

## RESEARCH ARTICLE

# Age of initiation, Determinants and Prevalence of Cigarette Smoking among Teenagers in Mushin Local Government Area of Lagos State, Nigeria

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## Abstract

**Background:** Cigarette smoking constitutes a major threat to the health and wellbeing of teenagers. While smoking has been on decline in the developed countries, the reverse is the case in developing countries. The aim of this study was to determine the age of initiation, determinants and prevalence of cigarette smoking among teenagers in Mushin Local Government Area of Lagos state, Nigeria. **Materials and Methods:** This was a descriptive cross-sectional study among 475 teenagers selected by multistage sampling. A pre-tested, structured, interviewer-administered questionnaire was used for data collection. The study was carried out in November, 2014. **Results:** Response rate was 84.6%. Mean age of the respondents was 16.4±1.65years. Range and mean age of initiation of cigarette smoking were 7 to 17 years and 12.0±3.32 years respectively. Teenagers who were above 15 years (OR:5.13, 95% CI: 0.87-30.26), males (OR:5.19, 95% CI: 1.57-17.18), married (OR:8.41, 95% CI: 1.04-63.35), had ≤primary school education (OR:4.31, 95% CI: 1.07-17.33), influenced by friends (OR:308.84, 95% CI: 84.87-1123.81), and influenced by advertisements (OR:27.83, 95% CI: 3.92-197.64) were more likely to have initiated cigarette smoking. Furthermore, teenagers who were males (OR:12.77, 95% CI: 2.90-56.28), married (OR:19.24, 95% CI: 2.05-180.45), had ≤primary school education (OR:7.85, 95% CI: 2.37-26.01), influenced by friends (OR:28.56, 95% CI: 10.86-75.07), and influenced by advertisements (OR:5.95, 95% CI: 1.72-20.61) were more likely to be current cigarette smokers. In addition, 24.9% had initiated cigarette smoking while 14.7% were current smokers of cigarette. **Conclusions:** Mean age of initiation of cigarette smoking was 12.0±3.32 years. Determinants of cigarette smoking were age, gender, marital status, educational background, friends and advertisements. Life time prevalence of cigarette smoking was higher than prevalence of current cigarette smokers. Cigarette smoking reduction programs should take these factors into consideration.

**Keywords:** Age of initiation - determinants of cigarette smoking - teenagers - prevalence - Nigeria

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## Introduction

Tobacco smoking remains a major public health concern particularly among young people (Odukoya et al., 2013). It is the leading preventable cause of mortality and over five million people die globally from the effects of tobacco every year. Every eight seconds someone, somewhere in the world, dies as a result of using tobacco (Leung et al., 2009). It is reported that by the year 2030, the death rate is estimated to exceed eight million people a year Global Youth Tobacco Survey Collaborative Group (GYTS, 2002).

According to the World Health Organization (WHO) it is estimated that 1.1 billion people, representing a third of the world population above the age of 15 years, use tobacco, principally in the form of the cigarettes and of

these, 700 million of them being males live in developing countries. While smoking rates have been on the decline in the developed countries, they have however been on the high side in the developing countries and it has increased by as much as 50 %, especially in Asia and in the Pacific region. Over the last decade about four million deaths occurred annually as a result of about 50% increase in rate of smoking cigarette in developing countries.

In Europe, an estimate of 26% of people aged 15 years and above approximately 100 million people smoke on a daily basis (AIHW, 2008). China and Indian, the two world's most populous nations are home to more smokers than the entire European Union. In China alone, more than 300 million people are tobacco users while in India about 275 million people use tobacco and about 57 million Indonesians are tobacco smokers (David, 2012). However

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in Africa, the prevalence of smoking varies from country to country. In South Africa, 33.3% of males and 8.2% of females smoke. In Kenya, 22.9% of males smoke and 0.7% of females smoke. In Ghana, 8.8% of males and 0.1% of females smoke. Comparatively, in Nigeria, 8.0% of males and 0.5% of females smoke (Pampel, 2008).

Smoking of tobacco appears to be a well-entrenched behaviour among teenagers. Adolescence period is seen as a forming stage, a resistant period where young people tries to form their own identity and also try to belong to a particular stratified social group. Initiation of smoking at a tender age is a behaviour that occurs at a time when the persons involved are not fully equipped to make certain decisions and these decisions may affect their inclination to addiction and also influences adult smoking behavior. Epidemiological study suggest that most tobacco users begin as adolescents and individuals who reach their mid-20s as nonsmokers are unlikely to ever become tobacco users (Aldrich et al., 2015). It is estimated that

80% of adult regular smokers initiate tobacco use before the age of 18 (Poynter, 2008). However, initiation of tobacco in teenagers is usually due to interaction of different factors which include intrapersonal, interpersonal and environmental factors. Some intrapersonal factors associated with adolescent smoking include lower levels of knowledge on hazards of smoking (Yan et al., 2014), low self-esteem (Karimy et al 2013; Nazarzdeh et al., 2013). Peer pressure and having friends who smoke has been considered as the most important factor influencing the habit of smoking in adolescents in the western world; (Schaefer et al., 2012), also motivation by smoking behavior of parents and siblings, the media, secondhand smoke exposure, curiosity, and a drive for experimentation (Voorhes et al., 2011).

The earlier a smoker quits smoking the less the hazard, as evidence suggests that much of the projected mortality from smoking can be prevented by stopping. This study seeks to determine the age of initiation, determinants

**Table 1. Factors Associated with Initiation of Cigarette Smoking among Teenagers, Mushin LGA,**

Variables	Initiation of cigarette smoking		Statistics & Pvalue
	Frequency (%)		
	Initiated	Never initiated	
Age (Years)			
≤15	84 (31.1)	186 (68.9)	t=5.0315; df=400; p=0.0001
>15	16 (12.1)	116 (87.9)	
Total	100 (24.9)	302 (75.1)	
Mean ± SD	17.07 ± 1.53	16.14 ± 1.63	
Gender			
Male	87 (34.1)	168 (65.9)	X <sup>2</sup> =31.8734; df=1; p=0.0001
Female	13 (8.8)	134 (91.2)	
Marital Status			
Unmarried	95 (24.1)	299 (75.9)	*p=0.0255
Married	5 (62.5)	3 (37.5)	
Religion			
Christian	45 (21.1)	168 (78.9)	*p=0.0418
Islam	55 (29.1)	132 (70.9)	
Ethnic group			
Yoruba	81 (26.7)	222 (73.3)	*p=0.0831
Others (Hausa/Fulani/ Igbo)	19 (19.2)	80 (80.8)	
Educational Background			
≤ Primary School	21 (48.8)	22 (51.2)	*p=0.0003
≥ Secondary School	79 (22.0)	280 (78.0)	
Friends influence			
Yes	83 (94.3)	5 (5.7)	*p=0.0001
No	17 (5.4)	297 (94.6)	
Advert influence			
Yes	29 (90.6)	3 (9.4)	*p=0.0001
No	71 (19.2)	299 (80.8)	
Parents influence			
Yes	12(85.7)	2 (14.3)	*p=0.0001
No	88 (22.7)	200 (77.3)	
Relatives influence			
Yes	26 (87.7)	3 (10.3)	*p=0.0001
No	74 (19.8)	299 (80.2)	

\*Fisher's Exact tests

and prevalence of cigarette smoking among teenagers in Mushin Local Government Area of Lagos state, Nigeria.

## Materials and Methods

### Study location

Mushin local government area (LGA) in the Lagos metropolis is one of the 20 LGAs in Lagos state, Nigeria. It is one of the major commercial centres in Lagos state. The 2006 census put the population of the LGA at 631,857, with 326,873 males and 304,984 females. Mushin LGA has 19 political wards. Each ward in Mushin LGA had an average of 40 streets and each street had about 36 houses, each house had an average of ten households, and each household consist of an average of five persons. The Local Government is a socio-cultural diversity of the typical Nigerian society because it is well represented by various ethnic groups.

### Study design

The study design was a descriptive cross-sectional study among teenagers that were permanent residents in Mushin LGA. The confidence interval and degree of accuracy desired were set at 95% and 5% respectively. The minimum sample size of 250 was determined using the formula  $n = Z^2pq/d^2$  for descriptive cross-sectional study with the prevalence of tobacco use amongst adolescents in a previous study carried out in Kajola LGA, Oyo state, Nigeria of 0.205.13 However, 475 respondents were selected for the study. Respondents were selected by multi-stage sampling method. In the first stage, one street was selected from each ward by simple random sampling method using balloting procedure. In the second stage, five houses were selected from each selected street by simple random sampling method using balloting procedure. In the third stage, five households were selected from each selected house by simple random sampling method using balloting procedure. In the fourth stage, one teenager was selected from each selected household by simple random sampling method using balloting procedure. Where a household has no teenager, another household is selected to replace it. This study was carried out in November, 2014.

### Data collection

A pre-tested structured interviewer-administered questionnaire was used to collect information on socio-demographic characteristics and tobacco cigarette smoking among teenagers. The questionnaire was adapted from previous studies and from the World Health Organization Global Youth Tobacco Survey tool (CDC, 2008). The questionnaire comprises of two sections: Section A had 6 questions on socio-demographic characteristics, section B had 14 questions on tobacco cigarette smoking.

### Data analysis

Data analysis was done using the Epi Info version 3.5.1, GraphPad InStat and WinPepi statistical software packages. Chi-square and Fisher exact tests were used to compare differences between proportions while t-test was used for comparison of differences between means. P

values of  $\leq 0.05$  were considered statistically significant. Logistic regression analyses were carried out to determine factors associated with tobacco cigarette smoking. For the multivariate analyses, all the variables that were statistically significant on the bivariate were entered into the multivariate analyses.

Ethical consideration: Approval for this study was obtained from the ethics and research committee of the Lagos University Teaching Hospital. Verbal informed consent was obtained from each respondent.

## Results

A total of 402 out of the 475 selected respondents participated in the study; giving a response rate of 84.6%. Mean age of the respondents was  $16.37 \pm 1.65$  years. Majority of the respondents were males (63.4%), unmarried (95%), Christians (53%), Yoruba by tribe (75.4%) and had minimum of secondary school education (89.3%) (Table1).

Less than one-third (24.9%) of the respondents had ever smoked tobacco cigarette while 14.7% were current cigarette smokers. The modal and mean age of initiation of cigarette smoking was 15 years and  $12.00 \pm 3.32$  years respectively (Table2). Reasons for smoking initiation were primarily friends (21.9%), advertisements (8.0%), relatives (7.2%) and parents (3.5%). Sixty six (16.4%) of the respondents like to smoke with friends, 10% like to smoke always, 9.0% like to smoke when nervous, 6.7% like to smoke when idle while 5.0% like to smoke when over-worked.

A bivariate analysis showed that there were statistically significant associations between the respondents' age ( $p=0.0001$ ), gender ( $p=0.0001$ ), marital status ( $p=0.0255$ ), religion ( $p=0.0418$ ), educational background ( $p=0.0001$ ), friends ( $p=0.0001$ ), advert ( $p=0.0001$ ), parent ( $p=0.0001$ ), relatives ( $p=0.0001$ ) and initiation cigarette smoking (Table 1). There were statistically significant

**Table 2. Age of Initiation of Cigarette Smoking among Teenagers, Mushin LGA, Lagos state, Nigeria, 2014**

Age of initiation of cigarette smoking (Years)	Frequency (%) (n=100)
7	1(1.0)
8	2 (2.0)
9	4 (4.0)
10	7 (7.0)
11	2 (2.0)
12	3 (3.0)
13	6 (6.0)
14	11 (11.0)
15	26 (26.0)
16	15 (15.0)
17	8 (8.0)
Age not given	15(15.0)
Total	100(100.0)
Mean $\pm$ SD	12.00 $\pm$ 3.32

**Table 3. Factors Associated with Current Cigarette Smoking among Teenagers, Mushin LGA, Lagos state, Nigeria, 2014**

Variables	Cigarette smoking Frequency (%)		Statistics & Pvalue
	Yes (n=59)	No (n=343)	
<b>Age</b>			
10-14	52 (19.3)	218 (80.7)	t=4.283;df=400; p=0.0001
15-19	7 (16.2)	125 (83.8)	
Total	59(14.7)	343(85.3)	
Mean±SD	17.20±1.42	16.23±1.65	
<b>Gender</b>			
Male	56 (22.0)	199 (78.0)	X <sup>2</sup> =29.5471; df=1; p= 0.0001
Female	3 (2.0)	144 (98.0)	
Total	59(14.7)	343(85.3)	
<b>Marital status</b>			
Unmarried	54 (13.7)	340 (86.3)	*p=0.0023
Married	5 (62.5)	3 (37.5)	
<b>Religion</b>			
Christian	25 (11.7)	188 (88.3)	*p=0.0519
Islam	34 (18.0)	155 (82.0)	
<b>Ethnic group</b>			
Yoruba	45 (14.9)	258 (85.1)	*p=0.5040
Others (Hausa/Fulani/Igbo)	14 (14.1)	85 (85.9)	
<b>Educational Background</b>			
≤ Primary School	16 (37.2)	27 (62.8)	*p=0.0001
≥ Secondary school	43 (12.0)	316 (88.0)	
<b>Friends influence</b>			
Yes	49 (55.7)	39 (44.3)	*p=0.0001
No	10 (3.2)	304 (96.8)	
<b>Advert influence</b>			
Yes	21 (65.6)	11 (34.4)	*p=0.0001
No	38 (10.3)	322 (89.7)	
<b>Parents influence</b>			
Yes	7 (11.9)	52 (88.1)	*p=0.0016
No	7 (2.0)	336 (98.0)	
<b>Relatives influence</b>			
Yes	17 (58.6)	12 (41.4)	*p=0.0001
No	42 (11.3)	331 (88.7)	

\*Fisher's Exact tests

**Table 4. Determinants of Initiation of Cigarette Smoking among Teenagers, Mushin LGA, Lagos state, Nigeria, 2014**

Variables	OR	CI	P
Age (>15 yrs / ≤15 yrs)	5.13	0.87-30.26	0.0709
Gender (Male / Female)	5.19	1.57-17.18	0.007
Marital status (Married/Unmarried)	8.41	1.04-63.35	0.0464
Educational Background (≤ Primary Sch / ≥ Secondary Sch)	4.31	1.07-17.33	0.0399
Friend (Yes/ No)	308.84	84.87-1123.81	0.0001
Adverts (Yes/ No)	27.83	3.92-197.64	0.0009

relationships between respondents' age (p=0.0001), gender (p=0.0001), marital status (p=0.0023), religion (p=0.0519), educational background (p=0.0001), friends (p=0.0001), advertisements (p=0.0001), parents (p=0.0016), relatives (p=0.0001) and current cigarette

smoking (Table 3).

A multivariate analysis revealed that teenagers who were above 15 years, males, married, had ≤ primary school education, influenced by friends, and influenced by advertisement are 5.13, 5.19, 8.41, 4.31, 308.84, and

**Table 5. Determinants of Current Cigarette Smokers among Teenagers, Mushin LGA, Lagos State, Nigeria**

Variables	OR	CI	P
Gender (Male / Female)	12.77	2.90-56.28	0.0008
Marital status (Married/ Unmarried)	19.24	2.05-180.45	0.0096
Educational Background ( $\leq$ Primary Sch / $\geq$ Secondary Sch)	7.85	2.37-26.01	0.0007
Friend (Yes/ No)	28.56	10.86-75.07	0.0001
Adverts (Yes/ No)	5.95	1.72-20.61	0.0049

27.83 times respectively more likely to have initiated cigarette smoking (Table 4). Furthermore, teenagers who were males, married, had  $\leq$  primary school education, influenced by friends, and influenced by advertisement were 12.77, 19.24, 7.85,

## Discussion

This study shed some light on the age of initiation, determinants and prevalence of cigarette smoking among teenagers in Mushin LGA of Lagos State, Nigeria. The mean age of initiation of cigarette smoking was  $12 \pm 3.32$  years. Teenagers do not just wake up one day and start smoking; the uptake of cigarette is as a result of various factors. The general reasons given for smoking are also similar to those obtained in this study. The predictors include: peer influence, siblings smoking, exposure to advertisements and parental smoking (Das et al., 2011; Voorhes et al., 2011).

From this study, it was shown that peer influence (21.9%) was the strongest predictor of smoking followed by exposure to advertisements (8.0%), and then the smoking status of relatives (7.2%) and parents (3.5%). In a Saudi Arabian study, parental influence (6.2%) was the major predictor of smoking. Studies show that adolescents with one or both parents who are smokers are associated with initiation of smoking (Ali et al., 2010). However, the reason why friends influence was the major predictor of smoking in this study could be as a result of negligence on the part of the parents and the environment of the study subjects.

Findings from this study showed that 32 (8%) of the respondents that smoke is as a result of exposure to advertisements, this is because glorification of smoking in films has a potential to influence smoking initiation among the youth (Gale et al., 2006). Tobacco packaging itself is among the most prominent and important forms of tobacco advertising and promotion. The tobacco industry exploits all packaging elements, including pack construction, in addition to graphic design and use of colour, to increase the appeal of smoking (Hammond, 2011).

According to this study, it was shown that out of the 402 respondents only 100 (24.9%) of the respondents had ever smoked cigarette while 59 (14.7%) currently smoke cigarette. This is higher than the finding of a study carried

out in Northeast Nigeria, in which 18 (15.9%) had ever smoked and 0.3% are regular smokers who still smoke (Salawu et al., 2009). The disparity in the results could be as a result of the socio-ethnic differences. Furthermore, in this study males accounted for 95% of current users compared to 5% amongst females; this findings agrees with other studies in Nigeria where males were more likely to smoke compared with females (Odukoya et al., 2013)

The prevalence of current smokers in this study is 14.7% which is similar to a study carried out in Kajola Local Government Area, Oyo state, Nigeria where the prevalence of current smokers was 11.6% (Akindele et al., 2010) but was lower than the corresponding figures reported by Lovato among school children where the mean prevalence of smoking in all age groups was  $22.0 \pm 3.37\%$  and the mean prevalence of smoking among 15-19 years old was  $20.3 \pm 8.30\%$  (Lovato et al., 2010).

Consistent with findings obtained in similar studies in many parts of Africa, the lifetime prevalence of smoking cigarette in this study (24.8%) is lower than among adolescents in some countries in Asia, notably Japan (Odukoya et al., 2013).

In conclusion, mean age of initiation of cigarette smoking was  $12.00 \pm 3.32$  years. Determinants of cigarette smoking were age, gender, marital status, educational background, friends and advertisements. Life time prevalence of cigarette smoking was higher than prevalence of current cigarette smokers. Cigarette smoking reduction programs should take these factors into consideration.

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