

Assessment of chewing stick (miswak) use in a Muslim community in Cameroon

Michael A. Agbor, Clement C. Azodo¹

Department of Community Dentistry, University of the Western Cape, Cape Town, South Africa,

¹Periodontics, University of Benin, Benin City, Nigeria

Address for correspondence:

Dr. Clement C. Azodo,

Department of Periodontics,

Room 21, 2nd Floor,

Prof Ejide Dental Complex,

University of Benin Teaching Hospital,

P.M.B. 1111 Ugbowo,

Benin City, Edo State, Nigeria.

E-mail: clementazodo@yahoo.com

ABSTRACT

Objective: To determine the prevalence and reasons for chewing stick use among adult Muslim's inhabitants of Banyo in the Adamawa region of Cameroon. **Materials and Methods:** This questionnaire-based cross-sectional study aimed at determining the prevalence and reasons for chewing stick use among Muslims was conducted between November 2010 and April 2011. **Results:** Of the 220 participants in this study, 187 (85.0%) of them reported chewing stick use for teeth cleaning, and this was higher among males than females. Chewing stick use increased with ageing and varied among participants of different professions. Chewing stick users accented that the chewing stick use has a relationship with religion, and believed that chewing stick has a positive effect in the mouth than the non-users. Chewing stick users were less likely to have visited the dentist and experienced mouth odor but more likely to report oral health problems than non-users. The majority of the participants used chewing stick alone while a few used chewing stick with salt, charcoal and toothpaste. The reasons for chewing stick use were religious advice, treatment of oral diseases, imitation of others and pleasure. **Conclusion:** Chewing stick use was common among participants with religious advice being the most dominant reason for the usage. Chewing stick users were less likely to visit the dentist, experience mouth odor but are more likely to report oral health problem than the non-users. This study information will serve as a useful guide in community oral health interventional development programme among Muslims.

Key words:

Chewing stick (miswak), mouth odour, Muslims, oral self-care

INTRODUCTION

Oral self-care which entails regular and thorough removal of dental plaque and food deposits from teeth and gingiva plays a vital role in achieving optimal dental and periodontal health.^[1] It is also an essential factor in the prevention of dental caries and periodontal disease, especially if supplemented by professional oral healthcare. 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.^[2-4]

The use of chewing sticks known as arak, miswak or siwak in the Middle East, miswaki in Tanzania, mefaka in Ethiopia and datun in India and Pakistan for mouth cleaning has been documented in parts of Asia, Africa, the Middle East, and South America.^[5,6] Chewing stick prepared as a pencil-sized stick from the twigs, stems or roots of variety of plant species 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.^[1,7,8] 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.^[5,9] The source plant for chewing stick include, but not limited to the following: *Accacia arabica*, *Cassia sieberianba*, *Cassia vennea*, *Azadirachta indica*, *Glycosmic pentaphylla*, *Olea europaea*, *Capparis decidua*, *Salvadora persica*, *Carpolobia lutea*, *Carapa procera*, *Citrus aurantifolia*, *Massularia acuminata* and *Distemonanthus benthamianus*.^[10,11] In Cameroon other plants like *Psidium guajava*, *Napoleonaea imperialis* are also used.

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Chewing stick is chewed on one end to frayed brush like end, before being used for teeth cleaning in a manner similar to the use of a toothbrush.^[8,12] Chewing sticks, when properly used, can be efficient in removing dental plaque due to the combined effect of mechanical cleaning, antimicrobial activity and enhanced salivation. The resultant activity against cariogenic and periodontopathic bacteria, the impediment of formation and activity of dental plaque with the regular use of the chewing sticks reduces the incidence of gingivitis and dental caries, thereby promoting dental health.^[5] 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, where there is a high concentration of Muslims. The objective of this study was to determine the prevalence and reasons for chewing stick use among adult Muslims inhabitants of Banyo in the Adamawa Region of Cameroon.

MATERIALS AND METHODS

After obtaining ethical approval and permission from the Ministry of Higher Education and Scientific Research and the Lamido of Banyo respectively, this study was conducted among selected inhabitants of Banyo in the Adamawa Region of the Northern part of Cameroon which is considered the least developed of the ten regions of the country. Banyo, is a town with a population of 41,000 people, whose inhabitants are predominantly Fulani's of Islamic religion and mainly agro-pastoralists and mini-traders. Participants for the study were recruited using multistage sampling method, which was a combination systematic and cluster sampling methods. Household was selected using systematic sampling methods, while all the adult participants in the selected household constituted a selected cluster.

The data for this study was collected through self-administered questionnaires between November 2010 and April 2011. The questionnaires elicited information on demography, chewing stick use, opinion about chewing stick in relation to the effect in the mouth use, self-reported oral health problem, dental visit, use of chewing stick in tooth brushing, reasons for using chewing stick, the use of tooth brushes and chewing stick. Dental therapists who understand the common dialects spoken in this area assisted in asking the questions and filling the questionnaires for illiterate participants. Data analysis was done using Epi-Info statistical software version 3.5.2.

RESULTS

Two hundred and twenty (220) Muslim adults with a mean age of 28-years participated in the study. One hundred and seventy-seven (80.5%) participants were males while

43 (19.5%) were females. Unemployed participants made up 121 (55.0%) of the participants [Table 1].

A total 187 (85.0%) of the participants reported chewing stick use for teeth cleaning, and this was higher among males than females. Chewing stick use increased with ageing and varied among participants engaged in different profession. Chewing stick users accented to the fact that chewing stick use has a relationship with religion, and believed that chewing a stick has a positive effect in the mouth than the non-users. Chewing stick users believed that chewing stick cleans their teeth well than the non-users. However, the chewing stick users that also use toothbrush agreed that toothbrush cannot replace chewing stick than non-users. Chewing stick users were less likely to have visited the dentist and experienced mouth odor but more likely to report oral health problems than non-users [Table 2]. The main reason for chewing stick use was religious advice. Others reasons include treatment of oral diseases, imitation of others and pleasure. Other users did not give any specific reason [Table 3]. The majority of the participants used chewing alone while a few used salt, charcoal and toothpaste in descending order in conjunction with the chewing stick [Figure 1].

DISCUSSION

Of the 220 participants in this study, 187 (85.0%) of them reported use of chewing stick for their teeth cleaning and use was more among males than females. This indicates that chewing stick use for teeth cleaning is very common in rural communities in Cameroon, especially amongst the Muslims. The accessibility of chewing stick due to the ability to get and model twigs, roots or tree branches from gardens into teeth cleaning form without necessarily spending money may be an explanation for the high prevalence of chewing stick use. Given the

Table 1: Demographic characteristics of the participants

Variable	Chewing stick		Total
	Users	Non-users	
Age (years)			
21-30	117 (81.8)	26 (18.2)	143 (65.0)
31-40	42 (89.4)	5 (10.6)	47 (21.4)
41-50	18 (90.0)	2 (10.0)	20 (9.1)
51-60	10 (100.0)	0 (0.0)	10 (4.5)
Gender			
Male	156 (88.1)	21 (11.9)	177 (80.5)
Female	31 (72.1)	12 (27.9)	43 (19.5)
Profession			
Cattle rearer	18 (85.7)	3 (14.3)	21 (9.5)
Civil servant	62 (93.9)	4 (6.1)	66 (30.0)
Farmer	11 (91.7)	1 (8.3)	12 (5.5)
Unemployed	96 (79.3)	25 (20.7)	121 (55.0)
Total	187 (85.0)	33 (15.0)	220 (100.0)
n(%)			

Table 2: Self-reported oral health problems and opinions about chewing stick among the participants

Variable	Chewing stick		Total
	Users	Non-users	
Does usage of chewing stick have relationship with religion?			
Yes	144 (77.0)	23 (69.7)	167 (75.9)
No	43 (23.0)	10 (30.3)	53 (24.1)
Do you think chewing stick cleans teeth well?			
Yes	130 (69.5)	4 (12.1)	134 (60.9)
No	57 (30.5)	29 (87.9)	86 (39.1)
Does the stick have an effect in the oral cavity?			
Yes	155 (82.9)	17 (51.5)	172 (78.2)
No	32 (17.1)	16 (48.5)	48 (21.8)
Is the effect positive in the mouth?			
Yes	162 (86.6)	23 (69.7)	185 (84.1)
No	25 (13.4)	10 (30.3)	35 (15.9)
Have you ever used toothbrush to clean your teeth?			
Yes	185 (98.9)	32 (97.0)	217 (98.6)
No	2 (1.1)	1 (3.0)	3 (1.4)
Can toothbrush replace chewing stick?			
Yes	75 (40.1)	21 (63.6)	96 (43.6)
No	112 (59.9)	12 (36.4)	124 (56.4)
Oral health problems			
Yes	81 (43.3)	6 (22.2)	87 (39.5)
No	106 (56.7)	27 (77.8)	133 (60.5)
Ever had unpleasant mouth odour			
Yes	92 (49.2)	23 (69.7)	115 (52.3)
No	95 (50.2)	10 (30.3)	105 (47.7)
Dental visit			
Yes	51 (27.3)	12 (36.4)	63 (28.6)
No	136 (72.7)	21 (63.6)	157 (71.4)
n (%)			

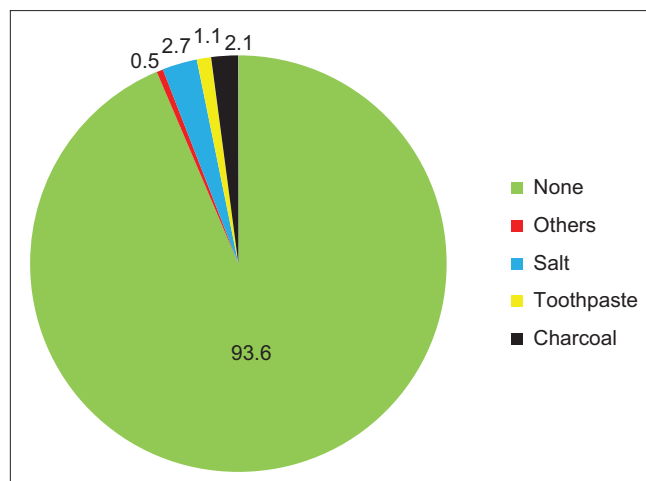
n(%)

Table 3: Reasons for chewing stick use among the participants

Reason	Gender		Total n (%)
	Female n (%)	Male n (%)	
Religious advise	16 (51.6)	59 (37.8)	75 (40.1)
Treatment of oral disease	5 (16.1)	42 (26.9)	47 (25.1)
Imitating others	8 (25.8)	36 (23.1)	44 (23.5)
For pleasure	2 (6.5)	17 (10.9)	19 (10.2)
Unspecified reasons	0 (0.0)	2 (1.3)	2 (1.1)

n(%)

availability, low cost and oral hygiene efficacy of chewing stick, it is recommended for use in motivated persons in developing countries.^[13] The chewing stick use increased with ageing and varied among participants engaged in different profession. This reflects that Muslims from all works of life use chewing stick irrespective of their profession as 62 (93.9%) of the civil servants, 11 (91.7%) farmers, 96 (79.3%) unemployed, 18 (85.7%) cattle rearers reported chewing stick use. This study finding also concurred with findings of studies among Arabs and

**Figure 1: Agent used with chewing stick among the participants**

Indians where regular miswak use was more prevalent among men and at older age.^[14-16]

In this study, chewing stick users believed that chewing stick has a positive effect in the mouth. This may be linked with the fact that chewing stick users believed that chewing stick cleans teeth well more than the non-users. Chewing stick users use toothbrush more than non-users but believe that toothbrush cannot replace toothbrush. This translates to the fact that reasons for chewing stick use goes beyond oral hygiene measures and may be linked to the reason why more chewing stick users accented to usage of chewing stick having relationship with the religion than non-user. Al Sadhan and Almas (1999)^[6] reported that chewing sticks are used for oral hygiene, religious and social purposes.

The reported reasons for chewing stick use were religious advice, treatment of oral diseases, imitation of others and pleasure. Although, chewing stick use existed before advent of Islamic religion, Islam added a religious perspective to its usage.^[17] Chewing stick use is among ten things cited as part of one's natural disposition in the prophetic narration. It is recommended that Muslims clean their teeth every day using chewing stick, especially upon waking up, when performing ablution, before prayer, when reciting the Quran, before sleeping, when entering the house, and when the mouth has a foul odor.^[18] The use of chewing stick among herbal medication as a modality of treatment of oral diseases has been similarly reported as one of self-medication for oral health problems in Cameroon.^[19]

The majority of the participants used chewing alone while a few used salt, charcoal and toothpaste in descending order in conjunction with the chewing stick. The use of salt and charcoal in conjunction with chewing stick reflect the rural nature of the study area. The use of these cleaning has also been reported by Rao and

Bharambe (1993)^[20] in India. However, chewing stick use with toothpaste has been reported to exert no additional effect.^[21]

Chewing stick users were more likely to report oral health problem. Although the use of chewing stick can be satisfying, if enough time is devoted to its application during the period it is kept in the mouth, but the common fault is the habit of keeping it in the mouth while doing other things with the complete neglect of the chewing stick.^[6] It is documented that miswak is more effective than tooth brushing for reducing plaque and gingivitis, when preceded by professional instruction on its correct application.^[22] The fact that a substantial proportion of the participants used chewing stick for the treatment of oral disease explained why chewing stick users were less likely to have visited the dentist than non-users.

Chewing stick users were less likely to have experienced mouth odor than non-users. The fact that antimicrobial substances that naturally protect plants used for chewing against various invading microorganisms or other parasites may leach out into the oral cavity offering antibacterial activity against plaque-forming bacteria may be the explanation for lower prevalence of halitosis among chewing stick users.^[18]

CONCLUSION

Chewing stick use was common among participants with religious advice being the dominant reason for usage. Chewing stick users were less likely to have visited the dentist and experienced mouth odor but more likely to report the oral health problem than the non-users. Community dentistry interventional development among Muslims should give reasonable consideration to this study information.

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