# Smoking Intensity Among Nigerian Secondary Schools Adolescent Smokers

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*This study examined smoking intensity among secondary school adolescent smokers. A total of 800 students, made up of 685 males and 115 females who have at least tasted a cigarette once, from twenty secondary schools (5 private and 15 public secondary schools) in Benin City, Nigeria participated in the study. A questionnaire was used in collecting data that were analyzed in this study. The questionnaire consisted of 7 sections: the demographic variables, Smoking stages, delinquency, alcohol use, school connectedness, family connectedness and peer smoking status. Two out of the three hypotheses tested were supported. Result of the multiple regression analysis indicated that delinquency and parents' smoking status independently predict smoking initiation, while depression was not found to initiate smoking among adolescents. Adolescents' whose parents smoke and had a strong family connectedness were found to smoke more during the addictive stage than those whose parents do not smoke. Female smokers were found to smoke more at initiation stage as a result of peer pressure and school connectedness. Males were found not to have greater smoking intensity as a result of peer pressure and school connectedness. Based on the findings of this study, it was recommended that the future of a successful treatment program by therapists for smokers lies heavily on knowing and identifying the stage of smoking the individual is, and how intense the individual's smoking level. This no doubt would help the therapists in tailoring specific treatment for specific individuals.*

## Introduction

World Health Organization (WHO) and the World Heart Foundation's current data reveal that in Nigeria, 22.1 % of school youth age between 12 to 17 years use tobacco (Megafu, 2002, as cited in Imhonde, 2005). In addition, general population survey on the use of tobacco products among Nigerian adults (20 years+) carried out in the Middle Belt Region of Northern Nigeria revealed the following: that the prevalence rate of cigarette smoking was 22.6 %; cigar pipe tobacco stood at 17.9 %; and snuff users was 9.6 %. Furthermore, Males were discovered to smoke more than females (Obot, 1990, as cited in Imhonde, 2005). Furthermore, the National Drug Law Enforcement Agency [NDLEA] (1991), found that about 11 % of the students' population in Lagos, Nigeria abused cigarettes. In 1992, NDLEA shifted research to Kano state and found that the male to female ratio for cigarette use was 11:1. In the same year, the NDLEA carried out yet another comparative study of Kano and Lagos states on the extent and pattern of the use of psychoactive drugs among secondary school students. It was found that unlike in Lagos state, where Valium topped the list and cigarette use came a distant 3rd position, cigarette use topped the list in Kano state and was followed by Valium use (NDLEA, 1992).

Smoking rates among secondary schools adolescents in the United States of America has also risen over the past decade; with the prevalence rate of current cigarette smoking (i.e., at least 1 cigarette in the past 30 days) among high school students increasing from 27.5% in 1991 to as high as 36.4% in 1997 (Centers for Disease Control and Prevention [CDC], 1998), with a slight decrease in 1999 to 34.8% (CDC, 2000). Leventhal and Cleary (1980) originally described smoking as a complex behavior that evolves through several stages. Smoking in adolescence is commonly conceptualized as progressing through a sequence of developmental stages characterized by different stages of smoking frequency and intensity (Mayhew, Flay, & Mott, 2000), often culminating in nicotine dependence (Chassin, Presson, Pitts, & Sherman, 2000; Colby, Tiffany, Shiffman, & Niaura, 2000).

Given the recurring incidents of smoking and other substance abuse among secondary schools' adolescents, Orubu (1983, cited in Adelekan & Ndom, 1997) warned that young people were now ruining their lives through drug use as Nigeria ranks third among the developing countries in its use of dangerous drugs. This may have caused stakeholders in Nigeria to make a clarion call on the Nigerian Government to embark on a vigorous campaign to enlighten its youths and the general populace on the dangers of drug abuse and other social vices (Adelekan, Ndom, & Imouokhome-Obayan, 1996). Even though incidents of drug abuse among Nigerian secondary schools adolescents are not confined to a particular sex or age, reports on cannabis use in Nigeria identify adolescents and young adults as the group at risk (Odejide & Sanda, 1976). However, drug use and abuse now cut across all strata of the society. It is found among the affluent, the top professionals, high executives, musicians, long distance truck drivers, as well as sportsmen (Odejide, 1993).

Imhonde, Afolabi, and Ehon (2001) in their study of the influence of self-efficacy, duration of smoking and gender on perceived smoking cessation, found that there is no gender difference in the contemplation of smoking cessation. However, Adelekan, Abiodun, Obayan, Oni and Ogunremi (1993) and Sijuwola, (1989) found that males remained significantly more likely to be smokers than their female counterparts. This situation is largely attributable to the fact that the Nigerian society still frowns at smoking behavior in females. This is in contrast with the general trend being reported from developed countries, where females are more frequent and heavier smokers than males. Adelekan, Ndom, and Imouokhome-Obayan, (1996) in their research on monitoring trends in substance use through a repeated cross-sectional survey in a Nigerian university, found that the pattern of use of the commonly used substances remained largely occasional, with a shift towards less frequent smoking. Higher levels of drug use were associated with parental use, family background, single parentage, parental conflict, family disorganization, social class, and peer

group (Adelekan & Ndom, 1997). Thus, Adelekan and Ndom (1997) described the typical smoker as a male, young, single, and from a polygamous, and a low socioeconomic background. In their phase 1 survey, Adelekan, Abiodun, Obayan, Oni and Ogunremi (1993) identified the following as common correlates to the three substances investigated (alcohol, cigarettes and cannabis): Peer influence; self-reported poor mental health; religiosity; parental/guardian supervision; perceived availability; and perceived harmfulness. In addition, drinking and smoking were reported to be common among males and among respondents who reported study difficulties.

Although multiple psychosocial risk and protective factors have been linked to youth smoking and its progression from initial to regular use, including various socio-demographic, contextual, behavioral, psychological, and biological variables (Hawkins, Catalano, & Miller, 1992; U.S. Dept. of Health and Human Services, 1994), few studies have investigated the salience of variables at particular smoking stages (Mayhew, Flay, & Mott, 2000). However, several recent studies have highlighted factors that appear to vary along the smoking continuum. For example, onset of smoking has consistently been linked to susceptibility to smoking (Pierce, Choi, Gilpin, Farkas, & Merritt, 1996), deviance and antisocial behavior (Reynolds & Nichols, 1976), and other drug use (McGee & Stanton, 1993). Flay, Hu and Richardson (1993) found that transition from trial to experimental smoking was related to friends smoking, cigarette offered by friends, smoking intentions, grade, and alcohol and marijuana use. Experimentation and regular smoking have been associated with individual level variables of gender and race (Flay, d'Avernas, Best, Kersell, & Ryan, 1983, as cited in Flay, 1993), regulation (Pallonen, Prochaska, Velicer, Prokhorov, & Smith, 1998), concerns about weight gain (Robinson, Klesges, Zbikowski, & Glaser, 1997), positive attitudes toward smoking (Pallonen et al., 1998), and parental and family influences (Flay et al., 1992; Mayhew, et al. 2000).

Research investigating the etiology of adolescent drug use (Jessor & Jessor, 1997; Magnusson, 1988) proposes an

interactional approach to drug use and abuse, in which individuals are taught to develop in reciprocal interaction with their environment (Brook, Cohen, Whiteman, & Gordon, 1992). Based originally on Bandura's (1977) social learning theory, the assumption is that adolescent's acquisition of behaviors and values is based in large part, on the complex web of interpersonal social relationships in which the individual is fixed. Adolescent problem behaviors, including drug use, are proposed to be the result of interactions between, and into a stage conceptualization of smoking.

The present study sought to examine if adolescent smokers get into smoking as a result of peer pressure or as a result of their school connectedness; whether there are possible differences between males and females in smoking intensity across stages; whether parents' smoking status influenced the smoking status of their children. In view of these, it was hypothesized that depression, delinquency and parents' smoking status (Parents smoking status was defined as either one or both parents currently smoking) would independently and jointly predict initiation of smoking among adolescents. Secondly, we postulated that adolescents whose parents (one or both) smoke, and have a strong family connectedness would report smoking more at the addictive stage than adolescents whose parents do not smoke. Lastly, we stated that sex will significantly be influenced by peer group and school connectedness at the initiation stage than the addictive stage.

## Method of Study

*Participants*

The research participants comprised of 800 secondary school students (current smokers) drawn from twenty secondary schools (5 private and 15 public schools) in Benin City, Nigeria. A total of hundred and fifteen (115) females representing 14.4% of the sample, with age range between 13 and 17 years (M= 16.34, SD= 1.31) participated in the study, while six hundred and eighty five (685) were males, representing 85.6% of the entire sample,

with an age range of between 12 and 19 years (M= 16.2, SD= 1.37).

*Measures*

The instrument used in gathering data for this study was a questionnaire. The questionnaire was constructed by current researchers, except for the sections on Beck Depression Inventory, family connectedness and delinquency, which were adopted from other studies as clearly indicated in this study. The questionnaire for this study was made up of seven sections, which are presented under the following sub-headings:

*Demographic Variables*

This section of the questionnaire elicited social-demographic information about participants. Specifically, information required from the respondents included their religion, sex, age, type of school as well as their parents' smoking status.

*Smoking Stage*

Smoking stage was defined using Lloyd-Richardson, Papandonatos, Kazar, Staton and Niaura's (2002) definition. It classified smoking stage on the basis of smoking frequency and present smoking status (Never smokers were defined as those adolescents who denied ever trying a puff or two of cigarettes; experimental smokers were defined as those who endorsed trying cigarettes, although denied smoking within the past month or ever smoking regularly i.e., daily smoking); intermittent smokers were defined as those who reported smoking between 1 and 10 out of the past month; addictive smokers were defined as those who reported smoking on a daily basis within the past month.

*Delinquency*

Items in this sub scale were adapted from the 11-item scale developed by Resnick, Bearman, Blum, Bauman, Hariris, and Jones (1997). Items adapted include destroying property, lying to parents, stealing, running away from home and skipping school. An internal

consistency, Cronbach alpha of .75 was obtained for this study.

*School Connectedness*

Items in this sub-scale were developed by the authors with due consultations with existing literature. It was a six-item scale, which assessed adolescent perception of the school environment, student-teacher relationship, students' peer relationship, students' interest in academic work and students' freedom in choice of recreational activities to participate in. The scale yielded an internal consistency reliability coefficient of 0.83 and Guttman's Split half reliability co-efficient of 0.72

*Beck Depression Inventory (BDI)*

Depressive symptoms were assessed using the BDI (Beck, Rush, Shaw, & Emery, 1979). The BDI was initially developed for use with adults and has well-established psychometric properties (Beck, Steer, & Garbin, 1988). In the present study, minor modifications were made to the original BDI, in accordance with other research studies that have used the BDI with adolescent samples (Bennett, Ambrosini, Bianchi, Barnett, Metz, & Rabinovich, 1997; Carter & Dacey, 1996; Reynolds, 1994). These changes included the removal of item 21, which asked about sexual interest, and simplification of terminology to aid understanding of item 11 (the word annoyed was used to define irritable). A coefficient alpha of .76 was obtained for this study.

*Family Connectedness*

This was an adaptation of parent-family connectedness scale (Resnick et al, 1997), which consisted of 13 items assessing the adolescent's general relationship with the feelings toward his/her family members. Item analysis for this study revealed 10 internally consistent items with coefficient alpha of .78 and Guttman split half reliability of the scale was 0.68.

*Peer Smoking Status*

This was assessed with the questions: do you have friends who smokes? Do they encourage you to smoke? Are they willing to part with their money to buy cigarette for you at any time?

## Procedure

Copies of the survey were distributed through the school principals and teachers in each of the secondary schools that participated in the study to their students who had earlier signified that they had smoked or have at least tasted smoking once. Students who did not signify that they had smoked or tasted smoking, but were identified by their fellow students to have smoked or tasted smoking were requested to fill out the questionnaire. Due to the relative length of the questionnaire, they were allowed to take the questionnaire home and were implored upon to return the completed questionnaire to their class teachers from whom copies of the scale were retrieved after three days.

## Results

In order to determine among others if adolescent smokers get into smoking as a result of their school connectedness or whether their parents' smoking status influenced the smoking status of these adolescents, we attempted to examine some demographics across stages. The results are presented in Table I below:

**Table 1**: Descriptive statistics of Adolescents by Smoking Stages

| Variables | Never smokers | Experimental smokers | Intermittent smokers | Addictive smokers |
|---|---|---|---|---|
| Age (years) | | | | |
| Mean | 15.29 | 14.52 | 18.24 | 18.15 |
| SD | 2.34 | 1.30 | 1.37 | 1.50 |
| Gender (%) | | | | |
| Boys | 85 (12.41) | 215(31.39) | 120(17.52) | 265(38.69) |
| Girls | 10 (8.70) | 30(26.09) | 47(40.87) | 28(24.35) |
| Type of School | | | | |
| (%) | 60(9.09) | 250(37.88) | 165(25) | 185(28.03) |
| Public | 20(14.29) | 25(17.86) | 30(21.43) | 65(46.43) |
| Private | | | | |
| Religion (%) | | | | |
| Christianity | 80(17.78) | 120(26.67) | 130(28.89) | 120(26.67) |
| Islam | 20(9.43) | | | 32(15.09) |
| ATR | | 95(44.81) | 75(35.38) | |
| Parents smoking | | | | |

| | | | | |
|---|---|---|---|---|
| status<br>Yes<br>No | 30(10)<br>200(40) | 80(26.67)<br>120(24) | 120(40)<br>130(26) | 70(23.33)<br>50(10) |

Note ATR= African Traditional Religion.
All figures appearing inside the parentheses ( ) is in %

Based on the survey, it can be concluded that an appreciable number of girls (40.87%) engage in intermittent smoking. Furthermore, 46.43% of adolescents attending private secondary schools are addictive smokers. The study also revealed that a reasonable proportion of the boys sampled (31.39%) were experimental smokers and 38.69%% are addictive smokers. In addition, only 8.70% of the sampled female adolescents have never smoked.

A simple multiple regression and independent t-test analysis were used in analyzing the data generated to test the hypotheses of the study. Results obtained indicated that delinquency independently predicts smoking initiation (t = 11.17, P< .05); parents' smoking status was also found to significantly predict smoking initiation (t = 8.34, P <. 05). Depression was not found to be independent predictor of smoking initiation among adolescents. However, there exists a significant joint prediction of depression, delinquency and parents' smoking status on smoking initiation among adolescents F (3,797) = 60.01, P < .01). The results of the multiple regressions is shown in Table II.

**Table 2**: Multiple Regression Analysis Showing Independent and Joint Prediction of Depression, Delinquency and Parents' Smoking status on Smoking Initiation Among Adolescents.

| Variables | Beta | T | p | R | $R^2$ | F | P |
|---|---|---|---|---|---|---|---|
| Depression | 0.44 | .712 | >.0.5 | | | | |
| Delinquency | 0.80 | 11.17 | <0.5 | 0.87 | 0.74 | 60.01 | < .01 |
| Parents' Smoking Status | 0.65 | 8.34 | <0.5 | | | | |

The second hypothesis, which stated that adolescents whose parents (one or both) smoke and have a strong family connectedness would smoke more on the addictive stage than

adolescents whose parents do not smoke, was tested using the independent t-test. Result obtained shows that adolescents whose parents smoke and with strong family connectedness smoke more at the addictive stage than those whose parents do not smoke (t =3.03, df = 798, P< .01). Result is presented on table III

Independent t-test computed separately for both males and females revealed that females were more influenced by peer pressure and school connectedness to smoke at initiation stage than at the addictive stage (t =3.40, df =114, P < .05), while there was no significant difference in the intensity of smoking by male students at the initiation and the addictive stages. Result are also presented in Table III, which indicated no statistically significant difference in the intensity of smoking by males at the initiation stage and the addictive stage (t =1.5, df = 683, P>.05).

**Table 3**

| Group | Variables | N | M | SD | DF | T |
|---|---|---|---|---|---|---|
| Addictive Stage | **Parents smoke with strong family connectedness** | **300** | **10.99** | **2.54** | **789** | 3.03 |
| | **Adolescents whose parents do not smoke** | **500** | --- | --- | **28.97** | 2.79 |
| Females | **Smoking intensity at initiation stage** | **70** | **10.35** | **3.41** | **113** | 4.50 |
| | **Smoking intensity at addictive stage** | **45** | **7.65** | --- | --- | --- |
| Males | **Initiation Stage** | **250** | **14.76** | **3.34** | **683** | 1.5 |
| | Addictive Stage | 435 | 15.01 | 3.09 | --- | --- |

Note: Significant at 0.05

## Discussion

The results of multiple regression analysis indicated that delinquency and parents' smoking status independently predict smoking initiation among adolescent smokers, while depression was not found to be independently significant in predicting smoking initiation. However, there was a joint predictive effect of delinquency, parents' smoking status and depression on smoking

initiation. This finding supports the works of Pierce, Choi, Gilpin, Farkas, and Merritt (1996), Reynolds and Nichols (1976), and McGee and Stanton (1993), who found that onset of smoking intensity has consistently been linked to susceptibility to smoking, deviance and antisocial behavior as well as other drug use. One of the major reasons that could be adduced for this finding is in the realm of methods employed for data analysis in this study as the total scores of each of the research participant were included in the analysis irrespective of how low or high the respondents' scores were. Secondly, it is possible that adolescents that smoke do so, not as a result of depression, but simply because they want to smoke.

The second hypothesis predicted that adolescents whose parents (one or both) smoke and have a strong family connectedness would smoke more at the addictive stage than adolescents whose parents do not smoke. This hypothesis was retained. However, the obtained differences could be due to the strong ties among family members of parents who smoke, which resulted in their children taking or modeling after them. This modeling gives room for the intensity of cigarette smoked during the addictive stage when a pattern has been established. This finding supported the works of Magnusson (1988), who proposed an interaction approach to drug use and abuse, in which individuals are taught to develop reciprocal interaction with their environment. Based originally on Bandura's (1977) social learning theory, the assumption is that adolescents' acquisition of behavior and values is based in large part on the complex web of interpersonal social relationships in which the individual is fixed.

Lastly, female smokers were, found to be significantly influenced by peer pressure and school connectedness at the initiation stage than the addictive stage. This shows that peer influence and school connectedness have a huge influence on adolescent girls during the initiation stage than the addictive stage. It is possible that the intensity of smoking during addictive stage for the adolescent girl is as a result of feeling of anomie and rebelliousness, and self-fulfilling prophecy, which were not among the variables investigated in this study. For instance, in Nigeria,

smoking among girls and women is frown upon. It is not accepted socially, so all who smoke are generally regarded as irresponsible females and often labeled prostitutes. This finding re-affirmed an earlier one by Imhonde, Afolabi and Ehon (2001), which revealed that in Nigeria women who smoke do not see themselves as women but smokers. At the initiation stage they are influenced a great deal by peer group and school connectedness but at the addictive stage they have developed a pattern and smoked more because they want to equate themselves to men and the likes. In view of this, those who get into smoking through the influence of their friends, may get to the maintenance and the addictive stage as a result of their belief that- 'I can do what the boys do- why won't I smoke".

Male adolescent smokers on the other hand were not found to be influenced by peer group pressure and school connectedness at initiation stage than the addictive stage. This finding was surprising given the expectation of this study that males would be more influenced to indulge in the acts of smoking at the initiation stage than in the addictive stage. The result shows that males who smoke do so not as a result of peer influence and school connectedness, but as a result of other variables probably not covered by this study. This did not support the findings of Flay, Hu, and Richardson (1993) who found that transition from trial to experimental smoking was related to friends' smoking, cigarette offered by friends, smoking intentions, grade and alcohol, and marijuana uses.

Delinquency and alcohol use were significant risk factors for smoking across all stages. Although these did not serve as risk factors when both were combined, it was unclear what influences are responsible for this pattern. One may therefore be tempted to speculate that it may be due to the unexplored interaction with family or peer influences. Alcohol, when combined with peer smoking, was found to predict smoking initiation and experimentation in adolescents (Patton, Hibbert, Roiser, Carlin, Caust & Bowes, 1996) and progression to daily smoking in young adults (Breslau, Peterson, Schultz, Chilcoat, & Andreski, 1998).

Recommendations

This study supported previous ones on the intensity of

smoking across differentiating stages. Smoking in adolescence is commonly conceptualized by different stages of smoking frequency and intensity, often culminating in nicotine dependence. Although previous investigators have underscored the theoretical importance of conceiving youth smoking as a series of developmental stages, there remains some discussion over the stages versus continuous nature of smoking uptake. This study has therefore, provided some insights, which could inform therapists' future planning and implementation of provision for intervention programs within and outside the school system. In addition, current study has also advanced variables to be taken into consideration when drawing out intervention programs. Therefore, the future of a successful treatment program by therapists for smokers lies heavily on knowing and identifying the stage of smoking the individual is, and how intense the individual's smoking level. These would help the therapists in tailoring specific treatment for specific individuals.

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