



Dietary Pattern and Prevalence of High Blood Pressure among Adult Traders in Port Harcourt, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author GOW, designed the study, wrote the protocol and write the first draft and the manuscript. Author OMA performed statistical analysis and managed the analysis of the study including the literature search.

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ABSTRACT

High blood pressure is a diet related disease with high incidence of morbidity and mortality. Identification of its diet risk factors will inform intervention for its control. The thrust of this study was to determine the prevalence of hypertension among adult traders in Port Harcourt Local Government Area, Rivers state, Nigeria. A descriptive cross-sectional study was carried out using a structured questionnaire among randomly selected 215 men and women who were adult traders in the creek road market. Informations obtained included the socio-economic characteristics, life style characteristics and food consumption pattern of the traders in creek road market, Port Harcourt. Anthropometric indices (height and weight) were measured to determine the body mass index (BMI). Blood pressure values were also determined and classified according to World Health organization and international society of Hypertension classification. The statistical package for social sciences was used for data analysis. More than half (53.5%) of the respondents were men and 46.5% were female. The prevalence of hypertension was 50.3% for pre-hypertensive and prevalence of stage I and stage II hypertension were 18.5% and 11.1% respectively. Hypertension

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was significantly higher ($P < 0.05$) in the male than in female respondents. The mean body mass index (BMI) of the respondent was 26.6% and the prevalence of overweight and obesity was 23.6% and 21.4% respectively.

Conclusion: The study showed that hypertension and its associated factors, obesity and diet are still problem among the study population. Adequate nutrition intake, physical activity should be encouraged through public education.

Keywords: Hypertension; obesity; physical activities; blood pressure; traders overweight.

1. INTRODUCTION

Recent global figures indicate that the prevalence of hypertension is not just a problem of the developed countries, but is also on the increase in the developing world [1].

Hypertension is the leading causes of morbidity and mortality worldwide [2] many people with hypertension are unaware of their condition and among those with hypertension treatment is infrequent and inadequate. When selected major risk factors were assessed, the leading global risks for mortality in the world were found to be high blood pressure [3].

A recent community based study of rural and semi-urban population in Engugu, Nigeria, put the prevalence of hypertension in the community at 34.8% [4].

Uncontrolled hypertension is associated with serious and organ damage including heart disease, stroke, blindness and renal diseases, [5].

Major target organ of complications of hypertension such as congestive heart failure, ischemic heart disease, diastolic dysfunction, stroke and renal failure have been established by various researchers in Nigeria. These serious complications can be prevented by adequate blood pressure control [6]. Reducing the prevalence rate of hypertension would decrease mortality and disability in middle-age and older persons and lead to a better quality of life [7].

The market in Nigeria is a meeting place for distribution of goods (and even producers of some goods, especially food items produced by small scale farmers) and consumers, represents the soul of every community in Nigeria. The nature of businesses carried out by traders also involves travelling from one location to another in order to purchase goods for sales. This work environment influence both eating habit and lifestyles of the traders. According to Afolabi [8], they consume diets, with mean daily energy

initiate for higher than recommended level. They also over eat as a result of stress, sometimes the skip their meals, some traders, according to Afolabi, et al., [8] also consume salt-laden fast foods while at work both market men and women traders, spend most hours at the day sitting down and involved in many other sedentary activities and alcohol consumption is the order of the day [8].

Providing information on the prevalence of hypertension of these set of people will contribute to the wealth of knowledge on the chronic diseases that could inflect on Nigerians, help to make informed choices on intervention strategies and as well as evaluate any on-going attempts to curb the disease.

Traders therefore represent an important productive sector of the economy, hence, this study is set to determine the prevalence of hypertension among market traders in the urban city of Port Harcourt in the Niger Delta, of Nigeria.

2. SUBJECTS AND METHODS

2.1 Study Design

This was descriptive cross-sectional study in nature.

2.2 Study Area

The study was carried out in Port Harcourt City of Rivers State, Nigeria between January and June, 2015.

The population consists of 215 adult males and females market traders aged 21 to 60 years from the major markets in Port Harcourt City, namely, Mile 1, Mile 3 and Creek road market with population of 1500.

2.3 Sample Size and Sampling Technique

The sample size, n , was determined using the Cochran formula (f) Ofuya, [9] which states that;

$$n = \frac{Z^2 Pq}{d^2}$$

Where n = the minimum sample size in the study population

Z = Standard normal deviation, 1.96 which corresponds to 95% confidence level.

P = prevalence rate, 16.0% = 0.16 according to Ofuya et al., [9].

q = 1 – P = 1 – 0.16 = 0.84

d = desired precision = 5% (0.05)

$$\text{Then } n = \frac{1.96^2 \times 0.16 \times 0.84}{0.05^2} = 206.5 = 207$$

The minimum sample size was estimated at 207

Add 10% attrition:	10% of 207=
10 x 207	= 20.7
100	= 20.7 + 207 = 228.

The sample size was rounded up to 228. Some questionnaires were not usable after the collection of the data, therefore was adjusted from 228 to 215.

2.4 Date Collection

Six research assistants made up of nutrition and food scientist and technologist. Students were trained on questionnaire administration and measurement procedures. A structured questionnaire which was validated by lectures in Home Science and management Department and pretested on a group of adults in mile 3 market, was used for data collection. Information on their socio-demographic characteristics as well as other information on their anthropometric and blood pressure were collected.

2.5 Weight and Height Measurement

Anthropometric measurement of height and weight were taken. The weight of the subjects were measured to the nearest 0.1kg using a portable bathroom scale.

2.6 Blood Pressure Measurement

Blood pressure (BP) measurements were made using digital sphyngomanometer (OMRON blood pressure monitor) three measurements were taken at intervals, and mean value of the measurements was calculated to determine the blood pressure status of the individuals Ogah, et al., [10].

2.7 Data Analysis

Data was analyzed using SPSS version 20.0. Descriptive statistics such as frequencies, percentages and means were used to analyze data. Chi-square test was used to determine the relationship between variables.

3. RESULTS

Table 1 shows the socio-demographic characteristics of the respondents. About half (53.50%) of the respondent were male while female were 46.5%. Many of the subjects (34.4%) were of the age range of 21-30years, while 42.8% were of age range of 31-40years. Most of the respondents (53.0%) were married, while 62.7% had up to secondary education.

Table 1. Socio-demographic characteristics of the respondents

Variables	Percentages %
Sex	
Male	53.5
Female	46.5
Total	100
Marital Status	
Single	39.5
Married	53.0
Divorced	7.4
Total	100
Age	
21-30	34.4
31-40	42.8
41-50	20.5
51-60	2.3
Total	100
Educational level	
no education	6.0
Primary	24.4
Secondary	62.7
Tertiary	6.9
Total	100

Their occupation is trading which constituted these study.

The blood pressure of the participants in Port Harcourt shown in Table 2. It shows that low proportion (20.1%) has a normal blood pressure value. More than half (50.3%) were in the category of pre-hypertension and 18.5% were in stage 1 hypertension category.

Table 2. Blood Pressure profile of the respondents

Blood pressure	percentages %
$< \frac{120}{80}$ (normal)	20.1
$\frac{120}{80} - \frac{139}{99}$ (pre-hypertension)	50.3
$\frac{140}{90} - \frac{159}{99}$ (stage 1 hypertensive)	18.5
$\geq \frac{160}{100}$ (Stage 2 hypertension)	11.1
Total	100

percentages %

Table 3. BM1 of the participants

Variable	Percentages %
<18.5 (underweight)	9.3
18.5 – 24.0 (normal range)	45.7
25 – 29.9 (over weight)	23.6
30.0 and above (base)	21.4
Total	100

The body mass index distribution is shown in Table 3. The prevalence of underweight was 9.3%. Normal weight was 43.7%, while overweight and obesity were 31.2% and 15.8% respectively.

Table 3 shows the eating habit of the subjects.

In Table 4, most of the subject (47.4%) had 3 times meal a day. About 18.6% skip meals. Only 31.6% enjoy breakfast meal. Dinner was the major food of the day with 34.0% enjoyed the dinner meal. Fruit and vegetable consumption was low (32.1%), while the intake of salt was high (50.2%). Also the intakes of fatty foods were moderately high (30.1%).

Total 5 shows the relationship between gender and blood pressure of the respondents. The analysis shows that high proportion of those with normal B P were found among the female respondents. However, stage 1 hypertension was higher in male (25.2%) than in female (4.0%) which was significant at (P < 0.05).

Table 6 shows the life style characteristics of the respondents. It shows that 10.7% of them were smokers while 89.3% were non-smokers. Most of

them (58.6%) do drink alcohol while 41.4% claimed not to drink alcohols. Majority (20.9%) of the respondents claimed that they engaged in physical activity, while 79.1% did not. The rest of the result is shown in the Table 6.

Relationship between metabolic index of the male and female traders are shown in Table 6. It was found that, while underweight was high among the female respondents overweight and obesity was high among the male than female (33.0% versus 9.0%) and (17.4% versus 14.0%) respectively and this was significant (P < 0.05).

4. DISCUSSION

Majority of the subjects (62.7%) had secondary school education which presumed high literate level. This corroborates other report (Ogah, [11] which gave a literacy level of 85.6% in Abia State where similar study was carried out. The participants were traders by occupation.

Table 4. Food preference of Respondents

Variable	Percentages %
Time of eating per day	
Three times	47.4
Two times	5.2
More than three times	28.8
Skipping meals	18.6
Total	100
Time of eating largest meal	
At Dinner	34.0
At Lunch	23.7
At Breakfast	31.6
All of the above	10.7
Total	100
Frequency of consuming fruit and vegetables	
Once per week	32.1
2-3 days per week	32.1
4-5 days per week	4.7
Every day	19.1
None per week	12.0
Total	100
Salt intake	
High	50.2
Low	22.8
Moderate	27.0
Total	100
Consumption of fatty food	
Always	30.1
Sometimes	40.0
Rarely	29.9
Total	100

The World Health Organization (WHO) recommends measurement of BMI as a universal criterion of overweight (>25kg/m²) and obesity (>30kg/m²) [2].

There was significant relationship between body mass index (BMI) and increased blood pressure. Overweight and obesity was found to be high among males (33.0%) and (29.0%) than in females (17.4% and 14.0%). The link between obesity and the risk of hypertension has already been established in studies (Ekanem et al, [12]. One implications of this finding is that, the obese

individuals are more likely to be face with doubled health challenges associated with both hypertension and obesity Odugbemi et al. [13]. The result of the lifestyle and eating behaviour of the respondents showed that they were involved in habits such as taking alcohol drinks (58.6%), none physical activity (79.1%), smokers (10.7%), while some (47.4%) eat three times per day, and some eat their largest meal at dinner (34.0%), some consume high salt (50.20) and fatty foods (30.1%). Those who consume fruits and vegetable, once per day and 2-3 days per week were both 32.1% each.

Table 5. Relationship between gender and blood pressure

Variables	Gender		Total	X ² ; p-value
	Male %	Female %	%	
Blood pressure				
Normal (<120<80mm/Hg)	15.0	27.0	42	22.304
Pre-hypertension ($\frac{120}{80} - \frac{139}{89}$)	58.3	69.0	136	
Stage 1 hypertension ($\frac{140}{90} - \frac{159}{99}$)	25.2	4.0	29.2	0.000
Stage 2 hypertension ($\geq \frac{160}{100}$)	1.7	0.0	2	
Total			209	

Significant at P < 0.05.

Table 6. Lifestyle characteristics of respondents

Variable	Percentages %
Smoking status	
Smokers	10.7
Non smokers	89.3
Total	100
Number of cigarettes per day	
< 1 pack per day	7.9
1-3 pack per day	2.8
Don't smoke	89.3
Total	100
Drink Alcohol	
Yes	58.6
No	41.4
Total	100
Form of physical activity	
Yes	20.9
No	79.1
Total	100
Frequency of physical activity	
Two times per week	7.4
Three times per week	10.0
Every day	7.9
Once a month	42.6
Twice a month	32.1
Total	100

Table 7. Relationship between BMI and gender %

Variables	Gender		Total	P-value
	Male	Female		
BMI				
< 18.5 (underweight 18.5 – 24.9 (Normal range)	3.5	16.0	19.5	10.002
250-29.9 (overweight)	33.0	29.0	62	0.019
30.0 and above (obese)	17.4	14.0	31.4	
Total	115	100	215	

Physical inactivity, alcoholism, smoking intake of salt and fatty foods are known associated vulnerable lifestyle conditions for developing hypertension [10]. Based on the report obtained from the participants in this study alcoholism, high salt intake and high fat intake were common among the traders. This is in agreement with the report of a joint WHO/FAO Expert Consultation [14], which stated that dietary salt intake is a significant factor in raising blood pressure. Also Ogah [11] stated that high salt intake increases intercellular fluid volume, heart beat rate and contractility and cardiac output. Thus moderate salt intake is recommended as a positive step for maintaining a healthy diet. This also relates to the finding by Odigbemi et al. [13] who reported high prevalence of cigarette smoking by males among traders in Lagos, Nigeria. Afolabi et al. [8] also made similar findings where alcoholism and physical inactivity were common among the participants. A healthy diet which ensures weight balance is known to be the cornerstone in the management of obesity. A combination of low calorie diet, exercise can play a positive role in management of obesity and lowering blood pressure.

5. CONCLUSION

This study has affirmed a high prevalence of obesity, overweight and high blood among the study population. Preventive strategies aimed at weight reduction should be emphasized among these adults considering its relationship with occurrence of cardiovascular diseases.

CONSENT

It is not applicable,

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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