

Cardiovascular Risk Factors in South-Eastern Nigeria: A Community Based Survey

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Abstract

Background: Cardiovascular risk factors play a major role in cardiovascular disease burden worldwide. The prevalence is known to be in the increase especially in the developing countries. There is need for timely community based studies in order to keep tab with the current scope. It is against this background that we embarked on this cross-sectional community based study of the prevalence of selected cardiovascular risk factors in semi-urban community in Abakaliki Southeastern part of Nigeria in October 2016. **Method:** The consecutive consenting persons of 18 years and above were screened for selected cardiovascular risk factors in October 2016. **Results:** A total of 1074 adults were seen (males-567, females-507) with age range of 18 - 80 years and mean age of 35.63 ± 12.45 years. They were predominantly farmers, petty traders and artisans. The identified CVD risk factors were hypertension 285 (26.4%), alcohol abuse 131 (12.1%), obesity 122 (11.3%), diabetes 97 (9%), family history of stroke 87 (8.1%), smoking 74 (6.9%) and previous stroke 29 (2.7%). **Conclusion:** The cardiovascular risk factors were quite prevalent with male preponderance of alcohol abuse and smoking.

Keywords

Cardiovascular, Risk Factors, Community Based Study, South-Eastern Nigeria

1. Introduction

Cardiovascular diseases (CVDs) are the leading cause of mortality globally [1]. It is estimated that CVDs accounted for 17.7 million human deaths in 2015 (which represents 31% of all global deaths) [2]. It is also noted that more than 75% of deaths from CVDs take place in low- and middle-income countries [2].

Cardiovascular disease risk factors are the characteristics, both modifiable and

non-modifiable, that increase the risk of developing CVDs, and their prevalence is on the increase in the developing nations of the world [3] [4] [5]. Some of the risk factors like Hypertension, Obesity, diabetes mellitus, dyslipidemia, and smoking contribute individually and collectively to an increased risk of CVDs [6] [7].

A study in the USA amongst population of diverse backgrounds in 2012 reported prevalence of major CVDs risk factors as hypertension 25.4%, obesity 36.5%, diabetes 16.7%, smoking 25.7% and dyslipidemia 51.7% [8].

In Nigeria, studies in Aba south-eastern and Ota southwestern Nigeria reported high prevalence of CVD risk factors in 2013 [9] [10]. Ulas *et al.* in Enugu reported prevalence of hypertension amongst market workers as 42% in 2011 [11]. Eze *et al.* reported that stroke and heart failure constituted 24.4% and 14.7% cause of mortality in medical emergency room respectively [12]. The above studies show that the prevalence, morbidity and mortality of CVDs and their risk factors are high. There is need for regular community based studies in order to keep abreast of the current burden of CVD risk factors.

This study is set to determine the prevalence of selected CVD risk factors in a semi-urban community in Abakaliki South-eastern Nigeria.

2. Methodology

This was a descriptive cross-sectional study conducted in Nkaliki Unuhu, a semi-urban community in Abakaliki South-Eastern Nigeria with a population of 198,100 in 2016 according to the Nigerian National Population Census. The predominant ethnic group in this community is Igbo and majority of them are farmers. The study was conducted in October 2016 as part of activities of World stroke day celebration. Prior to the study, the adult population of the community were invited for a medical screening at a community primary school through radio jingles and town criers after approval from the community leaders. An Informed consent was obtained from the participants after detailed description of the purpose of the study. An investigator designed and pretested semi-structured questionnaire was used to obtain information on biodata, history of CVD risk factors and they were screened for selected CVD risk factors (Blood pressure, obesity, diabetes). A total of 1074 adults were screened during the study period of two days, 27th and 28th October 2016. All the data collection and screening were carried out by a team of ten doctors and 6 research assistants. They were counseled and those identified to have CVD risk factors were referred for further evaluation.

Blood pressure (BP) was measured on the left arm with an accuson mercury sphygmomanometer, with the subjects relaxed and in sitting position. Hypertension was defined as BP \geq 140/90 mmHg according to JNC-7 criteria and also those presently taking antihypertensive therapy.

Obesity was screened by measuring the waist circumference (WC) at the midpoint between the subcostal margin and iliac crest with a measuring tape. Obesity was defined as WC of 94 cm for males and 80 cm for females according

to National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) final report [13].

Accu-chek active glucometer was used to measure the blood glucose level. Diabetes mellitus was defined by either the presence of classical diabetes symptoms (polyuria, polydipsia, polyphagia) and random blood glucose of ≥ 200 mg/dl or people previously diagnosed to have diabetes mellitus and taking anti-diabetic drugs [14].

Alcohol abuse was defined as use of alcoholic beverages of >21 units/week for males and >14 units/week for females. The number of units of alcohol in a drink was determined by multiplying the volume of the drink (in millilitres) by its percentage (Alcohol by volume), and dividing by 1000 [15].

Current smoker was defined as one that has smoked > 100 cigarette in entire life and still smokes every day or some days [16].

Positive family history of stroke was defined by prior stroke in a first degree relative.

Data was analyzed with Statistical Package for the Social Sciences (SPSS) version 25. The categorical variables were arranged in proportions and percentages while numerical variables were presented as means and standard deviations. Chi-square was used to test for statistical significance and p-value of <0.05 as significant.

3. Results

A total of 1074 adults were seen with 567 males and 507 females (sex ratio of $\approx 1:1$). The Age range was 18 - 80 years with mean age of 35.63 ± 12.45 years. The details of age and sex distribution are shown in **Table 1**. They were predominantly farmers 238 (22.1%), petty traders 231 (21.5), artisan 190 (17.7), motor cyclist/driver 121 (11.2%), civil servants 120 (11.1%) and laborers 109 (10.2%). The details are shown in **Table 2**.

The identified CVD risk factors were hypertension 285 (26.4%), alcohol abuse 131 (12.1%), obesity 122 (11.3%), diabetes 97 (9%), family history of stroke 87 (8.1%), smoking 74 (6.9%) and previous stroke 29 (2.7%). The details are shown in **Table 3** and **Figure 1**.

Table 1. Sex and age distribution.

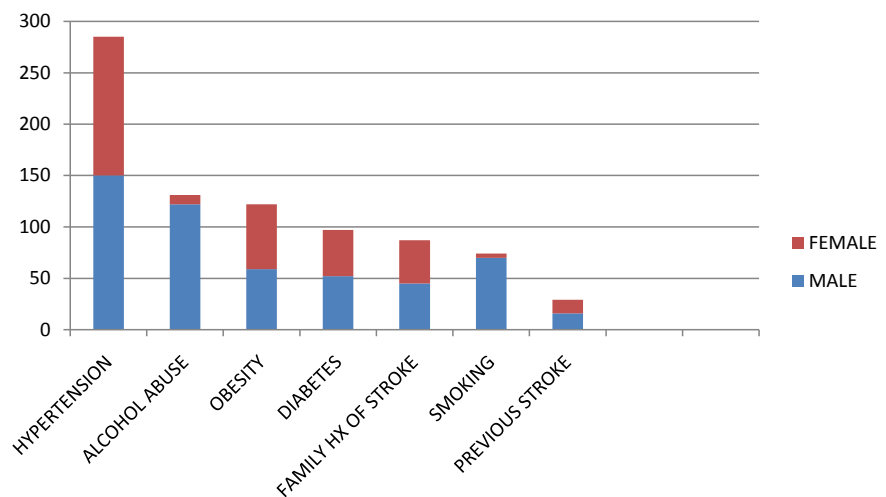
Age range	Male (%)	Female (%)	Total (%)
18 - 20	22 (2.0)	51 (4.7)	73 (6.7)
21 - 30	156 (14.5)	149 (13.8)	305 (28.3)
31 - 40	170 (15.8)	127 (11.8)	297 (27.6)
41 - 50	123 (11.4)	94 (8.7)	217 (20.1)
51 - 60	45 (4.2)	39 (3.6)	84 (7.8)
61 - 70	27 (2.5)	32 (3.0)	59 (5.5)
71 - 80	26 (2.4)	15 (1.4)	41 (3.8)
Total	569 (52.9)	507 (47.1)	1076 (100)

Table 2. Occupation distribution.

Occupation	Male (%)	Female (%)	Total (%)
Farmers	112 (10.4)	126 (11.7)	238 (22.1)
Petty traders	89 (8.3)	142 (13.2)	231 (21.5)
Artisan	106 (9.9)	84 (7.8)	190 (17.7)
Motor cyclist/Driver	121 (11.2)	0 (0)	121 (11.2)
Civil servants	68 (6.3)	52 (4.8)	120 (11.1)
Laborers	30 (2.9)	79 (7.3)	109 (10.2)
Others	43 (4.0)	24 (2.2)	67 (6.2)

Table 3. CVD risk factors.

CVD Risk factor	Male (%)	Female (%)	Total (%)	p
Hypertension	150 (13.9)	135 (12.5)	285 (26.4)	>0.05
Alcohol abuse	122 (11.3)	9 (0.8)	131 (12.1)	<0.05
Obesity	59 (5.5)	63 (5.8)	122 (11.3)	>0.05
Diabetes	52 (4.8)	45 (4.2)	97 (9.0)	>0.05
Family history of stroke	45 (4.2)	42 (3.9)	87 (8.1)	>0.05
Smoking	70 (6.5)	4 (0.4)	74 (6.9)	<0.05
Previous stroke	16 (1.5)	13 (1.2)	29 (2.7)	>0.05

**Figure 1.** CVD risk factors.

4. Discussion

This is a community based study of prevalence of selected cardiovascular risk factors in a sub-urban community in Abakaliki south-eastern Nigeria. The identified risk factors were hypertension, alcohol abuse, obesity, diabetes mellitus, family history of stroke, smoking and previous history of stroke in descending order.

The prevalence of hypertension was 26.4% with no sex predilection. This finding is similar with other community based studies in Nigeria and USA [8] [17] [18] [19]. It is lower than 42% reported amongst market workers in Enugu Nigeria with similar mean age [11]. The difference could stem from the fact that market workers were mainly sedentary while this study population was mainly active workers (farmers, laborers, artisans). The high prevalence of hypertension in this study underscores the high risk and enormous burden of cardiovascular diseases in sub-Saharan Africa.

Excessive use of alcoholic beverages was the second most prevalent cardiovascular risk factor identified with prevalence of 12.1% and male preponderance (11:1). The male preponderance is not unexpected as it's in keeping with multinational studies [20]. Men engage in significant alcohol use for several reasons which include cultural, social, biological, economic and religious reasons due to their low response to alcohol, later maturation in brain structures and executive function, greater estimates of perceived peer alcohol use, and socialization into traditional gender roles [21]. This contributes to high cardiovascular disease burden in male gender.

Obesity was reported in 11.3% of the study population with equal sex distribution. This is lower than prevalence rate of 27.3% reported in south-west Nigeria [22]. This difference is not unexpected as the former studied semi-urban dwellers mainly farmers and petty traders which were mostly of low socioeconomic class while the later studied health workers which are of higher socioeconomic class. Chukwuonye *et al.* reported prevalence of obesity in low and upper income groups of 12.2% and 20%, respectively in south-eastern Nigeria [23]. The above shows that obesity is more prevalent in individuals of higher socioeconomic groups.

Diabetes was noted in 9% of the study population which is higher than 2.2% and 5.8% reported from nationwide survey of 1992 and a systematic review/meta-analysis of 2018 in Nigeria respectively [24]. This shows steady rise in the prevalence of diabetes and typifies epidemiologic transition which is due to change to western lifestyle, dietary habits and urbanization.

History of stroke in first degree relative was noted in 8.1% while previous history of stroke was noted in 2.7% of the study population. Above figure is higher than previous systematic community based stroke prevalence of 1.5% in South-south part of Nigeria [25]. This high prevalence could stem from high prevalence of CVDs risk factors and also from chronic consumption of salty water in Ebonyi state [26].

Cigarette smoking was reported by 6.9% of the study population with male preponderance. This is not unexpected as majority of the study population were young and of low socioeconomic class which are both determinants for cigarette smoking [27]. This is higher than 0.8% cigarette smoking rate reported in southwest Nigeria [28]. This disparity could arise from the fact that the study population in former was young with mean age of 38 years compared to the mean age of 62 years in the later.

5. Conclusions and Recommendations

This is a community based study of the cardiovascular risk factors. The identified CV risk factors were hypertension, alcohol abuse, obesity, diabetes, family history of stroke, smoking and previous history of stroke in descending order of frequency. They were quite prevalent with male preponderance of alcohol abuse and smoking.

There is need for a multicentre nationwide study to ascertain the actual burden of these risk factors in the larger population. There is need for a regular comprehensive community based education and enlightenment programs on healthy lifestyles and good health seeking behavior. There is also need to train adequate manpower in health sector who will be involved in provision of secondary and tertiary levels of care to the at-risk population. Finally, there is need for government to ensure provision of portable water for the populace.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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