

Full Length Research Paper

Prevalence of cigarette smoking among adolescents in Calabar city, south-eastern Nigeria

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ABSTRACT

The global prevalence of cigarette smoking is increasing especially in developing countries where 80% of tobacco deaths occur. This study was undertaken to determine the prevalence of cigarette smoking among adolescents in Calabar, Nigeria. This was a cross sectional study of smoking among apparently healthy adolescents between the ages of 10 – 18 years. Demographic data and smoking habits were obtained from secondary school students over a two month period. Cigarette smoking was defined as smoking at least one stick of cigarette a week. Data generated was entered into EPI-INFO and analyzed. Four hundred and fifty-eight students were screened and 375 participants were enrolled. The prevalence of cigarette smoking among the study participants was 6.4%. The prevalence of cigarette smoking was higher among males (13.0%) than females (2.1%) and the difference was statistically significant ($p < 0.001$). The prevalence of obesity was 1.9%. There was no statistical difference between the social classes and cigarette smoking ($p = 0.52$). The prevalence of cigarette smoking in this adolescent population is of public health importance. Enforcement of legislation that bans sale of cigarette to children and adolescents among other measures, such as health education, are possible ways of preventing the epidemic in this environment.

Keywords: Prevalence, Cigarette smoking, Adolescents, Nigeria.

INTRODUCTION

Cigarette smoking is an important risk factor for many non-communicable diseases globally. It is one of the greatest contributors to preventable illness and premature death (Mather and Loncar, 2006). It kills a third to half of those who use it (Peto et al., 1997). The global tobacco epidemic threatens the lives of at least one billion people (Peto and Lopez, 2001). Tobacco use is a risk factor for six of the eight leading causes of death globally (WHO, 2008). Cigarette smoking is a significant risk factor in the development and acceleration of the atherosclerosis (Peto and Lopez, 2001; Schoen and Cotran, 1999; and Taylor, 1993) especially those who

started smoking before age of 20 years (Voller and Strong, 1981). Tragically, more than 80% of tobacco deaths occur in the developing world (WHO, 2008). Tobacco use is growing fastest in low-income countries due to steady population growth and the tobacco industry targets this vulnerable population. Unlike other dangerous substances for which the health impacts are immediate, tobacco-related disease usually begin to manifest up to 3 decades after tobacco use starts (Lopez et al., 1994). It has been suggested that as tobacco use rises globally, the epidemic of tobacco-related disease and death is expected to increase (WHO, 2008).

Youth smoking is a major concern throughout the world (Peto and Lopez, 2001). In Europe and Canada, three smoking trend groups have been identified among adolescents: a declining or stagnating trend in the first group of countries, an increasing trend followed by a

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decreasing trend in the second group and an increasing trend in the third group (Hublet et al., 2006).

In developing countries, the trend is increase in cigarette smoking among adolescents (GYTSCG, 2002). The habit of cigarette smoking with onset during adolescence is difficult to break in adulthood (Paavola et al., 2004). Most adult smokers began to smoke or were already addicted to smoking before the age of 18 (Paavola et al., 2004). Risk factors for initiation of cigarette smoking in adolescents include gender (Rachiotis et al., 2008), smoking parents or siblings (GYTSCG 2002; Rachiotis et al., 2008) smoking peers (Rachiotis et al., 2008), advertisement (GYTSCG 2002; Rudatsikira et al., 2007; and Siziya et al., 2007). Other risk factors include the perception that smoking is not harmful (Rudatsikira et al., 2007) or makes them look mature (GYTSCG, 2002) and having excess pocket money (Rachiotis et al., 2008; and Mohan et al., 2005). Initiation of smoking is closely followed by addiction (Voller and Strong, 1981). Unfortunately, addicted smokers from the developing countries are unlikely to quit the habit as there are no smoking cessation programs (WHO, 2008).

Currently, very little information is available on the magnitude of the problem of tobacco use among adolescents (WHO, 2008; GYTSCG, 2002). In an attempt to document the extent of the problem, this study on tobacco use among adolescents was undertaken in the urban city of Calabar, one of the major tourism destinations in Nigeria.

SUBJECTS AND METHODS

This was a cross-sectional study of the prevalence of cigarette smoking among apparently healthy adolescents aged 10 – 18 years in Calabar, Nigeria. Data was collected among youths in secondary schools over a two month period. There were 19 Government owned secondary schools in Calabar Municipality with total enrolment of 23,117 students. The sample size was calculated using the formula for determining sample size for population studies (Araoye, 2003).

Sampling Techniques

Multi-stage sampling technique was used in this study. The first stage was stratification of the secondary schools into day and boarding schools. Day schools were chosen for this study. Second stage was simple random sampling in which four day secondary schools were chosen by balloting. In the third stage, students were stratified into junior and senior sections based on their classes. The final sampling process was the use of statistical table of random numbers to recruit students using the class registers.

School records were used to determine the number of students in each class and arm of the class to be recruited. Half (50%) of the calculated sample size was recruited from the junior classes and the other 50% from the senior classes. Participants were enrolled in their various classes. Letters seeking parental consent to enlist subjects were distributed through the selected students to their parents/guardians.

Inclusion criteria were apparently healthy students between 10 – 18 years of age, parental consent and willingness of selected students to participate in the study. Willing subjects whose parents/guardians refused to give consent as well as unwilling subjects whose parents gave consent were excluded. A pretested semi-structured questionnaire was administered to recruited students. Information obtained from participants were age at last birthday, gender, class of study and smoking habits as well as educational level and occupation of both parents.

Cigarette smoking was defined in this study as smoking even one stick of cigarette a week (Bewley et al., 1972). Only active smokers (i.e. those who had smoked in the week preceding the survey) were included. Information was not obtained on exposure to passive smoking from the participants.

Social Classification

Subjects were stratified into five (I, II, III, IV and V) social classes based on their parent's level of education and type of occupation (Olusanya et al., 1985).

Ethical Issues: The study was approved by the Ethical committee of the University of Calabar Teaching Hospital (UCTH). Permission was also obtained from the Cross River State Ministry of Education to enroll students in the state owned secondary schools. Finally, informed consent was also obtained from parents and only willing subjects participated in the study.

Data Analysis: Data were analysed using EPI Info 2002 and Statistical Package for Social Sciences (SPSS) software (version 11.0). Distributions were described as Mean and standard deviation (SD). The analysis of variance (ANOVA) technique was used for comparison of means of continuous variables, with F-statistic as the test of significance. Odds ratio and chi-square were also computed for categorical variables using the EPI-2002 STAT-CAL. The level of statistical significance was fixed at $p < 0.05$.

RESULTS

Four hundred and fifty-eight forms were distributed through the sampled students for parental consent. Eighty-five (85.2%) of the forms were returned with

Table 1: Distribution of Subjects by Gender and Age

Age (years)	Males n(%)	Females n(%)	Total n(%)
10 - <11	2(1.4)	2(0.9)	4(1.1)
11 - <12	7(4.8)	9(3.9)	16(4.3)
12 - <13	17(11.6)	18(7.9)	35 (9.3)
13 - <14	16(11.0)	33(14.4)	49(13.1)
14 - <15	22(15.1)	49(21.4)	71(18.9)
15 - <16	33(22.6)	39(17.0)	72(19.2)
16 - <17	16(11.0)	36(15.7)	52(13.8)
17 - <18	19(13.0)	27(11.8)	46(12.3)
18 - <19	14(9.6)	16(6.9)	30(8.0)
Total	146	229	375

Table 2: Distribution of Subjects by Social Class of Parents

Social Class	Males n(%)	Females n(%)	Total n(%)
I	14(9.6)	19(8.3)	33 (8.9)
II	29(19.9)	40(17.5)	69 (18.5)
III	57(39.0)	84(36.7)	141 (37.5)
IV	31(21.2)	64(27.9)	95 (25.3)
V	15(10.3)	22(9.6)	37 (9.7)
Total	146	229	375

parental consent. Fifteen students declined participation in spite of parental consent and so were excluded from the study. The remaining students who met the enrolment criteria were recruited. Data analysis was carried out on 375 subjects.

Age and Sex Distribution: Table 1 shows age and sex distribution of the subjects. The median age was 15 years and the mean age 14.67 ± 1.94 years. There were 146(38.9%) males and 229(61.1%) females giving a male to female ratio of 1:1.6. The median age for the males was 15 years and mean age 14.68 ± 2.05 years while the median age for the females was also 15 years and mean 14.66 ± 1.80 years.

Social Classes of Subjects: The social classification of the subjects is shown in Table 2. All the social classes were represented. Social class III had the largest percentage of participants (37.5%) while social class I had the least (8.8%). There was no statistically significant difference in the social classes between the male and female participants ($p=0.69$).

PREVALENCE OF SMOKING

The prevalence of cigarette smoking among the study participants was 6.4% (Table 3). The prevalence of cigarette smoking was higher among males (13.0%) than was observed for females (2.1%) and the difference between genders was statistically significant ($p < 0.001$). Of the adolescents that smoked, 79% were males while 21% were females.

PREVALENCE OF OBESITY

The prevalence of obesity was 1.9% (7 of 375, Table 3). The gender of the obese participants was as follows; 5 (2.2%) females and 2(1.4%) males. The difference in the prevalence of obesity between gender was not statistically significant ($p = 0.57$). The proportion of overweight for all the subjects in this study was 2.4% and was marginally higher in females (3.4%) than males (1.4%).

Table 3: Sex prevalence of Smoking and Obesity among youths in Calabar

	Male (%) (n = 146)	Female (%) (n = 229)	Total (%) (n=375)	Odds Ratio (95% CI)	X ²	p
SMOKING	19(13.0)	5(2.2)	24(6.4)	5.96 (2.04–18.67)	15.06	0.001*
OBESITY	2(1.4)	5(2.2)	7(1.9)	0.62 (0.08–3.67)	0.32	0.57

KEY: CI = Confidence Interval
 X² = Chi Square
 P = p value
 * = Statistically Significant

Table 4: Prevalence of Smoking and Obesity by Social Class among youths in Calabar

RISK FACTOR	UPPER (%) (n = 102)	MIDDLE (%) (n = 141)	LOWER (%) (n = 132)	Total (%) (n = 375)	df	X ²	p
SMOKING	9(8.8)	7(5.0)	8(6.1)	24(6.4)	2	1.32	0.52
OBESITY	5(4.9)	1(0.7)	1(0.8)	7 (1.9)	2	6.67	0.04*

Key: df = degrees of freedom
 X² = Chi Square
 P = p value
 * = Statistically significant

RELATIONSHIP OF SMOKING TO SOCIAL CLASS

Table 4 shows the relationship between prevalence of smoking and social groupings of subjects. There was no statistical difference between cigarette smoking and the social classes of the adolescents ($p = 0.52$). However, there was statistically significant difference in the prevalence of obesity and the social classes ($p < 0.04$). Obesity was observed more commonly in the upper social group (4.9%) than in the middle and lower social groups (0.7% and 0.8%) respectively.

DISCUSSION

This study has shown that the prevalence of cigarette smoking among adolescents in Calabar was 6.4%, majority of the smokers being the male adolescents. The prevalence of adolescent smokers in this study is similar to the 7% of ever smokers reported from the same locality in one of the 75 sites of the GYTS study (GYTSCG 2002). In the GYTS study, adolescents between 13-15 years of age in secondary schools were studied. Other African sites in the GYTS study (GYTSCG 2002) reported higher prevalence as follows; 13.2% in Ghana, 7.2% in Harare and 12.8% in Monicaland (both in Zimbabwe), 8.6% in Lilongwe and 11.3% in Blantyre (both in Malawi). The slightly lower prevalence of

cigarette smoking among 10 – 18 year old adolescents in the present study i.e. with wider age range than in the GYTS study are in keeping with the report of the GYTS survey which showed that majority of adolescent smokers in the African sites are initiated into smoking in early adolescence, i.e. earlier age than was observed before now (GYTSCG, 2002). The implication is that the prevalence of adolescent smoking is likely to increase in the near future as more youths are initiated into smoking in early adolescence.

The definition of smoking among the participants in the present study also might have affected the prevalence obtained. While the current study captured adolescents that smoked in the previous seven days, the GYTS study included all adolescents that smoked 30 days to the day of data collection. It would appear that if the present study had included all the adolescents that smoked in the previous 30 days, the prevalence could have been higher than that in the GYTS study. It therefore appears that the prevalence of cigarette smoking among adolescents is high in Calabar, south-eastern Nigeria.

In this study, the males were the predominant smokers. Other studies from Nigeria and Uganda have shown similar trend (Omokhodion and Faseru, 2007; Onadeko et al., 1987; Mpabulungi and Muula, 2004) among adolescents. Gender disparity in the prevalence of cigarette smoking is not universal. Prevalence of 7.7% was reported among female adolescents in secondary

schools in eastern Nigerian females, a figure that was higher than the overall prevalence of 6.4% and the 2.2% found among females in this study (Ibeh et al., 2003). A study conducted in five centres in Nigeria, (Ekanem et al., 2010) reported that the level of cigarette smoking among 13-15 year old females is higher than in the adult female population. In Zambia, it was reported that more female adolescents smoke cigarettes when compared to the males (Siziya et al., 2007). Also the second GYTS reported that in about half of the 120 sites studied, there was no difference in the prevalence of cigarette smoking between gender (GYTSCG, 2003). Compared with the situation in Europe and Canada, it can be stated that this region is experiencing the increasing trend of cigarette smoking among adolescents.

The high prevalence of cigarette smoking observed in the current study supports the view expressed in the GYTS study (GYTSCG, 2002) that immediate attention should be given to the development and enforcement of tobacco smoking cessation programs especially for the youth population. Although from the GYTS study, school curriculum highlights the dangers of cigarette smoking, the prevalence of cigarette smoking is on the increase. Thus, more still needs to be done to compliment the content of the school curriculum on the dangers of cigarette smoking. In the GYTS study (GYTSCG, 2002), it was reported that 68.4% of adolescents were willing to stop smoking and 63.1% made unsuccessful attempts to quit smoking. Since it has been shown that it is difficult to stop smoking once the habit is initiated (Paavola et al., 2004), this is the right time to enforce measures aimed at discouraging adolescents from smoking.

CONCLUSION

In conclusion, the prevalence of cigarette smoking in this adolescent population is of public health interest. Enforcing legislation that bans sale of cigarette to children and adolescents among other measures, including health education are possible ways of preventing the epidemic in this environment. It is also needful to establish formal cigarette cessation programme in this environment.

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