ORIGINAL ARTICLE

Determinants of Cigarette Smoking Among Senior Secondary School Students in a Rural Community of Southwest Nigeria

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ABSTRACT
Background: *Smoking remains an increasing high-risk behaviour among the youth, despite its harmful effects on health. This study sought to find out the determinants of cigarette smoking among youth of a rural Nigerian community and suggested intervention measures which have potential for the control of smoking among in-school population.*
Methods: *It was a cross-sectional study carried out among 416 students selected through a multi-stage sampling procedure. Determinants of smoking among the study participants and their knowledge were assessed with the aid of a pre-tested structured questionnaire.*
Results: *The proportions of ever-smokers who could associate cigarette smoking with known health problems were generally low compared to the never-smokers. The mean knowledge score, 4.05 ± 0.4, obtained by the ever-smokers was also lower than the mean score, 6.41 ± 0.2, obtained by the never-smokers. This was found statistically significant ($p < 0.05$). Smoking behaviour was significantly associated with friends ($p = 0.00518$) and parents ($p = 0.002856$) who smoke, and with cigarette advertisement ($p = 0.032989$).*
Conclusion: *Low level of knowledge, peer and parental influence as well as exposure to cigarette advertisement played significant roles in the adoption of smoking behaviour by the youth. Anti-smoking education and other prevention strategies targeted at the youth, their parents and the media are desirable.*
Key words: *students, cigarette smoking, determinants, knowledge, tobacco advertisement, anti-smoking education*

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INTRODUCTION

A number of factors are known to influence cigarette smoking behaviour among young people. Many of them started smoking cigarette due to curiosity, peer pressure and a desire to *'look big'*.[1-3] Others are influenced by family members, who smoke and/or tobacco advertisement.[1-5] Furthermore, lack of awareness and poor knowledge of the harmful effects of cigarette smoking on health, especially among youth who smoke in developed countries have been reported as contributory factors.[3,6-8] Cigarette smoking is a known risk factor for lung cancer, occupational asthma, Chronic Obstructive Pulmonary Disease (COPD) and erectile dysfunction.[9-11] Frequent spontaneous abortions, ectopic pregnancies and low birth weight babies have also been reported among women of reproductive age who smoke.[12-14] Despite the adverse consequences, smoking remains a high-risk behaviour, especially among the youth.

Though a Global Youth Tobacco Survey (GYTS) among students had probed into the Nigerian school curriculum with a view to determining whether anti-smoking education was included or not, the study fell short of assessing knowledge on the subject[15]. There is thus paucity of information on the relationship between cigarette smoking and knowledge of its harmful effects. The importance of assessing knowledge is corroborated by a study which reported that cigarette smokers believe that cigarette smoking aids digestion and excretion, prevents vomiting after a meal and serves as a stimulant when depressed.[2] A study which would assess knowledge of the risks associated with cigarette smoking is therefore desirable as this will provide veritable information for planning health education interventions. The study was therefore aimed at determining the factors which influence cigarette smoking among students of a rural community in southwestern Nigeria with a view to suggesting appropriate interventions.

MATERIALS AND METHODS

The study was carried out in 2003 at Igbo-Ora, a rural Yoruba community in southwestern Nigeria with a population of 66,612.[16] The community has eight public secondary schools; each is a mixed school with a student population of about 600.

A cross-sectional study design was applied. Out of the eight secondary schools, three were randomly selected

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by balloting. Written permissions from the selected school authorities were obtained before carrying out the study. In addition, ethical approval was received from the institutional review committee of the University of Ibadan. Only senior secondary school (SSS) students were recruited into the study. This is because the mean age at onset of smoking among African youth ranges from 13.4 14.8 years when most youth would be in at least senior secondary class SSC I.[17-19] A minimum sample size of 235 students was required using 18.8% as prevalence rate of cigarette smoking in the age group.[15] In order to be able to generalize the results, the sample size was increased to at least one-third of the student population in the senior classes. A list of names of 1,260 students in all the arms of the senior secondary classes (SSC I SSC III) was obtained from the class registers and respondents were selected by a systematic sampling technique. Out of every three students, one was selected and interviewed with a self-administered semi-structured questionnaire, which was designed, developed and pre-tested among senior students of another secondary school in a neighbouring community. An average of 138 students was eventually recruited from each school and a total of 416 from the three. In each school, all the selected students were brought together in a large hall for interview during which the purpose of the study was explained to them and were assured of confidentiality of any volunteered information before commencing the interview. In addition, the students were informed that their participation in the study was voluntary. Furthermore, a verbal consent was obtained from each student before a questionnaire was given for completion. Necessary clarifications were made to anyone of them who requested for more information on any part of the questionnaire.

In assessing knowledge of harmful effects of cigarette smoking on health, eight-knowledge items focusing on common health problems associated with smoking were developed and used. Each participant was scored one point for a knowledge item identified correctly while zero was recorded for a knowledge item, which participants could not identify correctly. A knowledge scale that ranged from zero to eight was developed and total score for each study participant was based on the number of knowledge items that could be identified correctly.

Data analysis

Data entry and analysis were done with Epi-Info version 6 software. Participants were categorized into two groups. Students with a history of smoking, either currently or in the past, were grouped as *ever-smokers* while those who claimed to have never smoked cigarette were grouped as *never-smokers*. Arithmetic means and standard deviations were calculated for the scores obtained by the two groups and F-statistics was used to compare the means. Test statistics were regarded as significant at $p < 0.05$.

RESULTS

Socio-demographic characteristics

Four hundred and sixteen students were interviewed, out of which 212 (51%) were males. Their mean age was 19 ± 2.6 years. Most of them, 240 (57.7%), were aged 15-19 years old.

Determinants of cigarette smoking

Of the 416 students, 39 (9.4%) reported that they had ever smoked cigarettes while 21 (5.1%) admitted that they were current smokers. More of the males, 28 (13.2%), had ever smoked cigarettes than the females, 11 (5.4%). This difference was statistically significant ($p = 0.006$).

Table I shows that a high proportion, 251 (60.3%) of the respondents could identify cigarette smoking as a risk factor for lung cancer. Slightly more than half, 226 (54.3%) knew that smoking could provoke or worsen respiratory problems such as asthma. About half, 212 (51%), knew that it could lead to sudden death. Less number, 181 (43.5%), of the respondents could associate cigarette smoking with hypertension while 132 (31.7%), 129 (31%), 89 (21.3%) and 70 (16.8%) were able to associate cigarette smoking with stroke, peptic ulcer, spontaneous abortion and low birth weight respectively. Computation and analysis of knowledge scores among ever-smokers and never-smokers showed a significantly lower mean score of 4.05 ± 0.4 among ever-smokers than 6.41 ± 0.2 obtained among never-smokers (Table II).

Table I: Knowledge of participants on the harmful effects of cigarette smoking on health

				X^2	p-value
Smoking cigarette can predispose to lung cancer (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	12 (30.8)	9 (23.1)	18 (46.1)		
Never smokers	239 (63.4)	28 (7.4)	110 (29.2)	19.28	0.000065
Smoking cigarette can provoke or worsen respiratory problems (e.g. asthma) (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	17 (43.6)	12 (30.8)	10 (25.6)		
Never smokers	209 (55.5)	39 (10.3)	129 (34.2)	13.72	0.001050
Smoking cigarette can lead to sudden death (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	9 (23.1)	13 (33.3)	17 (43.6)		
Never smokers	203 (53.8)	61 (16.2)	113 (30)	14.51	0.000707
Smoking cigarette can predispose to hypertension (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	7 (17.9)	15 (38.5)	17 (43.6)		
Never smokers	174 (46.1)	63 (16.7)	140 (37.2)	15.77	0.000376
Smoking cigarette can predispose to stroke (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	5 (12.8)	11 (28.2)	23 (59)		
Never smokers	127 (33.7)	66 (17.5)	184 (48.8)	7.77	0.020550
Smoking cigarette can predispose to peptic ulcer (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	7 (18)	13 (33.3)	19 (48.7)		
Never smokers	122 (32.4)	49 (13)	206 (54.6)	12.40	0.002025
Smoking cigarette can predispose to spontaneous abortions (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	3 (7.6)	18 (46.2)	18 (46.2)		
Never smokers	86 (22.8)	65 (17.2)	226 (60)	19.73	0.000052
Smoking cigarette can predispose to low birth weight babies (N = 416)					
	Yes(%)	No(%)	Dont know(%)		
Ever smokers	3 (7.7)	14 (35.9)	22 (56.4)		
Never smokers	67 (17.8)	65 (17.2)	245 (65)	9.02	0.011017

Table II: Comparison of mean knowledge scores among ever- and never-smokers

Ever-smokers (39)		Never-smokers (377)	
No. of students (%)	Score	No. of students (%)	Score
13 (33.3)	5	221 (58.6)	7
18 (46.2)	4	109 (28.9)	6
5 (12.8)	3	32 (8.5)	5
3 (7.7)	2	9 (2.4)	4
		6 (1.6)	3
Mean score = 4.05 ÿ 0.4		Mean score = 6.41 ÿ 0.2	

F-statistic = 901.51; p < 0.05

Table III: Determinants of cigarette smoking

			X^2	p-value
Have friends who smoke (N = 416)				
	Yes(%)	No(%)		
Ever smokers	33 (84.6)	6 (15.4)		
Never smokers	234 (62.1)	143 (37.9)	7.82	0.00518
Have parents who smoke (N = 416)				
	Yes(%)	No(%)		
Ever smokers	23 (58.9)	16 (41.1)		
Never smokers	131 (34.7)	246 (65.3)	8.90	0.002856
Have other family members who smoke (N = 416)				
	Yes(%)	No(%)		
Ever smokers	17 (43.6)	22 (56.4)		
Never smokers	196 (52)	181 (48)	1.0	0.317786
Seeing cigarette advertising in the past (N = 416)				
	Yes(%)	No(%)		
Ever smokers	14 (35.9)	25 (64.1)		
Never smokers	79 (21)	298 (79)	4.55	0.032989

Table III shows that more friends, 33 (84.6%) and parents, 23 (58.9%) of the ever-smoker group were smokers than friends, 234 (62.1%) and parents, 131 (34.7%) of the never-smoker group. This was found significant (p < 0.05). In addition, there was a slight significant association between exposure to cigarette advertisement and the smoking behaviours of the study participants. Having any other family member who smoked was not significantly associated with smoking behaviour.

DISCUSSION AND RECOMMENDATIONS

The group of ever-smokers in this study demonstrated a significant low level of knowledge of the harmful effects of cigarette smoking on health compared to the never-smokers. This is similar to what other investigators have found though mainly in developed countries.[3,6-8] The observed deficiency in knowledge about the harmful health effects of cigarette smoking among the study participants is a source of concern for two reasons. Firstly, inadequate knowledge has the potential of leading to lack of motivation to abstain from smoking. This is more so in an environment where cigarette is readily available, socially acceptable and used freely by adults and youth, and where beliefs about its perceived beneficial effects are strongly held[2]. Secondly, lack of adequate information about the hazards of smoking may create opportunity for relapse among participants who have reportedly stopped smoking. The reason for the observed poor knowledge is however not far-fetched. Though, the school setting traditionally constitutes a favourable environment for upgrading young people's knowledge about health issues including the adverse effect of smoking on health, the subject of health education that ought to have provided the medium is, however, taught only during the first three years of a six-year high school education, during which period trained teachers are available. Most schools, including those in the study rural area, therefore do not offer the subject at the senior class due mainly to shortage of trained staff. This situation was corroborated by the GYTS finding, which showed that only 44.4% of the interviewed students could recall that they were ever taught about the harmful effects of cigarette smoking[15].

Having friends and parents who smoke as well as exposure to cigarette advertisement in the past served as determinants of cigarette smoking among the study population. These findings emphasized the significant role that peer and parental influences as well as media advertisement of cigarette play in facilitating the adoption of smoking behaviour among the youth. In addition, it corroborated the fact that youth are impressionistic and can easily be influenced by others especially those perceived as role models. Many other studies have also shown that these factors are likely predictors of smoking behaviour among the youth.[1-5,20]

In view of the above, an innovative anti-smoking education curriculum that would reduce the prevalence of smoking among youth is thus needed. It should be a curriculum incorporating elements of anti-smoking education at every level of high school education and offered throughout the school years. The curriculum should be aimed at equipping youth with adequate knowledge about the health consequences of cigarette smoking as well as enhancing them with certain life skills required to quit cigarette smoking and/or resist pressures to experiment it.[21] The proposition for a

curricular review would be a long-term strategy because of the processes involved. A short-term strategy will be the involvement of the media, researchers and youth friendly organizations in educational activities relating to cigarette smoking particularly in rural areas. A potentially useful strategy is peer education, which has been found to be effective in improving youth's knowledge and behaviour regarding psychoactive drug use and reproductive health.[22] Involvement of non-smoking role models could also be considered as a useful strategy to discouraging the youth from smoking. It is suggested that parents and family members who smoke should be regarded as part of the problem and hence be included in anti-smoking interventions. Such measures would include the promotion of smoking cessation efforts and strategies aimed at dissuading them from smoking in the presence of their wards.

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