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## Research Article

# Smokeless tobacco: Knowledge, attitudes and use among adults in Lagos, South-West, Nigeria

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## Abstract

**Background:** Smokeless tobacco (SLT) use leads to nicotine addiction and is associated with several health problems. However, it may be perceived as a safe alternative to cigarettes resulting in a potential for increased use among smokers and non-smokers alike. We assessed the pattern of smokeless tobacco use, as well as, the knowledge and attitudes towards SLT among adult residents in Lagos, South West Nigeria.

**Methods:** This was a cross-sectional descriptive study, carried out among 437 respondents selected by a multi-stage sampling method. A modified version of the Global Adult Tobacco Survey Questionnaire was administered to participants by trained research assistants. Data was analyzed using Epi-info statistical software version 3.5.1. Univariate and bivariate analyses were carried out at 5% level of significance ( $p < .05$ ).

**Results:** The results showed that 47 (10.8%) of the respondents had ever used any form of tobacco. Of these, 29 (6.6% of the total sample and 61.7% of tobacco users) had ever used SLT. Majority of those who had ever used SLT progressed to current use (75.8%). Up to 81.8% of current SLT users were daily users. SLT use was more common among males (77.3% of current users). Snuff was the most common form of SLT used (81.8% of current SLT users), followed by chewed tobacco (18.2%). Gender and marital status were statistically significant with the current use of SLT ( $p < .05$ ). However, no significant association was found between knowledge, attitude and SLT use in this study. Many of the respondents knew that SLT is harmful to health (65.4%); causing health issues like discolouration of the teeth (62.2%). However, a much higher proportion of respondents did not know that SLT use was associated with gum disease (50.3%), cancers of the lip (58.8%), tongue (57.4) and gums (58.6%). Overall, only 29.5% had a good knowledge of the health risks associated with SLT use. More than half (66.9%) felt that SLT use was socially acceptable, though 54.7% felt SLT use would be a waste of their money. Overall, 95.1% of respondents had good attitude. SLT use was more among men and those who were divorced/separated or widowed ( $p < .05$ ). However, respondents knowledge or attitudes was not associated with SLT use.

**Conclusion:** Though SLT use appears relatively low in this environment, the majority of the users used it daily. Progression from initiation to current use was also high. Though the respondents were aware of the general risks associated with SLT use, a significant proportion was unaware of the specific health risks. SLT use was however unrelated to the knowledge of its health risks. Efforts to reduce SLT initiation and progression to current and daily use should be prioritized. A focus on males with marital issues should be considered. Future studies may focus on understanding the underlying reasons for initiation and progression of the SLT use in this environment.

## Introduction

Smokeless tobacco increases the risk for death from heart disease and stroke and also causes cancers of the mouth, oesophagus, pancreas and other health hazards [1]. The diseases associated with tobacco use pose an imminent threat to the

health of low and middle-income countries which often bear a disproportionately high tobacco disease burden. Low smoking rates as well as enticing adverts by tobacco multinational companies may lead to an increase in the tobacco-related disease burden, attributable to SLT use in Africa [2]. Available data on the toxicity of SLT products in Africa is limited,



however, product testing reveals considerable differences in the nicotine contents of the variety of SLT product available in the region [3,4].

Smokeless tobacco, particularly nasal snuff, has been used for a long time in Nigeria before the advent of colonialism, usually in unpackaged and unbranded formats. The use is generally prevalent among elderly people residing in rural areas. Smokeless tobacco use has adverse health consequences which tend to emerge over time based on frequency and amount of per time [5,6].

Anti-tobacco policies in several parts of Africa have focused on the regulation of cigarette producing companies with clear gaps in the regulation, monitoring, production, sale and use of smokeless tobacco. Thus, there are often little or no regulatory frameworks to address the potential rise of smokeless tobacco use. Such frameworks require information on the pattern of use, as well as knowledge and attitudes towards SLT use. However, the availability of such data is often sparse. This study aimed to determine the prevalence of SLT use, the knowledge of and attitudes towards SLT among a sample of adult Nigerians residing in Lagos, the commercial capital of Nigeria.

## Methods

This was a cross-sectional descriptive study conducted in Lagos State, the commercial capital of Nigeria. Lagos is the smallest state in Nigeria with a landmass of 3.557 km<sup>2</sup> and an estimated population of more than 22 million inhabitants. Eligible respondents for this study were people aged 18 years old and above, residing in the state for at least six months. Visitors and people who were acutely ill as at the time of data collection were excluded from the study. The minimum sample size was determined using the formulae for descriptive study  $n = z^2 \cdot xp(1-p) / e^2$ . A multistage sampling technique was used to select 450 eligible respondents in two randomly selected local government areas (LGA) in the state, one rural and one urban.

In the first stage, one local government area each was selected by simple random sampling (SRS) through a ballot from the list of the 16 urban and 4 rural Local Government areas in Lagos State. The second stage involved selections of four wards by simple random sampling from the list of wards in each of the LGA selected which was obtained from the LGA secretariat. In the third stage, ten (10) streets were selected from each of the selected wards by simple random sampling. Stage four comprised of the selection of five (5) residential houses from each street also by simple random sampling. In houses with more than one household, a list of all the households in each house was enumerated and one household was selected by simple random sampling. In cases where only one household was found in a selected house, that household was automatically selected. Finally, there was the selection of eligible respondents, in each of selected household also by simple random sampling via a ballot.

Data was collected by trained interviewers. After a relevant review of the literature, the survey tool was adapted from a combination of two similar studies on SLT in Nigeria [7,8],

as well as the Global Adult Tobacco Survey (GATS) tool. The Global Adult Tobacco Survey (GATS) is the global standard for systematically monitoring adult tobacco use [9]. It has seven sections covering Background characteristics; Tobacco smoking; Smokeless tobacco; Cessation; Second-hand smoke; Economics; Media and Knowledge attitudes and perceptions of tobacco smoking. The GATS assess smokeless tobacco use separately for current and ex-users. It has 18 questions assessing the patterns of smokeless tobacco use, however, most of the questions apply only to current users. Respondents were asked "Do you currently smoke tobacco on a daily basis, less than daily, or not at all" and "In the past, have you used tobacco on a daily basis, less than daily, or not at all" Options were "daily" "Less than daily" and "Not at all" In the first instance, respondents who answered "daily" or "less than daily" were considered as current users. In the second instance, respondents who "daily" or "less than daily" were considered as ex-users, while those who answered "Not at all" were considered never users. In the GATS, the section on the knowledge attitudes and perceptions (KAP) of tobacco use were limited to smoked forms of tobacco. So, in developing our questions to assess the KAP, we adapted questions from two relevant KAP studies on smokeless tobacco in Nigeria [7,8].

We assessed respondents' knowledge using 9 questions. Every correct answer was awarded a score of 1 point while other responses were scored as 0 (zero). Participants attitudes towards SLT were assessed with 12 statements using a five-point Likert scale, where 5 was the most positive score. The total score for both sections were converted to percentages. Good knowledge or attitudes refers to a score of 50% and above while scores below 50% were considered as poor. The mean and SD of knowledge and attitude were also calculated.

Data was analyzed using Epi-info statistical software version 3.5.1. Continuous variables were presented as means and standard deviations while categorical variables were presented as percentages. Ever-use of SLT was treated as the dependent variable in the bivariate analyses, conducted using chi-square and Fishers' exact tests as appropriate. Level of significance was set at 5% ( $p < .05$ ). Ethical approval was obtained from the Research and Ethics committee of the Lagos University Teaching Hospital. Written informed consent was obtained from each respondent. Names were not required and the respondents were assured of confidentiality. Participants were given the choice to choose their participation in the study. They were made to understand that they could opt-out at any time they so desired.

## Results

A total of 437 out of 450 respondents concluded the interview giving a response rate of 97.1%. Most of the respondents (54.9%) were between 21–40 years of age. About half (50.1%) were female, 56.3% were currently married and most (83.5%) had a high school education or more. Up to 77.3% of them earn less than N50,000 (\$140) monthly and 51% resided in rural areas Table 1.



Most (65.4%) of the respondents knew that SLT is harmful to health. The knowledge of the general health risks associated with SLT use was higher than its specific harms. Slightly more than half of the respondents knew that SLT could cause discolouration of teeth (62.2%) and gum disease (50.3%). However, a higher proportion were unaware that SLT could cause cancer of the lips (58.8%), tongue (57.4), gum (58.6%). Similarly many were unable to associate SLT use with bronchitis (61.1%) and low birth weight (62.0%). Mean ± SD knowledge score was 3.46 ± 3.18. Overall, the attitude of respondents was fair, although 46.6% agreed and 12.6% of them strongly agreed that SLT use is dangerous to health. A lot of them were indifferent to the specific health effects of SLT use i.e. cancers (45.6%), heart disease (45.3%). Mean ± SD attitude score was 39.85 ± 5.75. Tables 2,3.

Only 47(10.8%) of the respondents had ever used any form of tobacco. Of these, 29(6.6%) of the total sample and (61.7% of tobacco users) had ever used SLT. Majority (75.8%) of those who had ever used SLT progressed to become current users. Up to 81.8% of current SLT users were daily users. SLT use was more common among males (77.3% of current users). Snuff was the most common form of SLT used (81.8% of current SLT users), followed by chewed tobacco (18.2%) Gender and marital status were statistically significant with the current use of SLT (p<.05) Tables 4,5. However, no significant association was found between knowledge, attitude and SLT use in this study Table 6.

**Table 1:** Socio-demographic characteristics of respondents.

Variables	Frequency (%) N=437
Age group (in years)	
Less than 20	63 (14.4)
21-40	240 (54.9)
41-60	118(27.0)
>60	16(3.7)
Mean age (SD)	35.07±13.18
Gender	
Female	219(50.1)
Male	218(49.9)
Marital Status	
Never Married	158(36.2)
Currently Married	246(56.3)
Divorced/Separated/Widowed	33(7.6)
Education	
Less than high school	72(16.5)
At least high school	365(83.5)
Average monthly income	
<N50,000	338(77.3)
>N50,000	99(22.7)
Area of residence	
Urban	218(49.9)
Rural	219(51.0)

**Table 2:** Knowledge of respondents about health hazards of SLT use.

Knowledge Items n=437	Frequency (%)		
	Yes	No	I don't know
Smokeless tobacco is harmful to health	286(65.4)	38(8.7)	113(25.9)
SLT is less harmful than smoking	165 (37.8)	39(8.9)	232(53.2)
SLT use can damage to gum	220(50.3)	54(12.4)	163(37.3)
SLT use can discolour the teeth	272(62.2)	37(8.5)	128(29.3)
SLT use can cause cancer of the lips	115(26.3)	65(14.9)	257(58.8)
SLT use can cause cancer of the tongue	123(28.1)	63(14.4)	251(57.4)
SLT use can cause chronic bronchitis	104(23.8)	66(15.1)	267(61.1)
SLT use can cause cancer of the gum	121(27.7)	60(13.7)	256(58.6)
SLT use can cause low birth weight	108(24.7)	58(13.3)	271(62.0)

Mean ± SD knowledge score= 3.46 ±3.14.

**Table 3:** Respondents attitudes towards SLT.

Attitude item (N=437)	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
The use of SLT shows high social class	64 (14.6)	185 (42.3)	144 (33.0)	29 (6.5)	15 (3.4)
The use of SLT takes away tension	56 (12.8)	136 (31.1)	176 (40.3)	56 (12.8)	13 (3.0)
The use of SLT makes you look dirty	16 (3.7)	88 (20.1)	144 (33.0)	161 (36.8)	28 (6.4)
The use of SLT makes you/your breath smell bad	159 (3.4)	46 (10.6)	132 (30.3)	212 (48.7)	30 (6.9)
The use of SLT increases your mental alertness.	35 (8.0)	89 (20.4)	208 (47.6)	86 (19.7)	35 (8.0)
The use of SLT boosts energy	61 (14.0)	172 (39.4)	204 (46.7)	0 (0.0)	0 (0.0)
The use of SLT helps abate sleeping difficulty	39 (8.9)	164 (37.5)	234 (53.7)	0 (0.0)	0 (0.0)
The use of SLT is a waste of money	18 (4.1)	63 (14.4)	117 (26.8)	169 (38.7)	70 (16.0)
The use of SLT is dangerous to health	21 (4.8)	38 (8.7)	119 (27.3)	203 (46.6)	55 (12.6)
SLT users are more likely to have cancer	14 (3.2)	37 (8.5)	199 (45.6)	158 (36.2)	28 (6.4)
SLT users are more likely to die from heart disease	11 (2.5)	36 (8.2)	198 (45.3)	162 (37.1)	30 (6.9)
SLT use is socially accepted.	0 (0.0)	0 (0.0)	145 (33.2)	238 (54.5)	54 (12.4)

Mean ± SD attitude score = 39.85 ± 5.75

## Discussion

This study documents the pattern and use of SLT among adults in a cosmopolitan city in West Africa. In our study 6.6% of the total sample and 61.7% of tobacco users had ever used SLT. Our figures are higher than those reported in the Global Adult Tobacco Survey (GATS), where the prevalence of SLT use among Nigerian adults was 1.9% which is about 1.6 million Nigerians [9]. The large population of Nigeria may make these apparently low figures seem worrisome. A similar study in North-East Nigeria reported slightly higher figures (7.49%) for SLT use [7]. Higher figures for SLT use have been reported in the North-Eastern parts of Nigeria compared to the South West, where Lagos is located [9]. Our figures are much lower than those reported in South-East Asia [10,11], which has the highest figures for SLT use globally.

Majority (75.8%) of the respondents in our sample who had ever used SLT, progressed to become current users. Up to 81.8% of current SLT users were daily users. All forms of



tobacco contain nicotine a highly addictive substance and the health effects are dose-dependent [6]. Therefore, though the proportions of SLT users may be relatively low, daily use by a high proportion of current users may exacerbate the health risks associated with SLT use. Further, daily use may be an indication of addiction though this was not measured

**Table 4:** Prevalence of SLT among respondents.

Variable N=437	Frequency (%)
Ever used any form of tobacco	47(10.8)
Ever used SLT	29(6.6)
Never used any form of tobacco	390(89.2)
Currently uses SLT	22(5.0)
Daily SLT Use	18(4.1)
Less than daily	11(2.5)
Gender (n=22)	Frequency (%)
Male	17(73.3)
Female	5 (26.7)
Type of SLT use (n=22)	Frequency (%)
Snuff	18(81.8)
Chew	4(18.2)
Area of residence (n=22)	User (%)
Rural	14(63.6)
Urban	8(36.4)

**Table 5:** Association between socio-demographic variables and SLT use.

	Current SLT user (n= 22)	Non-current SLT user (n= 415)	Total N=437	Chi-square	p-value
Age group (in years)					
Less than 20	2(3.2)	61(96.8)	63(100.0)	0.704	.872
21-40	12(5.0)	228(95.0)	240(100.0)		
41-60	7(5.9)	111(94.1)	118(100.0)		
>60	1(6.3)	15(93.7)	16(100.0)		
Gender					
Female	5(2.3)	214(97.7)	219(100.0)	6.9	0.008
Male	17(7.8)	201(95.0)	218(100.0)		
Marital status					
Never married	6(3.8)	152(96.2)	158(100.0)	12.9	0.002
Currently married	10(4.1)	236(95.9)	246(100.0)		
Separated/Divorced/Widowed	6(18.2)	27(81.8)	33 (100.0)		
Education					
Less than high school	6(8.3)	66(91.7)	72(100.0)	1.96	0.160
At least high school	16(4.4)	349(95.6)	365(100.0)		
Average monthly income					
N50,000 or less	14(4.1)	324(95.9)	387(100.0)	2.48	0.110
More than N50,000	8(8.1)	91(91.9)	99(100.0)		
Place of residence					
Urban	8(3.7)	210(96.3)	218(100.0)	1.6	0.190
Rural	14(6.4)	205(93.6)	219(100.0)		

**Table 6:** Association between knowledge, attitude and SLT use.

Knowledge of the health risks associated with tobacco use	Current SLT user (n= 22)	Non-current SLT user (n= 415)	Total N=437	Chi-square	p-value
Good	5(3.9)	124(96.1)	129(100.0)	0.5	0.47
Poor	17(5.5)	291(94.5)	308(100.0)		
Attitudes towards SLT use					
Good	21(5.0)	395(95.0)	416(100.0)	0.003	0.953
Poor	1(4.8)	20(95.2)	21(100.0)		

in our study. It is worthwhile to consider designing programs to identify the reasons for daily use and encourage cessation among SLT users in this environment.

Snuff was the most common form of SLT used (81.8% of current SLT users), followed by chewed tobacco. Similar to our findings, the GATS and the 2013 NDHS have also reported snuff as the most predominant form of SLT used among Nigerians [9,12] Efforts to address SLT use in Nigeria should focus on snuff use. Research to identify the underlying social and cultural issues promoting snuff use should also be considered.

In our study, SLT use was higher among males (73.3%) similar to the findings in other parts of Nigeria, India and Pakistan [7,9,11], but in contrast to studies in other parts of Africa, i.e. South Africa [13], Burkina Faso (8.9%) [14] and Benin Republic (4.4%) [15]. It is possible that cultural and societal differences in social restrictions against female tobacco use may be an explanation for this disparity.

Smokeless tobacco use may vary with age. Up to 9.1% of current SLT users in our study sample were aged less than 20 years. This is relatively lower than the figures obtained among adolescents in Congo [16] and Ghana [17], where 18.1% and 25.6% of adolescents were SLT users respectively. One reason for this might be because of possible differences in adolescent-focused tobacco advertisements in these regions, particularly as traditional forms of tobacco, such as snuff were the predominant type of SLT used by our study participants. Our study shows that the prevalence of SLT use peaked among respondents between fourth and sixth decade of life, similar to findings in North-East Nigera [9], where SLT use was highest in the third to fifth decades of life.

More adults with less than a high school education were current users of SLT (8.3% vs 4.4%), though this finding was not statistically significant. Studies in other parts of Nigeria [7,9,18]. Benin Republic [15], Burkina Faso [14] and India [19]. have reported education as a significant predictor of SLT use. Snuff, the most predominant form of smokeless tobacco used in Nigeria is a traditional product and may find more appeal with the less educated. Also, it is possible that higher levels of education may increase the awareness of dangers associated with SLT, hence, impede its use among the highly educated.

Marital status may be associated with tobacco use. In our study, more current SLT users were divorced/separated or widowed and this finding was statistically significant. This might be because marital problems like divorce, separation





or even the loss of a spouse may cause people to use SLT products as a means of coping with marital challenges. In the 2014 Kenya demographic health survey, similar findings were noticed among men, but not among women [20].

In this study, the awareness of the general health risks associated with SLT use was high compared to the knowledge of its specific harms. Similar findings were reported among health professionals in Karnataka, India, where though the majority were aware of the general harmful effects of tobacco, as high as 26.5% of them were unaware of the specific health effects [21]. In Bengal and Pakistan, majority of the respondents also had poor knowledge of the carcinogenicity of SLT [22,23].

Overall, the attitude of respondents was fair in this study. More than half (66.9%) felt that SLT use was socially acceptable while 15.8% agreed that it was a stress reliever. Relatively better attitudes were reported among adults in Yola, North-East Nigeria where fewer respondents (21.8%) considered SLT use to be socially accepted while a slightly higher proportion (19.6%) believed it helps in getting rid of stress [7]. Dental patients in Pakistan exhibited relatively better attitudes as majority (90%) agreed that SLT use would lead to cancer [24].

### Study limitations

This study adds to the body of evidence on SLT use. However, the number of SLT users was too small to allow for further sub-analyses. Also, the cross-sectional nature of the study does not allow for causal inferences. Further, data was collected from only two local government areas in Lagos state, hence generalization to the entire state cannot be made.

### Conclusion

Though SLT use appears relatively low in this environment, the majority of the users used it daily. Progression from initiation to current use was also high. Snuff was the most prevalent form of smokeless tobacco use. The knowledge of the general health risks associated with SLT use was high, however knowledge of the specific harms was low. Gender and marital status were associated with SLT use.

### Recommendations

Efforts to reduce SLT initiation and progression to current and daily use should be prioritized. A focus on males who are divorced, separated or widowed should be considered. Future studies may focus on understanding the underlying reasons for the initiation and progression of the SLT use in this environment. In addition, efforts should be made to address the knowledge and attitude gaps highlighted.

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