt, Rivers State, Nigeria. J Dent Allied Sci. 2017; 6:3-7.
- Hooda A, Rathee M, Singh J. Chewing Sticks in the Era of Toothbrush: A Review. The Internet Journal of Family Practice. 2009; 9(2):1-6.
- Wu CD, Darout IA, Skaug N. Chewing sticks: Timeless natural toothbrushes for oral cleansing. J Periodontal Res. 2001; 36:275-84.
- Sote EO. The tooth-cleaning stick: Its merits and demerits. West Afr J Med. 1994; 13:59-62.
- Al-Otaibi M. The miswak (chewing stick) and oral health. Studies on oral hygiene practices of urban Saudi Arabians. Swed Dent J Suppl. 2004; 167:2-75.
- Agbor MA, Azodo CC. Assessment of chewing stick (miswak) use in a Muslim community in Cameroon. Eur J Gen Dent. 2013; 2:50-3.
- Akhionbare O, Ehizele AO. Dental floss use in a diverse population. Nig J Dent Res. 2017; 2(2):109-112.
- Sambunjak D, Nickerson JW, Poklepovic T, Johnson TM, ImaI P, Tugwell P, et al. Flossing for the

- management of periodontal diseases and dental caries in adults. *Cochrane Database Syst Rev.* 2011; (12):CD008829.
16. Oji C. Chewing sticks and oral health – Review. *Nig. Dent J.* 1997; 11(2):27-32.
 17. Akaji EA, Uguru NP. Traditional oral health practices in a community in south east nigeria. *J. Coll.of Med.* 2010; 15(1):33-39.
 18. Sofola OO, Shaba OP, Jeboda SO. Oral hygiene and periodontal treatment needs of urban school children compared with that of rural school children in Lagos State. *Nigeria. Odontostomatol Trop.* 2003; 26:25-9.
 19. Varenne B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. *Int Dent J.* 2006; 56:61-70.
 20. Bashiru BO, Anthony IN. Oral self-care practices among university students in Port Harcourt, Rivers State. *Niger Med J.* 2014; 55:486-9.
 21. Opeodu OI, Gbadebo SO. Factors influencing choice of oral hygiene products by dental patients in a nigerian teaching hospital. *Ann Ibd. Pg. Med.* 2017; 15(1):51-56.
 22. Aderinokun GA, Lawoyin JO, Onyeaso CO. Effect of two common Nigerian chewing sticks on gingival health and oral hygiene odonto-Stomatologie Tropicale. 1999; 87:14-18.
 23. Bukar A, Danfillo IS, Adeleke OA, Ogunbodode EO. Traditional oral health practices among kanuri women of Borno State, Nigeria. *Odonto-Stomatol Trop.* 2004; 27(107):25-31.
 24. Mumghamba EGS, Fabian FM. Periodontal health status and oral hygiene practices among middle-aged adults in Mtwara rural, Tanzania. *Afr.J. Oral. Health Sci.* 2003; 4:192-197.
 25. Sarita PTN, Tuominen R. Tooth cleaning methods and their effectiveness among adults in Rural Tanzania. *Proc. Finn. Dent. Soc.* 1992; 88:139-145.
 26. Mumghamba EGS, Honkala S, Honkala E, Manji KP. Gingival Recession, Oral Hygiene and Associated Factors Among Tanzanian Women. *East African Medical Journal.* 2009; 86(3):125-132.
 27. Younus A, Qureshi A. Tooth brush changing frequency and associated sociodemographic and oral hygiene factors among residents of Karachi *Journal of Dentistry and Oral Hygiene.* 2016; 8(2):4-11.
 28. Bukar M, Audu BM, Adesina OA, Marupa JY. Oral health practices among pregnant women in North Eastern Nigeria. *Niger J Clin Pract.* 2012; 15:302-5.
 29. Adekola G, Nwoye CE. Traditions and Customs in Community Development: The Case of Nkanu West and Nkanu East Local Government Areas of Enugu State, Nigeria. *Journal of Education and Practice.* 2016; 7(18):120-127.
 30. Rathod S, Khan F, Sarda T. Attitude and awareness towards periodontal health among health care and nonhealth care professionals. *SRM J Res Dent Sci.* 2016; 7:23-6.
 31. Braimoh OB, Udeabor SE. Self-assessed oral health behavior and knowledge of undergraduate medical students. *African Journal of Medical Sciences.* 2012; 5:55-9.
 32. Rimondini L, Zolfanelli B, Bernardi F, Bez C. Self-preventive oral behavior in an Italian university student population. *J Clin Periodontol.* 2001; 28:207-11.
 33. Behbehani JM, Shah NM. Oral health in Kuwait before the Gulf War. *Prin Med Pract.* 2002; 11:36-43.