Prevalence and Patterns of Active Tobacco Smoking among Youths in Enugu North Senatorial District, Enugu State

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Abstract

Tobacco smoking has become a global public health concern, as it is a leading cause of preventable deaths and morbidity. The study assessed prevalence and patterns of active tobacco smoking among youths in Enugu North Senatorial District, Enugu State, Nigeria. The cross-sectional survey research design guided the study. A total number of 600 youths participated. Data collection was done using Prevalence, Patterns and Associated Factors of Tobacco Smoking Questionnaire (PREPAFTSQ), in which part of it was adapted from Global Youth Tobacco Survey (revised GYTS-R). Frequency, percentage, phi coefficient correlation, chi-square statistics and logistic regression were used for analyses. The findings revealed that the prevalence of active smoking among youths was high (51.3%). The youths reported smoking tobacco mostly in the work places (74.7%), followed by public places (63.4%), and home (63.2%) in the past 30 days. The youths reported not smoking tobacco at all (48.4%) mostly, followed by smoking weekly (39.7%), and smoking daily (12.0%). There were significant association between the patterns of active tobacco smoking among youths and place of residence ($\chi^2 = 16.166$, $p = .000 < .05$) and education level ($\chi^2 = 13.892$, $p = .003 < .05$). However, Ministry of Health at national and State levels, health programme planners, health educators, and professionals should implement a large-scale public intervention to reduce the rate and hazards of youths being involved and exposed to tobacco smoking and prohibition of smoking in various setting.

Keywords: Prevalence, Patterns, Tobacco smoking, Active tobacco smoking

Introduction

Tobacco smoking has become a global public health concern, as it is a leading cause of preventable deaths and morbidity. Tobacco smoking is linked to high burden of lung cancer, chronic obstructive pulmonary diseases, ischemic heart diseases, and stroke especially among the youths (Drope, Schluger, Chin, Hamill, & Islami, 2018). Tobacco use contribute to more than eight million global deaths every year; with more than seven million of those deaths resulting from direct tobacco use, while 1.2 million are the result of secondhand smoking. (Institute of Health Metrics [IHME], 2019).

Tobacco smoking continues to be a global health pandemic. The World Health Organization (WHO, 2019) reported that there are around 1.1 billion smokers worldwide, and about 80 per cent of these live in low-and middle- income countries, such as Nigeria, where more than two-third of smoking-related deaths occur. In addition, WHO estimates that tobacco kills nearly seven million people annually and 100 million deaths were recorded over the course of the 20th century. The Center for Disease Control and Prevention (CDC, 2021) reported that worldwide, cigarette use causes more than seven million deaths per year; and that if the pattern of smoking globally does not change, more than eight million people will

die from diseases related to tobacco use by 2030. Apart from the global worry of tobacco smoking, there exist tobacco smoking statistics locally.

Nigeria's report on tobacco smoking appears to be high. Adeloye et al. (2019) reported that the pooled mean cigarette smoking per a day was 10.1 (6.1-14.2), accounting for 110 million cigarettes per day and over 40 billion cigarettes consumed in Nigeria in a year. The authors further reported that one out of ten Nigerians smoke daily. According to the report of Marco (2021), 28,876 deaths related to tobacco smoking are recorded annually in Nigeria.

There is substantial evidence showing that there are pattern and prevalence of tobacco smoking among youths in Enugu State. Omotowo, Ndibuagu, and Ezeoke (2016) recorded a high incidence of cigarette smoking among health care workers in Enugu State, with the highest percentage being within the ages of 20 and 40 years. Due to high rate of unemployment in the country, many youths of Enugu North Senatorial District engage in so many menial jobs, such as okada riding, mason work, labourer among others, which may predispose them to smoking (Omotowo et al., 2016). The area is mostly rural and sub-urban, thereby providing enough hideouts where the youths can indulge in smoking activities. Also, Donatus et al. (2019) reported a 5.5% cigarette smoking prevalence in an urban settlement in Enugu.

Active tobacco smoking is the practice of inhaling the fumes from the burning of tobacco products into one's lungs by the youths. Active tobacco smoking can affect an active smoker and also someone who did not actively involved in the smoking. Active smoking according to Roya et al. (2016), is the intentional inhalation of fumes from the burning of plant materials. Active smoking is that smoking which one performs himself, lighting the tobacco product and inhaling the fumes, drawing deep into the lungs, in the process leaving deadly and toxic residues that will eventually directly cause health issues (Oyewole, Animasahun, & Chapman, 2018). The health consequences of active smoking are enormous and warrant an effective tobacco control policy, which can succeed only if the prevalence of active smoking is well known.

Prevalence is known to be the number, occurrence or proportion of youths who smoke. A study conducted by Zyambo et al. (2023) revealed that the prevalence of tobacco smokers was high among Zambian Adults. However, Tobacco smoking could manifest in different patterns.

Pattern refers to the various forms in which something may occur or happen. Global Burden of Diseases (GBD, 2021) differentiated pattern into three main forms or variations, namely: demographic, temporal, and spatial patterns. Demographic pattern of tobacco smoking in this study refers to active tobacco smoking among the youths according to gender, level of education, and place of residence, temporal pattern is interpreted to mean the time or period (such as, daily and weekly) that youths in the study area smoke tobacco, while spatial pattern refers to the space or location occupied by youths in Enugu North Senatorial District, Enugu State. The determination of different forms of patterns in this study is important because youths of different characteristics smoke at different periods or seasons and at different locations. Such locations or places include: in the homes, in public places, such as bars, restaurant or joints; in retail stores; in parties; in the neighbourhood; and in urban and rural areas, around Nigeria in general and Enugu State in particular which is the study area.

Active tobacco smoking could have deleterious effect, not only to the smoker but also the people around him or her studies indicate that most teenagers, who smoke, suffer health and increased risk of heart attacks: shortness of breath, asthma and respiratory illnesses, cancer, and other chronic diseases (CDC, 2016, Donatus et al., 2019). Aside from health effects, there are many adverse social effects of smoking. It can make hair and clothes stink,

stain teeth, and cause bad breath (Winnall, Letcher, Greenhalgh, & Winstanley, 2021). The World Health Organization is worried by the spate of infections suffered by smokers, and has therefore made it mandatory for cigarette manufacturers to add health warnings to their advertisements, such as "smokers are liable to die young" (WHO, 2019). The warning is seen on every packet of cigarette adverts' message. However, these warnings seem not to be assimilated by youths, hence the need to study the prevalence and patterns of active tobacco smoking among youths in Enugu North senatorial District, Enugu State.

Tobacco smoking is an established risk factor for many diseases, and reported to be one of the most important public health problems worldwide. It has been clearly shown that cigarette smoking is a causal factor in the development of many serious medical problems, most notably cardiovascular diseases, cerebrovascular diseases, lung cancer, and chronic obstructive airways disease, as well as tumours of the mouth, larynx, oesophagus, lip, and bladder. In order to avert these effects, the youths are expected to desist from tobacco smoking behaviour.

Regrettably, despite the constant reminders of how harmful smoking is to health, and the warning seen on every packet of cigarette advertisement, such as "smokers are liable to die young", tobacco smoking among the youths in Enugu North Senatorial District seem to be on the increase. However, there is no prior study that covered prevalence and patterns of active tobacco smoking and its associated factors in Enugu North Senatorial District. This study addresses this gap in the literature. In view of these facts, the study investigated the prevalence, and patterns of active tobacco smoking among youths. Specifically, the study assessed the prevalence of active tobacco smoking among youths in the past 30 days; spatial pattern of active tobacco smoking among youths; temporal pattern of active tobacco smoking among youths; and significant association between socio-demographic factors (gender, place of residence, and education level) and active tobacco smoking among youths.

The study findings would help to inform healthcare providers the need to promote anti-tobacco regulations for public places and in the home for the purpose of promoting health of the people, including youths. Moreover, the findings would inspire the government, health institutions and health professionals in the need for implementation of large-scale public interventions to reduce the rate and hazards of youths being involved to tobacco smoking and prohibition of smoking in various setting.

Materials and Methods

Study design and setting

A cross-sectional survey was carried out between January and March, 2023 in the communities in Enugu North Senatorial District. Enugu North Senatorial District is one of three Senatorial Districts in Enugu State, Nigeria. There are six Local government areas (LGAs) which make up the Senatorial District: Igbo-Eze South, Nsukka, Igbo-Etiti, Igbo-Eze North, Udenu, and Uzo-Uwani LGAs. The area was chosen for the study due to youths use the avenue of pre-funeral ceremony celebration to indulge in some anti-social behaviours, one of which tobacco smoking is inclusive.

Participants

The study participants consisted of youths in Enugu North Senatorial District, Enugu State. Youths in different autonomous communities in the drawn LGAs, who have time and expressed their consent in responding to the questionnaires, were included.

Sampling procedures

A sample size of 600 youths was used for the study. The sample size was determined using Cohen, Manion, and Morrison (2011), which stipulated that when a population size is 500,000 and above at 95 per cent confidence level (5% interval), the sample size should be

384 and above. The multi-stage sampling technique was used to draw the sample size for the study. In the first stage, four out of six LGAs in Enugu North Senatorial District, Enugu State were drawn using simple random sampling technique of balloting without replacement. This was to ensure equal representation of the population. The second stage involved using purposive sampling technique to select four autonomous communities that are densely populated from each of the selected LGAs. In the third stage, convenience sampling technique was used to select 150 youths from each of the drawn autonomous communities; hence 600 youths were drawn for the study. Convenience in the sense that youths in different autonomous communities in the LGAs, who have time and expressed their consent in responding to the questionnaires, were used.

Measures

Data collection was done using a validated self-structured Prevalence, Patterns and Associated Factors of Tobacco Smoking Questionnaire (PREPAFTSQ), in which part of it was adapted from Global Youth Tobacco Survey (revised GYTS-R, 2014). The Test Scale consists of three parts: Part I consisted of three socio-demographic variables (gender, place of residence, and education level). Gender was dichotomized into male and female. Place of residence was dichotomized into rural and urban. Education level was categorized into four groups (No formal education, primary education, secondary education, and tertiary education). Part II consisted of a question with dichotomous response options covering prevalence of active tobacco smoking, while Part III consisted of a question with non-dichotomous response options covering on temporal pattern, and three questions with dichotomous response options covering on spatial pattern of active tobacco smoking.

Questions assessing prevalence, and patterns of active tobacco smoking were prepared by the researchers according to a literature review and had dichotomous and non-dichotomous response options (yes and no): thus for prevalence; During the past 30 days, did you use any form of smoked tobacco products other than cigarettes?.

For patterns of active tobacco smoking; How often do you currently smoke tobacco?, During the past 30 days, did you smoke in any enclosed workplace space other than your home?, During the past 30 days, did you smoke at any outdoor public place, (such as, playgrounds, sidewalks, entrances to buildings, parks, beaches)?, and During the past 30 days, did you smoke inside the home?.

Face and content validity of the questionnaire was evaluated by four experts in Department of Human Kinetics and Health Education, and one from Science Education Department (Measurement & Evaluation unit), all in the University of Nigeria, Nsukka. The internal consistency (reliability) of the scales were determined using split half method (Spearman's Brown Coefficient) with indices of .798 for prevalence of active tobacco smoking and 0.845 for spatial pattern of tobacco smoking. Cronbach's alpha method was used to analyse temporal pattern of active tobacco smoking, with an index of 0.750.

Data collection procedure

Data collection was done between January and March, 2023. After obtaining the community leaders of the selected Local Government Areas' permission for data collection, youths who gave consent for participation were included in the study. The researchers explained the objectives of research to the participants and they were reassured that their responses are confidential and no personal identifiers will be disclosed. The questionnaire was administered with the aid of well-trained interviewers. A total number of 600 questionnaires were filled out in the process. 588 copies were returned, which gave a return rate of 98.0 per cent. Only 585 questionnaires duly filled out were used for analyses.

Data analysis

The returned questionnaires were cleaned and entered into IBM Statistical Package for Social Sciences (SPSS) version 25.0 and analysed using frequency and percentage, and

chi-square statistics. Percentages were used to answer research questions. The criterion for deciding active tobacco smoking prevalence was based on WHO proportional limits: 0-29 per cent interpreted as low proportion; 30-49 per cent interpreted as moderate proportion; 50-69 per cent interpreted as high proportion; and 70 per cent and above interpreted as very high proportion (WHO, 1997). Hypotheses were tested using chi-square statistics at 0.05 level of significance.

Results

Table 1: Prevalence of Active Tobacco Smoking among Youths in the Past 30 Days (*n*=585)

S/n	Active Tobacco Smoking	Yes f (%)	No f (%)
1	During the past 30 days, did you use any form of smoked tobacco products other than cigarettes?	300 (51.3)	285 (48.7)

Key for Interpretation
0-29% = low proportion
30-49% = moderate proportion
50 -69 = high proportion
70% and above = very high proportion

Table 1 shows that 51.3 per cent of youths reported using any form of smoked tobacco products other than cigarettes in the past 30 days. This implies that the prevalence of active smoking among youths was high.

Table 2: Spatial Pattern of Active Tobacco Smoking among Youths (*n*=585)

S/n	Spatial Pattern Statements	f (%)
1.	During the past 30 days, did you smoke inside the home?	
	Yes	370 (63.2)
	No	215 (36.8)
2.	During the past 30 days, did you smoke in any enclosed workplace other than your home?	
	Yes	437 (74.7)
	No	148 (25.3)
3.	During the past 30 days, did you smoke at any outdoor public place (such as, play grounds, sidewalks, entrances to buildings, parks, beaches)?	
	Yes	371 (63.4)
	No	214 (36.6)

Table 2 shows that the youths reported smoking tobacco mostly in the work places (74.7%), followed by public places (63.4%), and home (63.2%) in the past 30 days.

Table 3: Temporal Pattern of Active Tobacco Smoking among Youths (*n*=585)

S/n	Temporal Pattern Statement	f (%)
1.	How often do you currently smoke tobacco?	
	Daily	70 (12.0)
	Weekly	232 (39.7)
	Not at all	283 (48.4)

Table 3 shows that the youths reported not smoking tobacco at all (48.4%) mostly, followed by smoking weekly (39.7%), and smoking daily (12.0%).

Table 4: Chi-square Test of Patterns of Active Tobacco Smoking among Youths Based On Socio-Demographic Factors (Gender, Place of Residence, and Education Level) (n = 585)

Variables	N	Yes O (E)	No O (E)	χ^2	df	p-value
Gender						
Male	305	154 (156.4)	151 (148.6)	.159	1	.690
Female	280	146 (143.6)	134 (136.4)			
Place of Residence						
Rural	175	112 (89.7)	63 (85.3)	16.166*	1	.000
Urban	410	188 (210.3)	222 (199.7)			
Education Level						
No Formal Educ.	41	28 (21.0)	13 (20.0)	13.892*	3	.003
Primary Educ.	111	43 (56.9)	68 (54.1)			
Secondary Educ.	233	130 (119.5)	103 (113.5)			
Tertiary Educ.	200	99 (102.6)	101 (97.4)			

*Significant at p≤0.05

Table 4 shows that the hypothesis of no significant association between the patterns of active tobacco smoking among youths and place of residence (χ^2 = 16.166, p = .000 < .05), and education level (χ^2 = 13.892, p = .003 < .05) was rejected, thus significant. This implies that the patterns of active tobacco smoking among youths were not the same based on place of residence and education level. However, there were significant association between the patterns of active tobacco smoking among youths and place of residence and education level. Also, the hypothesis of no significant association between the patterns of active tobacco smoking among youths and gender (χ^2 = .159, p = .690 > .05) was not rejected, thus not significant. This implies that the patterns of active tobacco smoking among youths were the same based on gender of the youths. However, there was no significant association between the patterns of active tobacco smoking among youths and gender.

Discussion

The finding revealed that the prevalence of active smoking among youths was high (Table 1). The result was expected and therefore, not surprising. This is because studies have found that the prevalence of cigarette smoking or tobacco smokers was high in Nigerian and in Zambian (Gana et al., 2018; Zyambo et al., 2023). The finding is not consistent with the findings of Alves et al. (2022) who found that the prevalence of smoking is low in Portugal. However, there is need for the implementation of the intervention strategies that can impact behaviour change among the youths. Also, the finding was in line with the finding of Mekiso et al. (2022) who found that the prevalence of cigarette smoking was high in Southern Ethiopia. This could be attributable to the study findings because of the adoption of similar

research designs and methods, including social environmental factors that influence youths to be involved in tobacco smoking.

The findings in Table 2 revealed that the youths reported smoking tobacco mostly in the work places, followed by public places, and home in the past 30 days. The results were expected and therefore, not surprising given the fact that the brains of the youths, as compared with the brains of the adults, are most susceptible to nicotine and psychoactive substance dependence due to the developmental stage of the brain during this stage of life. The findings were consistent with the finding of Zhao et al. (2022) who revealed that adolescents in China often smoked at school, at home, and at social venues where girls smoked more frequently. However, the findings were not in agreement with the finding of Ibrahim et al. (2021) who revealed that the commonest places where tobacco was used were off campus accommodation, social centres, and bar or club in Nigeria. The inconsistency of the findings may be because of the slight variation in place of consumption, and this could be attributable to the dissimilarity in the culture of setting where these studies were conducted.

The findings in Table 3 revealed that the youths reported not smoking tobacco at all mostly, followed by smoking weekly, and smoking daily. The results were expected and therefore, not surprising. This is because studies have shown that few of the adult youths are daily smokers and an additional very few of the adults as nondaily smokers in Iran (Hamideh et al., 2016; Salimzadeh et al., 2016). The findings were consistent with the finding of Osinowo and Amaefula (2017) who reported that among the accident group of commercial motorcycle riders, some did not take substances including alcohol, while few ingested alcohol weekly, daily, and once a month in six cases in Nigeria. However, the findings were consistent with the findings of Adeloye et al. (2019); and Alves et al. (2022) who found that the students surveyed were current smokers, occasional smokers, regular smokers, and daily smokers in Portugal. The findings are somewhat not in line with the finding of Wang (2015) who reported that adults smoked cigarettes per day in China. The findings may be attributable to the study due to adoption of similar purpose of the study, research methods, and social and environmental influences.

The findings showed that there were significant association between the patterns of active tobacco smoking and socio-demographic factors (place of residence, and education level) among youths. Also, there was no significant association between the patterns of active tobacco smoking and gender among youths (Table 4). The findings were expected and therefore, not surprising. This is because studies have shown that place of residence was significantly associated with current tobacco smoking among adults in Zambians. Also, it was significantly higher in rural areas than the urban counterparts, and the odds of tobacco smoking were found to be decreasing with the level of education in Zambia and in China (Zhao et al., 2022; Zyambo et al., 2023). Also, the findings are not in line with the finding of Zyambo et al. (2023) who found that the prevalence rate of cigarette use among Chinese adolescents was significantly higher in boys than in girls. It could be attributed to this study due to similarities in population of the studies and status of sensitization about tobacco use. Moreover, level of education, geographical location, and marital status were determinants of smoking among the youths in Nigeria and in Zambia (Aniwada et al., 2018; Zyambo et al., 2023). The findings were not in line with the findings of Nyirenda et al. (2019) who found that rural areas were at an increased risk of cigarette smoking compared with those from the urban areas, and those with primary and secondary education were at a lower risk of cigarette smoking compared with those with no form of education in Zambia. This could be explained by the fact that smokers in the rural areas were more likely to access tobacco and other products which are mostly grown in rural areas. For instance, the findings were in line with the finding of Mekiso et al. (2022) who found that education status have a significant relationship with cigarette smoking; people with a college education or above, and illiterates

are approximately nine times more likely to consume cigarettes in Ethiopia. Abdulrahim and Jawad (2018) affirmed that lower education is more likely to be associated with tobacco smoking than higher education. Hence, results that the prevalence rate of cigarette use among Chinese adolescents was significantly higher in rural areas than in urban areas in China are surprisingly expected to be consistent (Zhao et al., 2022). Also, the result that males appeared to have a higher prevalence of current smoking and were heavier smokers in Greek are surprisingly expected to be inconsistent (Gangadi et al., 2021). The findings may be attributed to this study due to the geographical disparities which play a role in tobacco consumption between rural and urban areas, education status disparities, and other environmental factors.

Implications of the Study Findings to Public Health and Education

The study findings revealed that the prevalence of active tobacco smoking among youths was high. Better ways of combating active tobacco smoking that affect youths is paramount. Organization of an intensified health education is capable of bringing about behaviour change on the increasing tendency to active tobacco smoking. People who use tobacco products or who are regularly around environmental tobacco smoke have an increased risk of cancer because tobacco products and second hand smoke have many chemicals that damage Deoxyribonucleic acid (DNA). Long term smoking can lead to many health issues, such as high blood pressure, stroke, heart conditions and various forms of cancer; also blockages in the body which disrupt cell performance and organ function.

The youths reported smoking tobacco mostly in the work places, followed by public places, and home in the past 30 days. Policy makers are expected to formulate suitable and sustainable policies to regulate and intervene on increasing tendencies of active tobacco smoking among youths. Determining the location that requires appropriate enlightenment concerning the dangers of tobacco smoking among youths is implicated. Designing and planning services and information for the youths with consideration on location differences is expected to control smoking.

Findings of this study revealed that the youths reported not smoking tobacco at all mostly, followed by smoking weekly, and smoking daily. The result would help the ministry of health to know that the youths smoking weekly, and daily. The public health educators would use the findings to organize an intensified health education, in order to educate the youths on the effects of active tobacco smoking. Also, public health educators would through the result identify the particular time or period the youths mostly smoke tobacco while planning sensitization campaign against it.

Conclusion

The findings have shown that the prevalence of active smoking among youths was high. Smoking tobacco among the youths occurred mostly in the work places, followed by public places, and home in the past 30 days. The youths did not smoke tobacco at all mostly, followed by smoking weekly and daily. Gender was not a very important factor considered in the patterns of active tobacco smoking among youths, while place of residence, and education level were very important factors considered in the patterns of active tobacco smoking among youths. Finally, place of residence and education level were very important factors associated with active tobacco smoking among youths, while gender is not a very important factor associated with active tobacco smoking among youths in Enugu North Senatorial District, Enugu State.

However, Ministry of Health at national and State levels, health programme planners, health educators, and professionals should implement a large-scale public intervention to reduce the rate and hazards of youths being involved and exposed to tobacco smoking and prohibition of smoking in various setting. Healthcare providers need to promote anti-tobacco regulations for public places and in the home for the purpose of promoting health of the

people, including youths. There is need to implement in Enugu North Senatorial District, Enugu State, prevention policies of active and passive tobacco smoking, especially in public places, home, and workplaces in order to control its effects on public health.

The study was conducted only among youths. All measures were assessed using only participants' reports about their involvement in tobacco smoking. The data are thus subjected to all the biases, such as recall bias, social disability bias and reporting bias.

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