

Smokeless tobacco use, tooth loss and oral health issues among adults in Cameroon

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Abstract

Background: Tobacco use in smokeless and smoked forms is preventable cause of mortality and morbidity worldwide.

Objective: To determine the prevalence of smokeless tobacco use and the association with tooth loss and oral health problems among adults in Cameroon.

Methods: Adults dwelling in the Fokoue area of West Region of Cameroon were studied.

Results: Out of the 226 participants studied, 119 of them reported smokeless tobacco use giving a prevalence of 52.7% with majority-74 (62.2%) chewing it. Three-quarters (77.3%) of the respondents use it more than than thrice-daily and more than half of them respondents have been using it for 6-10 years. The smokeless tobacco users were more of those aged 50-59 years, females, farmers, those with less than post-primary education, non alcohol consumers and those that have not received previous dental care than smokeless tobacco users. However, it was only age ($p=0.006$) and educational attainment ($p=0.009$) that were significantly associated with smokeless tobacco use. Smokeless tobacco user were more likely to have poor oral hygiene, dental caries, gingival recession, leukoplakia, erythroplakia, abnormal growth, tooth wear lesion, experienced tooth loss and edentulousness than non smokeless tobacco users. However, the significantly associated lesions with smokeless tobacco use were tooth loss ($p=0.008$), edentulousness ($p=0.016$), gingival recession ($p=0.006$) and leukoplakia ($p=0.001$).

Conclusion: The prevalence of smokeless tobacco use was high among adults in Cameroon and it was associated with more likelihood of oral health problems. There is therefore a need for health education on the health consequences of the smokeless tobacco use with demonstrations by the dentist.

Key words: Smokeless tobacco, tooth loss, mucosal problems, adults

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Introduction

Tobacco use in smokeless and smoked forms is preventable cause of mortality and morbidity worldwide.¹ It constitutes about 90% of all drug-caused deaths² and stand out as one of the most significant causes of health inequalities.³ Addiction to tobacco is a global epidemic, increasingly ravaging countries and regions with lowered capacity to manage the attendant disability, disease, lost productivity and death.⁴

Tobacco use exacerbates poverty and hindering economic development by leaving families

with less money to spend on such basic items as food, education and health care. More than 10% of total household expenditure in the poorest households in some low- and middle-income countries is spent on tobacco.⁵ The decreased productivity among tobacco users due to increased sickness, associated premature death deprives families of their breadwinners and the nations of a healthy workforce and equally is devastating high public health cost of treating tobacco-caused diseases emphasis the economic implication of this epidemic.⁵ Although, tobacco originated from America, the long history tobacco use in many parts of Africa has resulted in the use being infused and ingrained into their culture.⁶ This is confirmed by request for smoked and smokeless tobacco among other items by young adults and elderly respectively as part of bethoral process in many parts of Africa. In South Africa, smokeless tobacco in form of snuff was reported to have important functions and to be socially acceptable among adults mainly for ceremonial and medicinal use and to a lesser degree for relaxation and pleasure.⁷

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Smokeless tobacco use has been used since the ancient times but the ban on cigarette smoking in public buildings and avoidance of secondhand smoke effect has resulted in increasing use in modern times. As far back as 1986, the advisory committee to the Surgeon General concluded that the use of smokeless tobacco is not a safe substitute for smoking cigarettes. This is based on the fact that smokeless tobacco consumption causes a number of cancer and non cancerous health problems.⁸ In addition, tobacco absorption through the lining of the mouth results in nicotine addiction and dependence.

Several studies on tobacco use were mainly on cigarette smoking with only a few studies on smokeless tobacco use and these studies are even fewer in developing countries.^{7,9} It was detected that tobacco use was commoner in rural area especially in developing countries from literature review.^{10,11} The smokeless tobacco use by snuff and chewing implies that the local effect in the oral cavity may be dominant. The lacking of information about tobacco use in Cameroon in English literature necessitated this study in Fokoué in the West Province of Cameroon.

The objective of the study was to determine the prevalence and the association of smokeless tobacco use with oral health problems among adults in Cameroon.

Methods

The study was conducted in Fokoué Sub division found in the Menoua Division in the West Province of Cameroon. It is situated at 15 km from Dschang the divisional headquarters of Menoua division and 60 km from Bafoussam the West regional capital. It is located between latitudes 5° 20' and 5° 22' North and longitudes 5° 10' and 5° 15' East. The average altitude, temperature and rainfall are 1400 meters, 20.26° C and 1853.8 mm respectively. The inhabitants of this bamboutos highland which about 2350 m above sea level and the land mass of about 273 Km² are fishermen and farmers.

After obtaining ethical approval from the Ministry of Higher Education and Scientific Research, this cross-sectional survey among middle aged adults and elderly was conducted between December, 2010 and April, 2011. The inclusion criteria were residence in Fokoué for more than 5 years and expressed willing to participate. Two hundred and twenty-six participants were randomly selected from the population in meetings and market places. The chief

of the village was informed about the research and helped in facilitating meeting with residents of the village which resulted in unprecedented cooperation among the selected participants.

Informed consent was obtained from participants after having been properly educated about the objective of the study and the confidentiality of data. Questionnaires were used for capturing demographic information (age, sex, educational attainment, occupation and alcohol consumption), prevalence, daily frequency and duration of smokeless tobacco use. Intra-oral examination was conducted to assess for tooth loss and extent, tooth wear lesions, gingival recession, leukoplakia, erythroplakia and abnormal growths. This examination was done using spatula for tissue retraction, mouth mirror for indirect vision, gauze for drying the oral mucosa, caries explorer for caries detection and plaque assessment under adequate illumination using natural light. The oral examination was conducted by 2 dental therapists who were trained and calibrated by the dental surgeon, the principal investigator. The training and calibration were done to facilitate the accurate detection of lesion and achieve concordance among the examiners respectively. The Kappa statistics value for inter-examiner reliability in this study was 0.95.

Tooth loss was reported as present when there exist one or more teeth and absent if teeth are complete in number. In assessment of edentulousness, it was recorded positive if all teeth were missing and negative if the teeth were complete or there was partial edentulism. Assessment of tooth wear constituted evaluating the teeth for any form of wear facets from attrition, abrasion and erosion. The presence of any of these identified tooth wear lesions irrespective of severity was recorded as yes and absence recorded, as no. The presence of gingival recession was reported as apical migration of gingiva below cemento-enamel junction with attendant tooth root exposure.

The presence of white and red lesions which cannot be wiped off with gauze were reported as leukoplakia and erythroplakia respectively. The presence of tumour was recorded as abnormal growths because the histological diagnosis was not sought. The data was subjected to descriptive statistics in form of frequencies, cross-tabulation and percentages using Epi-info statistic software version 3.5.2. Test of significance was done using Chi square statistics and $P < 0.05$ was considered as being statistically significant.

Results

Out of the 226 participants studied, 119 of them reported smokeless tobacco use giving a prevalence of 52.7% with majority-74 (62.2%) chewing it. More than half-69 (58.0%) of them have used smokeless tobacco for 6-10years, one tenth-13 (10.9%) for 1-5 years and 37 (31.1%) of the participants for more than 10 years. Daily usage frequency among smokeless tobacco using participants are as follows: Once-8 (6.7%), twice-16 (13.4%), thrice-3 (2.5%) and greater than thrice-92 (77.3%). The smokeless users tobacco user were more of those aged 50-59 years, females, farmers, those with less than post primary education, non alcohol consumers and those that have not received previous dental care than smokeless

tobacco users. However, it was only age ($p=0.006$) and educational attainment ($p=0.009$) that were significantly associated with smokeless tobacco use (table 1).

The oral health problems among the participants are gingival recession (73.4%), tooth wear lesion (59.3%), tooth loss (31.0%), dental caries (23.5%) leukoplakia (8.4%), abnormal soft tissue growth (6.2%), edentulousness (4.4%) and erythroplakia (0.4%). Smokeless tobacco users were more likely to have poor oral hygiene, dental caries, gingival recession, leukoplakia, erythroplakia, abnormal growth, tooth wear lesion, experienced tooth loss, and edentulousness than non smokeless tobacco users. However, the significantly associated lesions with smokeless tobacco use were tooth loss ($p=0.008$), edentulousness ($p=0.016$), gingival recession ($p=0.006$) and leukoplakia ($p=0.001$) (table 2).

Table 1: Demographic characteristics of the participants

Characteristics	Smokeless tobacco			P-value
	Users n (%)	Non users n (%)	Total n (%)	
Age (years)				0.006
40-49	32 (26.9)	48 (44.9)	80 (35.4)	
50-59	59 (49.6)	33 (30.8)	92 (40.7)	
60-69	28 (23.5)	26 (24.3)	54 (23.9)	
Gender				0.327
Male	35 (29.4)	38 (35.5)	73 (32.3)	
Female	84 (70.6)	69 (64.5)	153 (67.7)	
Educational attainment				0.009
Never in school	41 (34.5)	25 (23.4)	66 (29.2)	
Primary	71 (59.7)	63 (58.9)	134 (59.3)	
Post primary	7 (5.8)	19 (17.7)	26 (11.5)	
Profession				0.303
Farming	87 (73.1)	67 (62.6)	154 (68.1)	
Business	20 (16.8)	21 (19.6)	41 (18.1)	
Teaching	7 (5.9)	12 (11.2)	19 (8.4)	
Others	5 (4.2)	7 (6.6)	12 (5.4)	
Alcohol use				0.569
Yes	38 (31.9)	38 (35.5)	76 (33.6)	
No	81 (68.1)	69 (64.5)	150 (66.4)	
Previous dental visit				0.315
Yes	38 (31.9)	41 (38.3)	79 (35.0)	
No	81 (68.1)	66 (61.7)	147 (65.0)	

Table 2: Tooth loss and oral health issues among the participants

Characteristics	Smokeless tobacco		Total n (%)	P-value
	Users n (%)	Non users n (%)		
Tooth loss				0.008
Yes	46 (38.7)	24 (22.4)	70 (31.0)	
No	73 (61.3)	83 (77.6)	156 (69.0)	
Edentulous				0.016
Yes	9 (7.6)	1 (0.9)	10 (4.4)	
No	110 (92.4)	106 (99.4)	216 (95.6)	
Oral hygiene status				0.494
Good	12 (10.1)	15 (14.0)	27 (11.9)	
Fair	80 (67.2)	73 (68.2)	153 (67.7)	
Poor	27 (22.7)	19 (17.8)	46 (20.4)	
Dental caries				0.109
Present	33 (27.7)	20 (18.7)	53 (23.5)	
Absent	86 (72.3)	87 (81.3)	173 (76.5)	
Tooth wear				0.228
Present	75 (63.0)	59 (55.1)	134 (59.3)	
Absent	44 (37.0)	48 (44.9)	92 (40.7)	
Gingival recession				0.006
Present	73 (61.3)	46 (43.0)	119 (52.7)	
Absent	46 (38.7)	61 (57.0)	107 (47.3)	
Leukoplakia				0.001
Present	17 (14.3)	2 (1.9)	19 (8.4)	
Absent	102 (85.7)	105 (98.1)	207 (91.6)	
Erythroplakia				1.000
Present	1 (0.8)	0 (0.0)	1 (0.4)	
Absent	118 (99.2)	107 (100.0)	225 (99.6)	
Abnormal growth				0.146
Present	10 (8.4)	4 (3.7)	14 (6.2)	
Absent	109(91.6)	103 (96.3)	212 (93.8)	

Discussion

In this study, the prevalence of smokeless tobacco use was 52.7% with majority chewing it (62.2%). This is comparable to findings among adults attending family practice clinics in Karachi, Pakistan (52.4%)¹², hospital staff in Pakistan (48.6%)¹³ and sports athletes in United States of America where about half of them in the studies indulge in smokeless tobacco use.¹⁴⁻¹⁶ However, this is strikingly higher than reported values among adults in African communities.⁹ The rural nature of this community may be the reason for the high prevalence of smokeless tobacco use and showed why more than half of the respondents have been using smokeless tobacco for 6-10 years and greater than thrice daily frequency was reported by more than three-quarters (77.3%) of the respondents. Reports have shown higher smokeless tobacco use in rural areas¹⁷⁻¹⁹ and mountainous areas.¹⁹

Tobacco use contributes to higher malnutrition and illiteracy rates, since money that could have been used for food and education is spent on tobacco.⁵ In this study, the smokeless tobacco use was more among those aged 50-59 years. This was statistically significant reflecting smokeless tobacco use as commoner practice among older individuals. Smokeless tobacco was also found to be more common among females than males in this study. This is similar to reports in Bangladesh and Malaysia where use of smokeless tobacco products was found to be more common among females than males.^{10,20} The social and cultural acceptability of this practice among females in developing countries superimposed on their cheap nature may explain the higher smokeless tobacco use among females in this study. The reported more frequent smokeless tobacco use among black African women in comparison with white African women may be

contributory explanation.²¹ Tobacco use has been reported to be higher among individual with low socioeconomic status and educational attainment.²²⁻²⁴ This tallied with the finding of this study where farmers and those with lower educational attainment reported higher prevalence of smokeless tobacco use than their counterparts. This is a pointer to the inextricably link between tobacco use and poverty because of established role of tobacco use in exacerbating poverty and hindering economic development.⁵

In this study, the oral health problems among the participants are gingival recession (73.4%), tooth wear lesion (59.3%), tooth loss (31.0%), dental caries (23.5%) leukoplakia (8.4%), abnormal soft tissue growth (6.2%), edentulousness (4.4%) and erythroplakia (0.4%). The pattern of oral health problems in middle aged adults and elderly in this community is consistent with findings from other African countries where deficient utilization of dental services is common.²⁵⁻²⁷ The prevalence of these conditions also highlights oral health problems as a serious public health burden in rural areas of developing countries that need urgent and comprehensive attention. Smokeless tobacco user were more likely to have dental caries, gingival recession, leukoplakia, erythroplakia, abnormal growth, tooth loss, edentulousness, tooth wear lesion, and poor oral hygiene than non smokeless tobacco users. Toothache relief cited as the most common reason for initiation of tobacco use may be a possible explanation for the prevalence of oral lesions among smokeless tobacco users.²³ The poorer hygiene found among the smokeless tobacco users which are linked with dental caries and periodontal disease explains their higher experience of tooth loss and edentulousness in this study. The mechanism through which tobacco cause gingival recession and tooth wear lesion may be through local frictional and vascular effects. The high sugar content, increased gingival recession and enhanced collagenase activity were postulated by Tomar and Winn, (1999)²⁸ as reason for increased risk for development of root-surface caries among chewing smokeless tobacco users.

Studies have implicated the smokeless tobacco use as a risk factor for the development of oral mucosal problems and tumours.²⁹⁻³² The higher prevalence of leukoplakia, erythroplakia and abnormal soft tissue growth among smokeless tobacco user than the non tobacco users in this study

is an added epidemiological evidence of oral effects of smokeless tobacco use.

Conclusion

Smokeless tobacco use, which was associated with age, educational attainment, tooth loss, gingival recession and leukoplakia experience, was high among adults in Fokoué, Cameroon.

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