

Knowledge and Prevalence of Cigarette Smoking among Public Adolescent Secondary School Students in Ibadan North Local Government Area, Oyo State, Nigeria

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Abstract

Cigarette smoking constitutes a major threat to the health and wellbeing of teenagers. Information relating to the knowledge and smoking behaviour among these adolescent secondary school students in Ibadan North Local Government Area (IBNLGA) has not been systemically documented. This study was therefore conducted to investigate the knowledge, attitude and prevalence of cigarette smoking among public secondary school students in IBNLGA of Oyo State, Nigeria. A cross-sectional study design targeted at 349 secondary school students within the ages of 10-19 years selected from seven public secondary schools in IBNLGA using a three-stage sampling method. A pre-tested, semi-structured, interviewer-administered questionnaire was used for data collection. Data collected were analysed using descriptive statistics and Chi-square test at $p \leq 0.05$ level of significance. Mean age of the respondents was 14.7 ± 2.4 years. Majority of the respondents were males (61.9%), and Christians (64.5%). 53.9% were within age group 15-19 years. Seventy-three percent of the respondents had good knowledge on the dangers of cigarette smoking. Majority (95.1%) of the respondents considered cigarette smoking dangerous to their health while 67.9% of the respondents correctly mentioned nicotine as a constituent in cigarette. Eighty-five percent of the respondents had positive attitude towards cigarette smoking. Majority of the respondents were influenced by their peers' smoking behaviour (48.7%), while 59.9% by their parents' smoking behaviour. The prevalence of cigarette smoking was 32.1% and 108 (97.3%) of the total population were current smokers. There was a significant difference between the sex, age, and area of residence ($p < 0.001$). Prevalence of cigarette smoking was relatively high among study participants. This is as a result of peer influence and parental smoking behaviour. Adolescent peer education and school-based enlightenment activities should be implemented in schools.

Keywords:

Adolescents,
Cigarette smoking,
Smoking behaviour,
Current smokers

La Connaissance et la prévalence du tabagisme chez les adolescents des écoles secondaires publiques de la zone du nord de gouvernement local d'Ibadan dans l'État d'Oyo, Nigéria

Résumé

Le tabagisme constitue une menace majeure pour la santé et le bien-être des adolescents. Les informations relatives aux connaissances et au comportement tabagique de ces adolescents du secondaire dans la zone du nord de gouvernement local d'Ibadan Nord (le IBNLGA) n'ont pas été systématiquement documentées. Cette étude a donc été menée pour enquêter sur les connaissances, l'attitude et la prévalence du tabagisme chez les élèves des écoles secondaires publiques de 'IBNLGA' de l'État d'Oyo, au Nigéria. Une conception d'étude transversale ciblant 349 élèves du secondaire âgés de 10 à 19 ans sélectionnés dans sept écoles secondaires publiques de 'IBNLGA' à l'aide d'une méthode d'échantillonnage en trois étapes. Un questionnaire pré-test, semi-structuré et administré par un intervieweur a été utilisé pour la collecte des données. Les données recueillies ont été analysées à l'aide de statistiques descriptives et d'un test du chi carré à un niveau de signification $p \leq 0,05$. L'âge moyen des répondants était de $14,7 \pm 2,4$ ans. La majorité des répondants étaient des hommes (61,9%), des chrétiens (64,5%) et 53,9% appartenaient au groupe d'âge 15-19 ans. Soixante-treize pour cent des

répondants avaient une bonne connaissance des dangers de la cigarette. La majorité (95,1 %) des répondants considéraient le tabagisme comme dangereux pour leur santé tandis que 67,9 % des répondants ont correctement mentionné la nicotine comme constituant de la cigarette. Quarante-vingt-cinq pour cent des répondants avaient une attitude positive envers le tabagisme. La majorité des répondants ont été influencés par le comportement tabagique de leurs pairs (48,7 %) tandis que 59,9 % par le comportement tabagique de leurs parents. La prévalence du tabagisme était de 32,1 % et 108 (97,3 %) de la population totale des fumeurs ayant déjà fumé étaient des fumeurs actuels. Il y avait une différence significative entre le sexe, l'âge et le lieu de résidence ($p < 0,001$). La prévalence du tabagisme était relativement élevée parmi les participants à l'étude, ce qui est dû à l'influence des pairs et au comportement tabagique des parents. L'éducation des adolescents par les pairs et les activités d'éducation scolaire devraient être mises en œuvre dans les écoles.

Mots clés:

Adolescents,
Tabagisme,
Comportement
tabagique,
Fumeurs
actuels

Introduction

Every year, tobacco is responsible for the mortality of an estimated six million people. It is associated with one in ten adult deaths worldwide (1). Of these deaths, 75% occurs in middle and low-income countries where more than 80% of the world's smokers live, including Nigeria (2). According to the World Health Organization, 1.1 million people; representing one-third of the world's population above the age of 15 use tobacco particularly in form of cigarette. Of this 1.1 million people, 700 million of them are males living in developing countries (3, 4). Adolescents generally entertain fun habits of which cigarette smoking is one of them (4). It is not well understood why they engage in experimentation with tobacco, although youths are seen as ever changing and wanting to live up to the expectation of their peers (5). Unfortunately, most of the tobacco were used in their natural state. The prevalence of smoking among Nigerian youths in particular has led the Federal Government of Nigeria to adopt some preventive measures such as pricing policies, advertising control and regulating access to cigarettes (5).

Adolescent years represent a critical period for the initiation of substance use including tobacco. The health risk of early onset of smoking is particularly severe and this could establish smoking related illness at adulthood (5). Several studies have reported that cigarette may be the first drug to be used by adolescents in a sequel that may include alcohol, Indian hemp and hard drugs. It is estimated that 80% of adult regular smokers' initiate tobacco use before the age of 18 (6). In Nigeria, adolescent smoking rates are considerably lower than in many developed countries. However, these rates appear to be increasing over time (7). In 1994, the smoking rate among Nigerian youth was 4.4% (7). A study in Nigeria reported the smoking prevalence among children aged 13-15 years as high as 11.4% among males, while 16.2% of those that had never smoked (8). The study also reported that they were likely to initiate smoking within the next year (9). The WHO reports also showed the prevalence of cigarette smoking among adolescents between the ages of 13 and 15 to be 3.5% (7). Studies have also shown that peer pressure and having friends who smoke has been considered the most important factor influencing the habit of smoking in adolescents in the western world (10, 11). These studies were carried out in the South-west and South-east of Nigeria respectively.

The findings revealed that cigarette smoking was prevalent among adolescents especially in the secondary and tertiary institutions in Nigeria (12). Some intrapersonal factors associated with adolescent smoking include low level of knowledge on hazards

of smoking in China (13). However, research has shown that many young Nigerians are unaware of the grave dangers of cigarette smoking (8, 14, 15). Although, several studies have been carried out on various categories of secondary school students in Nigeria, there is a need to redefine the present magnitude of cigarette smoking among the secondary school students in Nigeria particularly in Ibadan North Local Government Area being the largest LGA in Ibadan Municipal. This study, therefore, aimed at investigating the knowledge, attitude and prevalence of cigarette smoking among secondary school students in Ibadan North Local Government Area, Oyo State, Nigeria.

Methods

Study Design

A descriptive cross-sectional research design was used to investigate the knowledge, attitude and prevalence of cigarette smoking among public secondary school students in Ibadan North Local Government Area of Oyo State, Nigeria.

Study Area and Study Population

The study was carried out in IBNLGA of Oyo State, which is one of the five LGAs in Ibadan metropolis, with an estimated size of 27,249 square kilometres. There are 12 geo-political wards in IBNLGA. The population size is 432, 900 (Projected Population, 2016) and the people are mainly of the Yoruba tribe. Other ethnic groups in Nigeria are well represented but constitute the minority. Sales of cigarette are common without any restriction by law or any policy in the study area. There are about 42 public secondary schools which are under the control of the State Government and mainly populated by adolescents from relatively low socio-economic class. There are about 72 secondary schools with two main categories in IBNLGA; 42 public schools and 30 private schools. These schools are under the management of Oyo State Post-primary Education Board. Every school is being headed by a Principal of grade level 15 and above. The study was carried out among public secondary school students within the ages of 10-19 in Ibadan North Local Government Area of Oyo-State Nigeria.

Sample Size and Sample Technique

The postulated prevalence of tobacco use; a psychoactive substance use among young people outside formal school setting in Lagos State was 32.5% (15). Using Leslie Kish formula for estimating sample size for one-sample comparison of proportion to hypothesized value was required for the study at 95% level of

confidence. This estimated value was obtained as shown below:

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = sample size

Z^2 = Percentage point of the normal distribution corresponding to the (two-sided) significance level = 1.96 at 95% level of significance (two-sided test).

p = Proportion of cigarette smokers in the population = 0.325 (15)
d is the degree of freedom 0.05

n = 312.13

Estimate for non-response = assume 10% of the study size.

$$312.13 \times 10/100 = 31.2$$

Therefore, sample population = 312.13 + 31.213 = 343.3 approximately 343

The total sample size that was used for this study was 349.

A total of 349 pre-tested, semi-structured, interviewer-administered questionnaire were administered using multistage sampling techniques.

The sampling units for this study were adolescents in secondary schools between the ages of 10 and 19. A 3-stage sampling technique was employed to select schools and students from the schools.

Stage 1: Simple random sampling was used to select four wards out of the existing 12 wards in IBNLGA.

Stage 2: Selection of a school across each ward, which was done using simple balloting to make a total of seven schools.

Stage 3: Administration of questionnaire to respondents who met the inclusive criteria. Copies of questionnaire were distributed to the students between the ages of 10 and 19 years.

The questionnaire was designed to capture the respondents' socio-demographic characteristics, their knowledge on the dangers of cigarette smoking, factors influencing smoking behaviour, prevalence and their attitude towards cigarette smoking. The validity of the questionnaire was ensured through review of literature and by experts in the field of public health. In order to ensure the reliability of the instrument, a pre-test was carried out in Ibadan North- East Local Government Area (IBNELGA) using 10% of the sample size of 32. The pre-tested questionnaire were analysed using Statistical Package for Social Sciences (SPSS) version 22 to measure the reliability coefficient which was 0.7.

Data Management and Analysis

The administered copies of the questionnaire were safely kept. Data were entered and analysed using the Statistical Package for Social Sciences (SPSS) version 22. The main outcome variables were self-reported cigarette smoking status score (Quantitative). Independent variables were the socio-demographic status of respondents. Data were summarized in frequencies, percentage and means. The respondents' knowledge was scored, with every correct answer scoring one point and incorrect or non-response scoring zero. The scores were summed and categorized as poor (<8) and good (≥ 8) knowledge using a total knowledge score of 16. Attitude of respondents was scored with every correct response scoring two points, indifferent response scoring one and negative response scoring zero. The scores were summarized and categorized as negative (<6) attitudes and positive (≥ 6) attitudes using a total attitude score of 12. Statistical tests of significance using chi-square test was utilized for cross-tabulations between the dependent and independent categorical variables at the 5% level of significance.

Results

Demographic Data

Slightly more than half of the respondents (53.9%) were within 15-19 years of age and 61.9% were male. Majority of the respondents were Christians (64.5%) while 34.1% of the respondents were Muslims. The population consists of 76.5% Yoruba indigenes, 16.0% Igbo and 7.5% Hausa. Majority of the respondents (53%) were in Senior Secondary School (SSS) 1-3. The parents of the respondents in this survey were mostly secondary school holders (Table 1).

Prevalence of Cigarette Smoking among Respondents

Two-third (67.9%) of the adolescents' reported no to the question 'ever smoked'. Majority (83.9%) of them were males. The most prevalent age of initiation was 13-15 years. Less than half (32.1%) of the respondents are smokers, while 108 (97.3%) of the total population of smokers are current smokers (Table 2) A quarter of the respondents (24.9%) agreed that peer group was their greatest source of exposure to smoking cigarette.

Adolescents' Knowledge about the Dangers Associated with Cigarette Smoking

Majority (67.9%) of respondents correctly responded that nicotine is present in cigarette, 42.3% of the respondents identified Tar as one of the main substances present in cigarette, 40.1% indicated that carbon (II) oxide is one of the main substances present in cigarette. One hundred and thirty-seven respondents (39.3%) did not know that menthol is not a main substance present in cigarette, two hundred and seventy six (70.5%) of respondents identified lung cancer to be a disease associated with cigarette smoking, 57.3% said that asthma attack is associated with cigarette smoking, 67.3% of respondents correctly identified heart disease to be associated with cigarette smoking, and 11.6% of the respondents stated that healthy brain is not a disease associated with cigarette smoking (Table 3).

Table 1: Respondents' socio-demographic characteristics

Demographic Characteristics	Frequency	Percentage
Age (in years)		
<10	5	1.6
10-14	137	43.9
15-19	168	53.9
20-24	2	0.6
Sex		
Male	216	61.9
Female	133	38.1
Religion		
Islam	119	34.1
Christianity	255	64.5
Traditional	5	1.4
Ethnic Group		
Yoruba	267	76.5
Igbo	56	16.0
Hausa	26	7.5
Class of Respondents		
JSS 1- JSS3	154	47.0
SSS1- SSS3	185	53.0
Area of Residence		
Rural	157	45.0
Urban	192	55.0
Number of Children in the Family		
=3	49	14.0
3-5	222	63.6
=5	78	22.4

JSS= Junior Secondary School SSS= Senior Secondary School

Table 2: Prevalence of Cigarette Smoking among Adolescents

Prevalence of Cigarette Smoking	Frequency	Percentage
Ever smoked (n=349)		
Yes	112	32.1
No	237	67.9
Age of Initiation of Smoking (n=112)		
<13	8	7.2
13-15	78	69.6
>15	26	23.2
Current Smokers (n=112)		
Yes	108	97.3
No	3	2.7
Sex of current Smokers		
Male	94	83.9
Female	18	16.1
Frequency of Smoking (n=112)		
Daily	41	36.6
Once a week	39	34.8
Twice a week	21	18.8
More than three times a week	11	9.8

Respondents' Attitude towards Cigarette Smoking

Majority of the respondents (70.2%) agreed that students should distance themselves from people who smoke, 11.7% of the respondents agreed that it is good to associate with people who smoke, 60.7% viewed smoking as an offensive act. Majority

(63.0%) of the respondents agreed that smoking should not be a public act, 68.7% of the respondents agreed that most students readily associate with smokers because they are not aware of the adverse effects of smoking, 22.1% of the respondents supported joining smokers in the act of smoking, 67.3% of the respondents

supported that people should not smoke in their cars and 22.3% of the respondents agreed that they would not be bothered to associate with friends who smoke (Table 4).

Area of residence (urban) and family size were significantly associated with knowledge of the dangers of cigarette smoking. Also, sex of respondents, age, area of residence, mothers' level of education and family size were significantly associated with cigarette smoking ($p < 0.0001$) (Tables 5 and 6).

Table 3: Respondents Knowledge on Cigarette Smoking

Variables	Frequency	Percentage
Nicotine is present in cigarette	237	67.9
Tar is present in cigarette	144	42.3
Caron (II) oxide is present in cigarette	140	40.1
Menthol is present in cigarette	137	39.3
Lung- cancer is associated with cigarette smoking	276	70.5
Asthma attack is associated with cigarette smoking	200	57.3
Heart disease is associated with cigarette smoking	235	67.3
Healthy brain is associated with cigarette smoking	312	89.4

*Multiple responses included

Table 4a: Adolescents' Attitude towards Cigarette smoking

Attitude towards Cigarette smoking	Agree (%)	Undecided (%)	Disagree (%)
Students should distance themselves from people who smoke	245 (70.2)*	49 (14.0)	55 (15.8)
It is good to associate with people who smoke	41(11.7)	67(19.2)	241(69.1)*
Smoking is an offensive act	212 (60.7)*	56 (16.0)	81(23.3)
Smoking should be banned in public places	220 63.0)*	55(15.8)	74(21.2)
Most students are ignorant about the adverse effect of smoking; hence, they readily associate with students who smoke	205(68.7)*	67 (19.2)	78(22.1)
If a student's friend or relatives are gathering to smoke, he or she should join them in smoking rather than be alone	77 (22.1)	72(20.6)	200(57.3)*
People should not smoke in their cars	235 (67.3)*	44(12.6)	70(20.1)
Associating with friends who smoke will not bother you	78(22.3)	71(20.3)	200 (57.3)*

* Correct responses

Table 4b: Adolescents' Attitudinal Score towards Cigarette smoking

Attitude to Smoking	Frequency (N)	Percentage
Positive (>6)	295	84.5
Negative (=6)	54	15.5
Total	349	100

Table 5: Association between Selected Respondents Socio-Demographic Characteristics and their level of Knowledge on the Dangers Associated with Cigarette Smoking

Socio-Demographic Characteristics	Level of Knowledge		Total (%)	χ^2	p-value
	Poor (<8)	Good (=8)			
Area of Residence					
Rural	52 (33.1)	105(66.9)	157 (100.0)	5.0	0.03*
Urban	43 (22.4)	149 (77.6)	192 (100.0)		
Family Type					
Monogamous	77(30.0)	180(70.0)	257(100.0)	12.4	0.006**
Polygamous	8(13.6)	51(86.4)	59 (100.0)		
Divorced	0(0.0)	9(100.0)	9 (100.0)		
Separated	10(41.7)	14(58.3)	24 (100.0)		
No of Children					
<3	20(45.1)	29(54.6)	49(100.0)	22.7	0.04*
3-5	60(27.5)	162(72.5)	222(100.0)		
>5	15(27.1)	63(72.9)	78(100.0)		

*Chi square test

**Fisher's exact

Table 6: Association with the Selected Respondents' Socio-Demographic Characteristics and Prevalence of Cigarette smoking

Variables	Ever Smoked		Total (%)	χ^2	p-value
	Yes (%)	No (%)			
Sex of respondents					
Male	94(43.5)	122 (56.5)	216(61.9)	34.0	<0.001*
Female	18(13.5)	115(86.5)	133(38.1)		
Total	112(32.1)	237 (67.9)	349(100.0)		
Age					
<13	3(3.5)	61 (96.4)	64(18.3)	80.2	<0.001*
13-15	39(26.5)	97 (73.5)	136(39.0)		
>15	70(66.0)	79 (34.0)	149(42.7)		
Area of Residence					
Rural	66 (42.0)	91 (58.0)	157(45.0)	12.9	<0.001*
Urban	46 (24.0)	146 (76.0)	192(55.0)		
Mother's Level of Education					
No formal education	11(40.7)	16 (59.3)	27(7.7)	21.3	0.02*
Primary	31(57.4)	23(42.6)	54(15.5)		
Secondary	40 (25.5)	117(74.2)	157(45.0)		
Tertiary	30(27.0)	81 (73.0)	111(31.8)		
No of children					
<3	18 (43.1)	31 (56.9)	49(14.0)	31.5	0.03*
3-5	60(27.6)	162(72.4)	222(63.6)		
>5	34(37.8)	44(62.3)	78(22.3)		

*Significant

Discussion

This study revealed that majority of students in the age group 13-15 years are smokers as claimed that tobacco smoking remains a major public health concern particularly among young people (10,11). This is in line with the findings by (2) in which 1.1 million people representing one- third of the world's population above the age of 15 use tobacco particularly, in form of cigarette. Although, almost all of the students concluded that smoking is dangerous to health, only a few submitted that cigarette smoking shortens life span. This is contrary to the findings which revealed that every year, tobacco is responsible for the deaths of an estimated six million people and is associated with one in ten adult mortality worldwide. Tobacco smokers are believed to lose one decade of their life expectancy than those who never smoked (12). This result confirms other studies on respondents' smoking behaviour which was influenced by their friends and classmates (13,14,15).

The findings from this study is similar to the studies conducted among undergraduates in Ilorin (16) and South-East Nigeria (17) that revealed smoking prevalence to be higher in male respondents than female respondents. Consistent with the findings obtained in similar studies in many parts of Africa, the lifetime prevalence of smoking cigarette in this study is more than half and higher as compared to the mean lifetime smoking prevalence of 26.4% reported among secondary school students in Lagos State (2). The prevalence of current smokers in this study was 97.3% which is similar to the study conducted in South-South, Nigeria where the prevalence of current smokers was 86.0% (15). This study revealed that majority of the respondents agreed that smoking should be banned in public places. This finding is much higher than that reported by another study conducted in North east, Nigeria where about half of the respondents wanted smoking in public places banned (18).

Implications of the findings

This study lends credence to other study findings to scale up health promotion and education intervention that directly target young people. Findings of this study showed that the knowledge of respondents was good and only few had poor knowledge with existing misconceptions.

This finding necessitates training to improve their knowledge and dispel misconceptions among adolescents. The training programmes could be in form of seminars and debates in schools in order to effectively prepare them for the future ahead of them.

Conclusion and Recommendations

The prevalence of cigarette smoking was high among secondary school students in Ibadan North Local Government Area. Adolescent peer education and school-based enlightenment activities should be implemented in schools. Parents also need health education on the dangers associated with smoking as most of these students were being influenced by their smoking parents. Furthermore, public health experts should also look at ways to reduce cigarette smoking so as to ensure that cigarettes must not be found with adolescents. The Nigerian government should enforce a law that prohibits smoking in public places and under-age smoking. There should also be law prohibiting selling of cigarette to people below the age of 18 years.

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Authors' Contributions

AOE and MAT were involved in developing the research idea, as well as collecting and analysing of the data. AOE developed the draft manuscript. ATD and MAT reviewed the manuscript, while all authors approved the final manuscript for publication.

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Availability of Data and Materials

Dataset can be provided to interested persons upon request to the corresponding author. This can only be used for non-commercial purposes which will ensure respondents' confidentiality.

Ethical Consideration

Ethical approval was obtained from the Oyo State Ministry of Education Research Ethics Committee and the assigned reference number is AD13/479/1101. The respondents' consents were obtained after provision of adequate, clear and complete information about what the study entailed. Written consent was obtained from adolescents above 18 years of age while assent was obtained from principals for students who are less than 18 years old as well as the consent to publish the findings.

Consent for publication

Not Applicable.

Competing Interests

The authors declare no conflict of interest.

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