

PACIFIC JOURNAL OF MEDICAL SCIENCES
{Formerly: Medical Sciences Bulletin}
ISSN: 2072 – 1625



Pac. J. Med. Sci. (PJMS)

www.pacjmedsci.com. Email: pacjmedsci@gmail.com.

**CIGARETTE SMOKING AMONG NIGERIAN ADOLESCENT PUBLIC SENIOR SECONDARY
SCHOOL BOYS: PREVALENCE, CHARACTERISTICS AND ATTITUDES**

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CIGARETTE SMOKING AMONG NIGERIAN ADOLESCENT PUBLIC SENIOR SECONDARY SCHOOL BOYS: PREVALENCE, CHARACTERISTICS AND ATTITUDES**Alphonsus N. Onyiriuka ^{*1} and Rita C. Onyiriuka²**¹ Department of Child Health, University of Benin Teaching Hospital, Benin City, Nigeria.² Department of Economics and Statistics, Faculty of Social Sciences, University of Benin,

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ABSTRACT:

Although recent trends indicate a rising cigarette-smoking prevalence among adolescents in African countries, data on characteristics and attitudes of these African adolescent smokers are scarce despite the peculiar socio-cultural and economic patterns of African countries compared to Western and Asian countries. This study sought to determine the prevalence of cigarette smoking among public senior secondary (SS) school boys in Oredo Local Government Area (LGA) of Edo State and identify the associated risk factors and behaviors.

In this school-based cross-sectional study, anonymous self-administered questionnaire was used in obtaining data on cigarette smoking from 1,060 students in the two males-only secondary schools located in the LGA. The prevalence of cigarette smoking was 12.0%, 22.4% and 17.1% among first-year (SS1), second-year (SS2) and third-year (SS3) students respectively, with an overall prevalence of 16.5%. The mean age at which smoking began was 16.9 ± 1.2 years (95% confidence interval, CI = 16.7 – 17.1). A significantly higher risk of smoking was associated with having parents, elder siblings or best friends who smoke. Tolerant attitude of parents and best friends towards smoking by their sons/friends encouraged smoking among students. The two major reasons for taking up smoking were peer pressure effect (36.5%) and the need to mix freely with peers in social situations (22.9%). All the smokers were “light smokers” (smoking less than 10 sticks of cigarette per day). 3.4% of the smokers smoked their first cigarette within 30 minutes after waking up in the morning. Among the smokers, 80.6% admitted smoking was harmful and 60% said they would like to quit smoking but lacked the will power and were uncertain how to quit.

Considering that the prevalence of smoking among adolescents tend to increase with age, school-based smoking control intervention programs should start in the primary/junior secondary

schools and they must also address family influences on adolescent smoking. Empowering adolescents with skills to resist peer pressure is advocated.

Keywords: Cigarette, smoking, adolescents, boys, public schools.

Received: November 2010; Accepted: December 2010.

INTRODUCTION

Cigarette-smoking which often begins during adolescence is on the rise and constitutes a public health problem, not only because of the preventable morbidity and mortality it causes, but also, because of its socioeconomic implications [1, 2]. The prevalence rate of cigarette smoking is declining in developed countries but rising in developing countries [3, 4]. Despite this trend, there is paucity of information on cigarette smoking among adolescents in most developing countries [5]. Cigarette smoking commonly begins during adolescence when several factors such as peer pressure, family influences, social class, curiosity, defiance of social norms and the desire to imitate others influence a youth to start smoking and maintain the habit [6, 7].

Adverse effects of cigarette smoking may occur during adolescence. For instance, increased prevalence of chronic cough, sputum production, wheezing, bad breath and yellowish discoloration of the teeth have been documented [8]. Some components in cigarette smoke are known to induce

xenobiotic enzymes in the smooth endoplasmic reticulum in hepatocytes [8]. This process can influence metabolism of some drugs such as phenacetin, theophylline and imipramine, including affecting the rate in some endogenously produced hormones [8]. Studies have shown that adolescent cigarette smokers are at increased risk of other forms of drug misuse [9, 11]. Inhalation of cigarette smoke (passive smoking) may predispose adolescents to early pharmacological dependence on cigarette [10].

Adolescent smokers may become nicotine dependent by smoking fewer cigarette sticks per day compared to adult smokers [8]. More than 90% of adolescent smokers may become adult smokers [8].

One of the signs of nicotine dependence is smoking more than 10 sticks of cigarette per day or feeling a craving to smoke their first cigarette within 30 minutes after waking up in the morning [12, 13].

Prevalence of cigarette smoking among male secondary school students varies from country to country; Republic of Yemen 21.9%, Saudi Arabia 20.0%, Syria 15.9%,

Portugal 21.5% , and Bahrain 21.0% [9, 14 – 17]. In Nigeria, there is paucity of information on the prevalence of cigarette smoking, smoking behaviors and attitudes toward smoking among adolescent secondary school students [18]. Ibe and Ele [19] recently studied only female secondary school students in Nigeria despite the reported higher prevalence among male students by other authors [1, 5, 9, 20].

The present study, therefore, sought to determine the prevalence of cigarette smoking among adolescent senior secondary school male students in Oredo LGA and to assess the characteristics and attitudes of the smokers.

PARTICIPANTS AND METHODS

This cross-sectional study was conducted in two public senior secondary schools for male students in Oredo LGA, Edo State, Nigeria. According to Edo State Ministry of Education Statistics, there are nine public senior secondary (SS) schools in the LGA comprising 4 females-only, 3 co-educational and 2 Males-only [21]. Students in all the classes in the two males-only public SS schools were recruited for this study. Consent for the study was obtained from the school authorities.

Data was collected between January and February 2009, using a modified

anonymous self-administered questionnaire based on WHO guidelines for conducting surveys on smoking prevalence and behavior [22]. In the survey design, we emphasized to the students that the questionnaire was anonymous and their participation was entirely voluntary in order to protect the students' privacy and minimize underreporting.

In this survey, information was collected on socio-demographic characteristics, smoking behavior which included questions on: smoking status, age at which smoking started, number of cigarettes smoked per day, reasons for smoking, place of smoking, place of procurement of cigarette, whether or not younger siblings go to purchase cigarette for them and the time they smoke their first cigarette on waking up in the morning and whether or not they smoke in the presence of their parents.

The attitude of smokers towards the harmful nature of smoking and quitting of smoking was also assessed. The disapproving attitude or otherwise of the smokers' close contact toward smoking was documented. The socio-economic classification of each student was determined using a scoring system suggested by Ogunlesi et al, [23], which combined the highest educational attainment, occupation and income of the parents.

The scores for both parents were used to assign their children to socio-economic

classes (I to V). Social classes I and II represent the high social class, social class III represents the middle social class, and social classes IV and V represent the low social class [23].

The individual academic performance of each student was assessed by classifying them into three levels, "never failed", "failed once" and "failed more than once". In this study, each failure refers to having to repeat one year at school.

The smokers were also assessed for signs of nicotine dependence by identifying those who smoked 10 or more sticks of cigarette per day or feel a craving to smoke their first cigarette within 30 minutes after waking up in the morning; these signs were used to indicate potential nicotine dependence requiring initiation of treatment [12, 13].

Data management and analysis were performed using the SPSS statistical program. Chi-square test was used for assessing the significance of differences between smoking status and study variables among respondents. A p-value <0.05 was considered significant. Odd ratio (OR) and 95% confidence intervals (CI) were calculated.

{Smokers were those who smoked at the time of the study, whether daily, weekly or less than weekly. Ex-smokers were those who have smoked before but were not smoking at the time of the study. "Non

smokers" were those who have never smoked and ex-smokers combined [22].

Those who smoked less than 10 sticks of cigarette per day were classified as "light smokers" while those who smoked 10 or more sticks of cigarette per day were classified as "heavy smokers".

RESULTS:

At the time of this survey, a total of 1073 male students (974 in school A and 99 in school B) were attending the two males-only public SS schools in the LGA. The response rates were 99.4% in school A and 96.0% in school B. Overall response rate was 99.1%.

The questionnaires of 3 students were excluded from the analysis because they were incompletely filled, thereby leaving a total of 1060 questionnaires for data analysis. Students in both schools had similar socio-demographic characteristics, thus further analysis of data was carried out for the combined group of students.

Of the 1060 respondents, 175 (16.5%) were smokers and 885 (83.5%) were non-smokers. Among the non-smokers 79 (8.9%) were ex-smokers and 806 (91.1%) were never-smokers.

Table 1 shows the socio-demographic variables and prevalence of cigarette smoking for the respondents. Prevalence was higher among students in their third year (SS3) and older (aged between 17 and

21 years) and from families in the middle social class. The mean age at which smoking commenced was 16.9 ± 1.2 years (95% confidence interval, CI = 16.7 – 17.1). Both smokers and non-smokers had similar economic and demographic profiles. Results obtained for the characteristics and attitudes towards smoking by the 175 smokers are presented in Table 2. Peer group pressure and the need to mix freely with peers in social situations together accounted for 59.4% of the reasons for smoking by respondents. All the smokers were “light smokers” (smoked less than 10 sticks of cigarette per day) but 3.4% smoked their first cigarette within 30 minutes after waking up in the morning. The majority of smokers (84.5%) and non-smokers (87.2%) lived with both parents. The remainder lived with either one parent or other relatives.

One hundred and forty one (80.6%) smokers were aware that cigarette smoking is harmful to the body through the warning during advertisements (radio/bill boards). The smokers enjoyed smoking most in the following circumstances: Social gathering with peers/friends (60.0%); During manual work e.g., farming (15.0%); At home behind

the house (11.0%); In the bedroom (10.0%) and Anywhere (8.0%). A higher percentage of non-smokers (58.6%) than smokers (41.3%) expressed the desire to continue their education after secondary school. Out of the 175 smokers, 154 (88.0%) purchased their cigarette from either a nearby shop or hawker. Thirty percent of smokers regularly sent their younger siblings to purchase cigarette for them. Fifty (28.6%) of the smokers stated that they would like to stop smoking but their main obstacles were lack of will power, uncertainty about how to quit and fear of being regarded as timid or weakling by friends who continued to smoke.

The prevalence of smoking among students in close contact with other smokers is shown in Table 3. Smokers were four times more likely to have smokers among their best friends compared to non-smokers. The smoking status of fathers and elder siblings were significantly different between smokers and non-smokers. As shown in Table 4, the highest odd ratio was found in the disapproving attitude of best friends. Higher percentage of parents and elder siblings of non-smokers disapproved of smoking by student.

Table 1: Socio-demographic variables and prevalence of cigarette-smoking for the respondents

Socio demographic variables	No of respondents (%)	No of smokers	Prevalence in percent
School year			
First year (SS1)	366 (34.5)	37	10.1
Second year (SS2)	359 (33.9)	53	14.8
Third year (SS3)	335 (31.6)	85	25.4
Total	1060 (100)	175	16.5
Age group (years)			
13 – 15	170 (16.0)	17	10.0
16 – 17	715 (67.5)	111	15.5
18 –21	175 (16.5)	117	66.9
Total	1060 (100)	175	16.5
Social class of family*			
High social class	335 (61.6)	33	9.9
Middle social class	412 (38.9)	74	18.0
Low social class	313 (29.5)	47	15.0
Total	1060 (100)	164	15.5
*Eleven (6.3%) of the smokers have lost one of their parents, as a result were excluded from the social class determination.			

Table 2: Characteristics and attitudes towards smoking by 175 smokers

Characteristics and attitudes	No (%)
Reasons given by respondents for smoking	
Peer group pressure	64 (36.5)
Mix freely with peers in social situations	40 (22.9)
Imitate others	23 (13.1)
Boost self-confidence	21 (12.0)
Curiosity	15 (8.6)
Relax/Relieve anger and frustration	12 (6.9)
Opinion about smoking	
Harmful	141 (80.6)
Harmless	20 (11.4)
Uncertain	14 (8.0)
Do you smoke in the presence of your parents/guardian?	
Yes	38 (21.7)
No	137 (78.3)
Do you want to quit smoking?	
Yes	105 (60.0)
No	51 (29.1)
Uncertain	19 (10.9)
Regular source of cigarette	
Nearby shop	120 (68.6)
Hawkers	34 (19.4)
Friends	21 (12.0)
Do you send your younger siblings to purchase cigarette for you?	
Yes	53 (30.3)
No	122 (69.7)
Number of cigarette sticks smoked per day	
1 – 4	124 (70.9)
5 – 9	51 (29.1)
≥ 10	0 (0)
Do you smoke your first cigarette within 30 minutes of waking up in the morning?	
Yes	6 (3.4)
No	169 (96.6)
Academic performance of individual smoker	
Never failed	29 (16.6)
Failed once	96 (54.8)
Failed more than once	50 (28.6)

Table 3: Prevalence of smoking among students in close contact with other smokers

*Contacts	Smokers (%) n=175	Non smokers (%) n=885	Odds ratio	95% confidence interval
Father	40.1	26.5	1.84	1.23 – 2.57
Mother	0.3	0.1	0.83	0.40 – 0.90
Brother/Sister	36.5	15.3	1.76	1.11 – 2.68
Best friend	47.6	11.9	4.34	2.88 – 6.48

*In some cases, more than one students' close contact is a smoker

Table 4: Disapproving attitude of respondent's close contacts toward respondent smoking

*Contact	Disapproving (%)		Odds ratio	95% confidence interval
	Smokers n=175	Non-smokers n=885		
Parents	84.6	93.5	1.90	1.08 – 3.01
Elder siblings	68.9	84.8	1.98	1.36 – 2.89
Best friend	33.5	70.2	3.54	2.63 – 5.48

*In some cases, more than one students' close contact disapproved of smoking

DISCUSSION:

The overall prevalence rate of cigarette smoking (16.5%) among adolescent boys in public senior secondary school reported in this study was lower than the corresponding figures reported for Saudi Arabia (20.0%), Bahrain (21.0%), Portugal (21.5%), and Yemen (21.9%) but comparable to 15.9% reported for Syria [9, 14, 15, 17]. In the

United Kingdom, overall smoking rates have not changed appreciably over the last 20 years with 21 to 26% of adolescents admitting to smoking regularly [11]. A much higher smoking rate was reported among French adolescent students [24]. Differences in socioeconomic and cultural factors may account for relatively lower smoking rate in our study. The prevalence rate of smoking obtained in this study was

two times higher than the figure (7.7%) reported among secondary school girls in South East Nigeria, indicating that cigarette smoking was more prevalent among boys than girls in Nigeria [19]. The reported prevalence of cigarette smoking in the general adult population in Nigeria vary from 17.6% to 24.4%, which suggests that about 90% of adolescent smokers may become adult smokers [1, 8, 18].

Prevalence of smoking was higher among third-year (SS3) than first-year (SS1) students. This finding agrees with reports by other researchers that the rate of cigarette smoking increases with age [9, 17, 25]. The opposite was found in a study in Bahrain [17]. The lower prevalence among first-year students in this study may be due to their younger age and that the intensity of peer pressure has not reached its peak.

In the present study smoking commenced at a mean age of 16.9 ± 1.2 years, which is similar to the mean age (16.8 ± 1.1 years) reported for students in Bahrain [17], but different for the mean age (13.4 ± 2.1 years) reported for high school boys in Portugal [9]. This suggests that cigarette smoking by students in high schools starts at an earlier age in Portugal compared to Nigeria [9]. Among adult rural dwellers in South West Nigeria, the reported mean age of commencement of smoking was 18.9 ± 5.6

years, which is higher than the 16.9 ± 1.2 years obtained for public SS male students in the present study [18]. This difference in the results may be due to the type of study population used in both studies; adolescents versus adults, rural dwellers versus urban dwellers. The implication of the age of commencement of smoking reported in this study is that preventive strategies should, at least, start from the junior secondary schools, or better still, from the primary schools.

Most (59.1%) of the smokers in the present study took up smoking either because they were urged on by peers and friends or simply to mix freely with peers in social situations. Available studies among adolescent secondary school boys did not report the reason given by their respondents [9, 17]. In contrast, the leading reasons for smoking among Kuwaiti adults were to relieve boredom and to feel relaxed [26]; these are two of the uncommon reasons among Nigerian adolescents. In the Nigerian context, therefore, cigarette smoking control programs should include equipping adolescents with skills to resist peer pressure.

In consonance with other studies [16,17, 26] having parents, elder sibling(s) or best friends who smoke encouraged adolescents to take up smoking, suggesting that parents

and elder siblings of smokers provided early negative role models for these adolescents. The likelihood of smoking was higher among students whose parents and elder siblings have tolerant attitude toward smoking by their sons or younger brothers. Similar findings have been reported by other investigators [17, 27]. In this regard, for school cigarette smoking control programs to succeed, it must target not only the student, but also, their families.

Majority of the smokers in this study have repeated one or more school year due to failures, which supports the findings reported by others that poor academic performance promote up take of smoking [9, 17]. Our results indicate that majority (68.6%) of the smokers purchased their cigarette from nearby shops and that 30.3% of the smokers sent their young siblings to purchase cigarette for them. Other researchers in Nigeria reported that nearby shops were the commonest regular sources of cigarette for smokers [18]. This situation is worrisome, because cigarette seems to enjoy an excellent distribution system making procurement very easy, thereby escalating rate of consumption. The practice of sending younger siblings to purchase cigarette may expose them and make them potential smokers in the near future, further fueling the cigarette smoking epidemic in developing countries.

All the smokers in our study were "light smokers", which support the findings reported by Soresi et al that "light" smoking is common among high school students [28]. It is possible that financial constraint limited the number of cigarette sticks consumed daily by these students, because in the Oredo LGA, each a stick of cigarette cost between 10 and 15 Naira (between 0.07 – 0.1 USA Dollars). Despite the "light" smoking habits observed among the smokers in the present study, the negative impact on their health cannot be overemphasized. According to Soresi et al [18] occurrence of respiratory symptoms such as cough with phlegm and breathlessness were similar when "light" and "heavy" smokers were compared [28]. They also showed that nicotine dependence can occur even in adolescent high school students who are "light" smokers [28]. Only 3.4% of the smokers in our study smoked their first cigarette within 30 minutes of waking up in the morning, suggesting a low risk of nicotine dependence. Further studies are needed to fully assess the pattern of smoking behavior among other students in the various categories of schools in Nigeria. The data obtained in the present study can be used to assess the magnitude of the problem of smoking among male adolescent secondary school students in Nigeria.

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