

**CIGARETTE SMOKING IN A RURAL COMMUNITY OF THE NIGER DELTA; A
STUDY OF ITS PREVALENCE AND CORRELATES**¹*Alikor Chizindu A. and ²Nyeche Ovunda¹Department of Medicine, University of Port Harcourt.²Department of Medicine, Rivers State University Teaching Hospital.

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Article Received on 10/10/2019

Article Revised on 31/10/2019

Article Accepted on 21/11/2019

ABSTRACT

Introduction: Cigarette smoking which is a modifiable risk factor for cardiovascular disease is a very important cause of preventable and premature death worldwide accounting for about seven million death yearly with direct tobacco use accounting for over six million of these deaths and the rest from second-hand smoking. This study was aimed at determining the prevalence and correlates of cigarette smoking in a rural community of the Niger Delta Region. **Methods:** This is a cross sectional study involving five hundred and seventy two adults in a rural community in the Niger Delta Region of Nigeria. A questionnaire administered by face-face interview was used to obtain socio-demographic data including age, gender, occupation, educational level, cigarette smoking, and alcohol consumption. Smoking questions included don't Smoke, stopped Smoking, currently Smokes and the pack years. **Results:** The mean age was 39.08±17.5 with a range of 18 years to 95 years. Male to female ratio was 1:2.6. The prevalence of smoking (Ex-smoker and Current smoker) was 6.6 % with current smokers being 3% and was significantly commoner in males than in females (P< 0.001). The prevalence of ex- and current smokers among males was 23.1%. Females constituted only 0.2% of the smoking prevalence of both Ex and Current-smokers. Amongst those who smoke, over 3/4 smoked less than 10 cigarette a day. Cigarette smoking was most prevalent in the age group of 40 to 49 years in males. Physical inactivity, occupation of study participants, Waist-Hip-Ratio and gender of study participants were found to be correlates of cigarette smoking in this study **Conclusion:** There high prevalence of cigarette smoking among males in this rural community.

INTRODUCTION

Cigarette smoking which is a modifiable risk factor for cardiovascular disease is a very important cause of preventable and premature death worldwide accounting for about seven million death yearly with direct tobacco use accounting for over six million of these deaths and the rest from second-hand smoking.^[1-2] As well, passive smoking has been identified as a contributor to cardiovascular disease.^[3] It is troubling as the low and middle income countries contribute up to 80% of the total world smokers.^[1-2] Cigarette smoking is a well-documented risk factor for ischaemic heart disease, heart failure, ischaemic stroke and acute myocardial infarction.^[4-5] The risk of cardiovascular disease in smokers is proportional to the number of cigarettes smoked and how deeply the smoker inhales, and it is apparently greater for women than men on a global scale.^[16-7]

Tobacco use remains one of the most serious epidemiological risk factors in terms of prevalence of coronary artery disease and smoking prevalence is increasing among men and women in SSA.^[8] A study by Seck et al^[9] found that among patients entering the hospital for MI treatment in Dakar, 40% were smokers.

In a hospital-based sample of 202 diabetics in Ethiopia, about 20% were smokers, all of whom were males.^[10]

With increasing urbanisation and westernisation of lifestyle in the African continent, it is estimated that Africa will account for over 25% increase of the global burden of NCDs which is also calculated to rise by nearly 20% over the next 10 years. This also applies to tobacco-consumption which has significantly increased in the African continent.^[1] Nigeria being a critical stakeholder in Africa with its attendant large population becomes at the forefront of tobacco consumption with subsequent health implications.^[11-13] It is estimated that there is almost a 60 percent increase in tobacco consumption in Africa and Middle Eastern countries in the last 2 decades with Africa now becoming a business hub for tobacco companies.^[14-15]

Adolescent years are important season and of great relevance when investigating smoking commencement. This becomes further important when tackling the health issues related to smoking as these are influenced by both the duration and quantity of smoking. The capacity to curb smoking in the society is also limited by the fact

that these adolescents become adults who further negatively impacts other adolescents.^[16-17]

Abdulkarim et. al in the year 2005 reported a smoking prevalence of 4.8% among adolescent in their school-based study in North-central Nigeria.^[18] They worked on both males and females in an urban school in Ilorin, Nigeria. Omokhodion et al similarly worked among adolescent in an urban school in South-west, Nigeria where they reported a smoking prevalence of 3.4% among males and 1% among female.^[19] Egbuonu et al. (2004) however worked on females only and in a rural school in South Eastern Nigeria where they reported a prevalence of 4.7%.^[20] Osungbade et al. (2008) worked also in the rural among both gender and reported a 5.1% prevalence.^[21] Abdulmalik et al. (2009) in North-Eastern Nigeria worked in the rural school and found a prevalence of 19.1% among males only.^[22] Ekanem et al. (2010) did an extensive work involving both urban and rural schools across four geopolitical zones in Nigeria reporting smoking prevalence of 3.5% in Abuja North Central, 4.1% in Cross River State, South-South Nigeria, 3.5% in Ibadan, South-West Nigeria, 6.2% in Kano, North West Nigeria and 2.6% in Lagos.^[23]

There is paucity of data on cigarette consumption in the rural Niger Delta Region of Nigeria. Hence this study was aimed at determining the prevalence and correlates of cigarette smoking in a rural community of the Niger Delta Region.

METHODOLOGY

This is a cross sectional study involving five hundred and seventy two adults in a rural community in the Niger Delta Region of Nigeria. Ethical approval was obtained from the Ethics committee of the University of Port Harcourt Teaching hospital while consent was gotten from the village Chiefs/Community and religious leaders. Consent from each study participant was also obtained for the study.

A questionnaire administered by face-face interview was used to obtain socio-demographic data including age, gender, occupation, educational level, cigarette smoking, and alcohol consumption. Smoking questions included don't Smoke, stopped Smoking, currently Smokes and the pack years.

Physical activity was assessed with World Health Organization (WHO) Step questionnaire which was modified to fit into the activities peculiar to the rural community where this study was done. Anthropometric and blood pressure measurements were obtained while fasting blood sample was taken for both blood glucose, uric acid and lipid analyses consistent with standard protocol.^[24-28]

Statistical analysis was done using Statistical Package for Social Sciences (SPSS Inc, Chicago,IL) version 17. Results were expressed as either mean values (standard

deviation) or proportions. Comparison for statistical significance was by student's t test for Continuous variables and chi-square analysis for categorical variables. Epi info statistical package version 3.5.1 was used for chi-square for trend analysis. Pearson and Spearman' rho correlation test were used to determine the relationship between obesity and its possible risk factors. Logistic regression was also done. A p-value of ≤ 0.05 was considered statistically significant.

For the purpose of this study, the following parameters were defined as follows:

1. Heavy alcohol consumption is consumption of > 21 units per week.^[29]

2. Physical inactivity is defined as

I Activity at work or leisure that is not vigorous or moderate in intensity for at least 10 minutes continuously for ≥ 3 days in a week OR

II Not commuting by foot or use of bicycle (cycling) for at least 10 minutes continuously for ≥ 3 days in a week.

3. BMI was calculated as weight (kg)/height (m²).^[30]

Under weight- < 18.5 Kg/m²

Normal Weight- 18.5 to 24.9 Kg/m²

Overweight- 25 to 29.9 Kg/m²

Obesity- > 30 Kg/m²

3. Waist Circumference

Normal- <102cm for males, <88cm for females

Abnormal- ≥ 102 cm for males, ≥ 88 cm for females

4. Waist-hip-ratio

Normal - < 1 for males, < 0.9 for females

Abnormal ≥ 1 for males, ≥ 0.9 for females

5. Hypertension was defined using the JNC 7 (Joint National Committee on Prevention, Evaluation, and Treatment report) criteria of blood pressure $\geq 140/90$ mmHg or self-reported anti-hypertensive medication use.^[31]

6. Diabetes mellitus was defined using fasting plasma glucose (FPG) ≥ 7.0 mmol/l (126 mg/dl) and individuals who were previously known to have diabetes based on history of drug medication were also classified to have diabetes.

7. Total cholesterol of > 6mmol/L, TG > 1.8mmol/L, HDL-C <1.0mmol/L and LDL-C ≥ 3 mmol/L were taken as abnormal values.

8. Hyperuricemia was defined as ≥ 420 mmol/L for males and ≥ 360 mmol/L for females.^[32]

RESULTS

The mean age was 39.08 \pm 17.5 with a range of 18 years to 95 years. Male to female ratio was 1:2.6. Table I shows that the prevalence of smoking (Ex-smoker and Current smoker) was 6.6 % and was significantly commoner in males than in females (P< 0.001). Amongst those who smoke, over 3/4 smoked less than 10 cigarette a day. Table II shows that cigarette smoking was most prevalent in the age group of 40 to 49 years in males. The prevalence of ex- and current smokers among males was 23.1%. Females constituted only 0.2% of the smoking prevalence of both ex- and current-smokers

with less than 5% of the young age group of 18 to 29 years being involved in cigarette smoking.

Table I: Lifestyle characteristics (Smoking Status).

Smoking History	Overall		Males		Females	
	Number	%	Number	%	Number	%
Non Smoker	534	93.4	123	76.9	411	99.8
Ex-Smoker	21	3.6	20	12.5	01	0.2
Current Smoker	17	3.0	17	10.6	0	0.0
Total	572	100	160	100	412	100
QUANTITY SMOKED						
≥ 10 Cigarette / day	8	21.1	08	21.6	0	0.0
< 10 Cigarette / day	30	78.9	29	78.4	01	100
Total	38	100	37	100	01	100

P value <0.001

Table II: Prevalence of Smoking by Gender and Age-Group.

Risk factor	Smoking (current & Ex smoker) %
Males	
18-29 years	24.5
30-39 years	13.6
40-49 years	33.3
50-59 years	20.0
60-69 years	14.2
≥70 years	20.0
Total	23.1
Females	
18-29 years	2.3
30-39 years	0
40-49 years	0
50-59 years	0
60-69 years	0
≥70 years	0
Total	0.2
Overall prevalence	6.6

<0.001*

Table iii: Gender Differences In The Means of Systolic and Diastolic Blood Pressure.

Variables	TOTAL		MALES		FEMALES		P * value
	n	Mean±SD	n	Mean±SD	n	Mean±SD	
SBP (mmHg)	550	120.04±21.40	160	123.54±19.50	390	118.59±21.9	0.013
DBP(mmHg)	550	73.64±12.50	160	75.88±12.80	390	72.72±12.30	0.007

SBP = systolic blood pressure; DBP= diastolic blood pressure; n= number. P* = Significant.

Table Iv: Gender Differences in The Means of Laboratory Parameters.

VARIABLES	TOTAL		MALES		FEMALES		P value
	n	Mean±SD	n	Mean±SD	n	Mean±SD	
FBG (mmol/L)	506	4.59±1.30	146	4.55±1.19	360	4.61±1.40	0.66
TC (mmol/L)	506	3.89±0.85	146	3.81±0.82	360	3.93±0.86	0.16
TG (mmol/L)	506	1.17±0.41	146	1.21±0.42	360	1.16±0.40	0.17
HDL(mmol/L)	506	1.02±0.22	146	1.01±0.22	360	1.02±0.22	0.45
LDL (mmol/l)	506	2.63±0.79	146	2.54±0.75	360	2.67±0.80	0.09
UA (mmol/L)	506	342.53±95.9	146	376.34±96.6	360	328.82±92.4	0.00*

FBG= fasting blood sugar, TC= total cholesterol, TG = triglycerides, HDL-C = high density lipoprotein- cholesterol, LDL-C= low density lipoprotein-cholesterol, UA = uric acid. * = Significant.

Table V: Relationship of Smoking with Risk Factors For Smoking.

Variables	Coefficient	P value
Physical Inactivity	-0.082	0.05
Occupation	0.141	0.005
Waist-hip-ratio	0.212	<0.001
Gender	-0.389	<0.001

DISCUSSION

The prevalence of cigarette smoking of 6.6% with 3% reported as current smokers is similar to the findings by other Nigerian authors.^[18-20,22] This finding is however lower than the 19.1% ,20% and 40% reported in North-East Nigeria, Dakar and Ethiopia respectively.^[9-10] The work as reported from the North East Nigeria was only among males which may have accounted for the higher prevalence in comparison to this present study. This lower prevalence may also be related to the fact that whereas the present study was conducted in a rural community on subjects that were mostly apparently healthy, the comparative studies were hospital based studies among patients with cardiac disease. Cigarette smoking is a known modifiable risk factor for coronary heart disease.^[33-34] In Asia, a smoking prevalence of 37% was also reported in a large industry of Northern India.^[34] The study was conducted only on male subjects.

Cigarette smoking has been found by other workers to be commoner in males than females, similar to the finding in this study.^[9,34] This present study reported a very low female prevalence of 0.2% unlike the rural work by Egbuonu et.al who reported a 4.7% prevalence.^[20] This marked difference may be linked to the fact that the Egbuonu et al study was only among adolescent who are more prone to cigarette consumption associated with peer pressure. In a typical rural African setting, cultural factors may serve as an inhibition for females from cigarette smoking or publicly admitting to cigarette smoking.

The predominance of smoking in middle age male subjects in this present study, was similar to results obtained in other study.^[34] The works by Egbuonu et al, Ekanem et al were all among adolescent.^[20-25] The reason why cigarette smoking is high in the middle age in this present study is unclear. However it may be related to the fact that affordability may be higher in this age group.

Physical inactivity, occupation of study participants, Waist-Hip-Ratio and gender of study participants were found to be correlates of cigarette smoking in this study.

CONCLUSION

There high prevalence of cigarette smoking among males in this rural community. Physical inactivity, occupation of study participants and Waist-Hip-Ratio were found to be correlates of cigarette smoking in this study.

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