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Correlates of tobacco smoking among residents of an urban community in Northern Nigeria

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ABSTRACT: Smoking is a public health problem that is a significant risk factor for heart attacks, strokes, chronic obstructive pulmonary diseases and cancers. Smoking accounts for one in every five deaths among men and one in every 20 deaths among women globally. World health organization (WHO) has estimated that about 1.3 billion people smoke worldwide, and the vast majority of these people live in developing countries. This study seeks to determine the correlates of tobacco smoking among residents of Katsina local government. A cross-sectional study that enrolled 384 respondents was adopted in this study. A multi-stage sampling technique was employed to select the respondents for the survey. Data collected were analyzed with SPSS v22 software. The results showed that the questionnaire response rate was 98.9% (n=380). The mean age of the respondents was 25.7 ± 11.8 years, all-time prevalence of smoking is 28.9% (n=110), and prevalence among those actively smoking is 21.5% (n=82). The mean number of cigarettes smoked by individual respondents daily was 8.9 ± 5.6, with a mean smoking duration of 4.6 ± 4.2 years. The mean number of people that smoke in households was 2.0 ± 1.5. Males are almost three times (aOR=2.8, 95% CI=1.94-4.02) more likely to smoke. Parental smoking (aOR=3.3, 95% CI= 2.61-4.30), peer influence (aOR=6.9, 95% CI=4.45-10.7), and media advertisements (aOR=4.5, 95% CI=3.52-5.99) are strong predictors of smoking in the community. In conclusion, the prevalence of smoking in the community was high, and the likelihood of smoking behaviour of the individual is influenced by peer group, parental smoking and exposure to pro-smoking advertisements. Health education and strong tobacco control policies are needed to address the problem of smoking.

Keywords: Community, Katsina, Nigeria, smoking, tobacco.

INTRODUCTION

Tobacco smoking remains a severe significant public health concern all over the world. It is a leading cause of mortality and is responsible for a high proportion of preventable deaths (Sari et al, 2011). Every year, more than 8 million people die from tobacco use (WHO, 2019). Most tobacco-related deaths occur in low- and middle-income countries, areas that are targets of intensive tobacco marketing (WHO, 2011). It is projected that by the year 2030, tobacco will be responsible for more deaths than the combined deaths resulting from HIV/AIDS, tuberculosis and malaria (Tezera and Endalamaw, 2019). Tobacco-related deaths could account for 10% of the total global mortality (WHO, 2020; WHO, 2015a; b). According to the World Health Organization, by 2020, smoking accounts for 10 per cent of all deaths. Smoking causes an estimated 71 per cent of lung cancers, 42 per cent of chronic respiratory disease and almost 10 per cent of cardiovascular disease (World Health Organization, 2020).

Every day, almost 2,500 children under 18 years of age try their first cigarette, and more than 400 of them will become new, regular daily smokers (Substance Abuse and Mental Health Services Administration, 2015). People

who start smoking at an early age are more likely to develop a severe addiction to nicotine than those who start at a later age. Of adolescents who have smoked at least 100 cigarettes in their lifetime, most of them report that they would like to quit, but are not able to do so (American Legacy Foundation, 2000).

Tobacco smoking is associated with an extensive list of health disorders as well as reduction of life expectancy (Raji et al., 2013). Smoking can make it harder for a woman to become pregnant. It can affect her baby's health before and after birth. Smoking increases risks for preterm delivery, stillbirth, low birth weight, sudden infant death, syndrome ectopic pregnancy and orofacial clefts in infants (U.S. Department of Health and Human Services, 2001; 2010; 2014). It also affects men by reducing their fertility and affecting the bones where it causes tooth loss (U.S. Department of Health and Human Services 2014). It can also cause age-related macular degeneration (AMD). Smoking is a cause of type 2 diabetes mellitus and can make it harder to control. The risk of developing diabetes is 30 to 40% higher for active smokers than nonsmokers (U.S. Department of Health and Human Services, 2014; 2010). It causes general adverse effects on the body, including inflammation and decreased immune function. Smoking is a cause of rheumatoid arthritis (U.S. Department of Health and Human Services, 2014).

Moreover, smoking also exposes smokers to many risky behaviours, like fighting and unprotected sex (Elders et al., 1994). On the average, cigarette smokers lose about 15 years of their life (Raji et al., 2013), and an estimated 4 million cigarette smokers die worldwide annually (World Health Organization, 2002). Many researchers have also reported that cigarette may be the first drug to be used by adolescents in a sequel that may include alcohol, marijuana and hard drugs. Individuals who have not smoked a cigarette by the age of 20 are unlikely to become smokers (Mayhew et al., 2000; Shehu and Idris, 2008; Idris and Sambo, 2009). Several studies (Asbridge et al., 2005; Huver et al., 2006; Gaffar et al., 2013; Fida and Abdelmoneim, 2013; Finkelstein et al., 2006; Rudatsikira et al., 2010) have identified risk factors that predict vulnerability to smoking in adolescents. These factors include parental smoking, friends smoking, socioeconomic status, family problems, and tobacco advertisements.

A large share of the global tobacco burden falls on developing countries, where an estimated 84% of the world's current smokers live (Jha and Chaloupka, 2000). In the African continent, smoking is on the increase compared to other continents. Tobacco use has doubled in the last four decades, particularly among the youth and the poor (World Health Organization, 2015). The increase in tobacco use is due to, among others, aggressive tobacco industry marketing of tobacco products to adolescents and young adults in low and middle-income countries (Lee et al., 2012; Doku, 2010; Madkour et al., 2014; World Health Organization, 1999) and early initiation of smoking (Breslau and Peterson, 1996; Morgenstern et al., 2013). The prevalence of smoking is between 15 to 67% in Africa (Osibogun et al., 2009). In Nigeria, studies have reported tobacco smoking prevalence between 3.4 and 17.1% (Osibogun et al., 2009; Salaudeen et al., 2013). Most studies on prevalence and factors associated with smoking globally and in Africa were among in-school adolescents, perhaps because these vulnerable groups are the targets for marketing that can lead to lifelong tobacco use. This study, therefore, seeks to determine the community prevalence and predictors of tobacco smoking in Nigeria.

METHODOLOGY

The study location was Katsina Local Government Area (L.G.A.), and it has a total area of 142 sqkm and an estimated population size of 318,459. The study populations are respondents living within the selected L.G.A., who are at least 18 years. Individuals that do not live in the selected L.G.A., and those aged less than 18 years were excluded from the study. The study was a cross-sectional study. Using Fisher Leslie formula, the minimum sample size of 384 eligible respondents enrolled for the study. A multi-stage cluster sampling technique was employed to select the respondents from the selected cluster in the community. The first stage was the selection of the L.G.A., from the list of all metropolitan L.G.A.s by a simple random procedure. This was followed by the selection of settlements within the selected L.G.A. Fifty per cent of the eight settlements were selected by balloting procedure, and all the clusters (n=11) in the selected settlements were determined and consecutively used for the study. All eligible respondents from the selected clusters were enrolled for the survey until the sample size is exhausted. The instrument used was a semi-structured interviewer-administered data collection tool that was adapted (Odukoya et al., 2013) to suit the objectives. The instrument has three sections: the socio-demographics, smoking habits and knowledge of the effects of smoking on the body. The instrument was checked for reliability and Cronbach's alpha value of 0.805 determined. Four research assistants with a health background and research experience were used for data collection. The research assistants were two male resident doctors from the community medicine department and two female medical social workers, each with a degree in medical sociology. They were trained for two days on how to administer the questionnaire and involved in pretesting and validation of the tool. The quality of data was ensured during the data collection by spot checks of the filled questionnaire.

Data analyses

Data collected were entered into SPSS version 22 and

analyzed. Frequency tables, percentages were used to describe categorical variables. Tests of association were performed and considered significant where the p-value is less than 0.05. The primary outcome variable is a binary measure of whether or not the individual smokes. The independent variables include age group, sex, ethnic group, marital status, education, occupation, income, parental smoking and peer influence, among others. Chi-square test was used to analyze factors associated with smoking behaviour, and p value less than 0.05 was considered statistically significant. At multivariate level, all variables found to have $p < 0.05$ were entered into the regression model to control for confounders.

Ethical approval

Ethical approval for this work was obtained from the ethical committee of Aminu Kano Teaching Hospital, Kano Nigeria. Permission was given by the Katsina State Ministry for Local governments to conduct the study at Katsina L.G.A. The consent of the respondents was equally obtained before administering the questionnaire.

RESULTS

A total of 384 questionnaires were filled and returned, giving a response rate of 98.9% (n=380). The mean age of the respondents was 25.7 ± 11.8 years. The prevalence of smoking for those that have ever smoke is 28.9% (n=110), and 21.5% (n=82) in those currently smoking (Table 1). More male respondents 25.3% (n=96) smoke than females (3.7%). The mean number of cigarette sticks smoked by individuals was 8.9 ± 5.6, and respondents reported a mean duration of smoking to be 4.6 ± 4.2 years. The mean number of people that smoke in the households was 2 ± 1.5. The money spent by the respondents on cigarette per day was 135 ± 82 Naira. Of the 110 respondents that smoke, 82 (74.5%) of them expressed the desire to quit, 19(17.3%) do not even think about quitting and 9 (8.25%) are unsure of what to do to quit.

Knowledge of the effects of smoking is shown in Table 3, where the respondents mentioned many health problems. Three-quarters of the respondents admit smoking affects the health of the individual by directly affecting the lungs.

Age, marital status, level of respondent's education, occupation and income were not associated with cigarette smoking (Table 4). Male sex, parental smoking, peer influence and tobacco advertisements were seen to be significantly associated with smoking (Tables 4 and 5).

Respondents that smoke (n=110) also use additional substances. Up to three-quarters use kola nut, a nicotine rich fruit common in Nigeria. Other substances used in addition to tobacco were alcohol in 16.4% of the respondents, marijuana 31.8% and tube solvents like glue (Table 2).

Table 1. Sociodemographic characteristics of the respondents.

Socio-demographic characteristics	Frequency (n=380)	Percentage (%)
Age group (years)		
15-25	241	63.4
26-35	93	24.5
36-45	30	7.9
46-55	9	2.4
56-65	5	1.3
66-75	2	0.5
Sex		
Males	286	75.3
Females	94	24.7
Ethnic group		
Hausa	308	81.1
Fulani	24	6.3
Yoruba	24	6.3
Igbo	20	5.3
Kanuri	3	0.8
others	1	0.3
Marital Status		
Married	124	32.6
Divorced	10	2.6
Widowed	7	1.8
Separated	2	0.5
Single	234	61.6
Educational Status		
None	36	9.5
Primary	48	12.6
Secondary	174	45.8
Tertiary	122	32.1
Occupation		
Civil servant	122	32.1
Trader	86	22.6
Farmer	25	6.6
others	147	38.7
Smoking status		
Ever smoke	110	28.9
Never Smoke	270	71.1

Respondents knowledge on the effects of smoking on human body was presented in Table 3. Many health problems have been mentioned by the respondents as presented in Table 3. More than three-quarters mentioned the main effect is on the lungs (76.6%). Table 4 shows the relationship between smoking behavior and some

Table 2. Smoking habits.

Smoking Habits	Frequency	Percentage (%)
Smoking status (n=380)		
Never smoke	270	71.1
Smoked before but no longer smoke	28	7.4
Smokes regularly	59	15.5
Smokes occasionally	23	6.1
Reasons for starting smoking (n=110) *		
Peer Group	99	90.0
Parents Smoke	77	70.0
Media Advertisement	68	61.8
Respondents feeling after smoking (n=110)		
Happy	81	73.6
Unhappy	11	10.0
Indifferent	18	16.4
Reason for sustained smoking (n=110) *		
Pleasure	101	91.8
Addiction	98	89.1
Use of Tobacco is Social Life	76	69.1
Additional substances used (n=110) *		
Alcohol	18	16.4
Marijuana	35	31.8
Glue/Tube solvents	15	13.6
Others (Kola nut)	73	66.4
Heard of Smoking quitting clinic (n=110)		
Yes	49	44.6
No	61	55.6
Has ever attended smoking clinic (n=110)		
Yes	27	24.6
No	83	75.6

*Questions with multiple options.

Table 3. Knowledge of health problems associated with smoking.

Health problems	Frequency (N=380)	Percentage (%)
Affects the Lungs	291	76.6
Affects the Heart	89	23.4
Affects the Pregnancy	121	31.8
Darkens Skin	314	82.6
Causes Ulcers	70	18.4
Causes Hypertension	162	42.6
Causes Diabetes	91	23.9
Others (cause bladder cancer, stroke etc.)	50	13.2

sociodemographic characteristics. Significant relationship ($p < 0.05$) was observed with some sociodemographic features.

Table 4. Bivariate Analysis of factors associated with smoking.

Sociodemographic features	Smoking [F(%)]	No Smoking [F(%)]	Total	χ2	P-value
Age					
Less than 25	70(29.1)	171(70.9)	241(63.4)	0.03	0.956**
More than 25	40(36.4)	99 (36.7)	139(36.6)		
Sex					
Males	96(35.6)	174(64.4)	270(71.1)	19.8	<0.001*
Females	14(12.7)	96(87.3)	110(28.9)		
Marital status					
Ever married	42(28.7)	104(71.2)	146(38.4)	0.003	0.951**
Never married	68(29.1)	166(70.9)	234(61.6)		
Educational status					
At least Secondary	86 (29.0)	210(70.9)	296(77.9)	0.007	0.931**
others	24(28.6)	60(71.4)	84(22.1)		
Occupation					
Employed	68 (29.1)	166(70.9)	234(61.6)		
Unemployed	42(28.8)	104(71.2)	146(38.4)	0.003	0.951**
Income					
<NGN50,000	94(29.1)	229(70.9)	323(85.0)	0.025	0.874**
> NGN50,000	16(28.1	41(71.9)	57(15.0)		
Parent/Family Smoking					
Yes	77(49.4)	79(50.6)	156(41.1)	53.61	<0.001*
No	33(14.7)	191(85.3)	224(58.9)		
Influenced by Peer smoking					
Yes	99(46.1)	116(53.9)	215(56.6)	70.38	0.001*
No	11(6.7)	154(93.3)	165(43.4)		
Influenced by Advertisement					
Yes	68(48.2)	73(51.7)	141(37.1)	40.51	<0.001*
No	42(17.6)	197(82.4)	239(62.9)		

*****Significant association
**Not significant p>0.05.

DISCUSSION

The study determines the use of refined tobacco among members of the study community in Nigeria. The prevalence of tobacco smoking was 21.5% among those that currently smoke and higher among all-time smokers (29.1%). The findings in this study are closer to what was reported by other studies on the prevalence of smoking within and outside Nigeria (Amin et al., 2011; Fida and Abdelmoneim, 2013; Osibogun et al., 2009; Salaudeen et al., 2013) but vary in the type of respondents used for the study. The study respondents are drawn from the community, while these studies use students based in educational institutions and mostly adolescents. From the study, it was observed that a higher proportion of younger respondents (63.4%) practice smoking habits compared to older age groups in the community. It is similar to what was reported in Australia (Greenhalgh et al. 2020), where people aged under 40 years are generally more likely to smoke than those in older age groups. This trend differs from what was reported by Akanni and Adayonfo (2015) were an increase in smoking habits increase with the increase in age of the respondents. The difference observed could perhaps result from the fact that these studies used adolescents in school as respondents. The initiation of smoking habits results from interplay of factors

Table 5. Predictors of smoking.

Sociodemographic features	Smoking 110(%)	Not Smoking 270(%)	Crude OR (95% CI)	P-value	Adjusted OR (95% CI)
Sex					
Males	96(35.6)	174(64.4)	3.7(2.04-5.83)	0.001	2.8(1.94-4.02)
Females	14(12.7)	96(87.3)			
Parent smoking					
Yes	77(49.4)	79(50.6)	5.6(4.0-7.95)	0.001	3.3(2.61-4.30)
No	33(14.7)	191(85.3)			
Influenced by peer smoking					
Yes	99(46.1)	116(53.9)	11.9(7.45-19.2)	0.001	6.9(4.55-10.47)
No	11(6.7)	154(93.3)			
Advertisement					
Yes	68(48.2)	73(51.7)	6.9(5.06-9.36)	0.001	4.5(3.52-5.99)
No	42(17.6)	197(82.4)			

The confounders that have been controlled for adjusting were: age, marital status, education, occupation and income.

like parental smoking (49.4%) peer influence (46.1%) as well as continued exposure to pro-smoking advertisements (48.2%). This is similar to the findings reported by Bähler et al. (2016), where he reported moving out with peers was a strong predictor of initiation of smoking. The implication is that there may be an epidemic of smoking going on unabated in the community, despite the efforts made by healthcare authorities to discourage the practice through various healthcare campaigns. Most respondents are aware of the harmful effects of smoking on the health of the individual. It was observed from the respondents that they are aware of the effects of smoking on various organs in the body, yet good numbers of them continue to smoke. The potential of getting organ damage from long term use of tobacco is likely to portend a rise in the number of non-communicable diseases and its attendant high healthcare cost.

The prevalence was higher among males (25.3%) than females (3.7%), similar to reports from other countries and much higher than what was reported by Odukoya et al. (2013) from other parts of Nigeria. Elsewhere studies (Raji et al., 2013; Shehu and Idris, 2008; Idris and Sambo, 2009) have reported high tobacco use amongst males than females, males tend to be more audacious and adventurous when it comes to risky health behavioural practices and could be responsible for this high tobacco use.

The mean number of cigarette sticks smoked by individuals per day in the community is 8.9, this similar to results reported by Fawibe and Shittu (2011) but much higher than that reported by other studies (Raji et al., 2013; Osibogun et al., 2009; Gana et al., 2018) which could be explained by the differences in the type of respondents used for the studies. Respondents have reported use of substances like alcohol (16.4%), marijuana (31.8%), tube solvents and a popular Nigerian nicotine rich fruit, kola nut. These psychotropic substances use further complement the tobacco use and may make the reversal of this addiction habit difficult, mainly where the respondent uses one or more additional substance. A number of them are aware of programs targeting how to quit smoking habits (44.6%) and about a quarter have even attended smoking quitting clinic (24.6%) in the past. It was observed that males are 2.8 times more likely to smoke compared to females. This finding is similar to that from other studies (Odukoya et al., 2013; Fawibe and Shittu, 2011) and consistent with the existing literature. Parental or family member smoking behaviour is likely to increase the chances of smoking by 3.3 times similar to exposure to pro-smoking adverts that influences the acceptance of tobacco use by 4.3 times. By far, the most important predictor for smoking in the community is peer influence. Peer influence was observed to increase the likelihood of smoking in the community by seven-folds. This finding is much higher and differs from what was reported by Odukoya et al. (2013) and Mbongwe et al. (2017). The difference observed between this study and these other studies could be the effect of methodological approach, respondents used as well as the location of the study. Thus, the need to have programs targeting individuals and families in helping to prevent and quit smoking among the populace is imperative. There is a need for policy formulation against tobacco use and robust monitoring of the impact of tobacco control measures to curve the trend. More community-based researches should be encouraged to provide an answer to the magnitude of the problem.

The study limitation is by being a community-based study that enrolled a small number of respondents. Furthermore, the study community has a large number of

people that adopts the use of all forms of tobacco as part of their culture. Thus, the results could show a higher prevalence compared to other regions where the culture of using tobacco products is an abhorrent behaviour.

Conclusion

The prevalence of tobacco smoking among members of the community was high. There are some risk factors identified contributing to this like peer influence and having a family member that smokes, among others. Age, education, marital status were not significantly associated with smoking. Health education on dangers associated with smoking backed by robust policies to address the problem of tobacco use is recommended. There may also be a need to discourage advertisements that promote smoking behaviour in the community.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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