

INFLUENCE OF DIETARY INTAKE AND HIGH BLOOD PRESSURE AMONG ADULT TRADERS IN PORT HARCOURT.

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), $\text{weight/height}^2/\text{kg/m}^2$. 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 46.7% were female. The prevalence of hypertension was 36.3% and prevalence of stage I and stage II hypertension was 18.5% and 11.1% respectively. Hypertension 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 27.6% and 31.4% respectively and the adult females were significantly overweight and obese than the males majority (55.0%) of the respondents never engaged in any form of exercise in a week and more than half (52.7%) of them consumed alcohol at different level.

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.

Key words: Hypertension, Obesity, physical activities, blood pressure, traders, overweight.

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 (WHO, 2013).

Hypertension is the leading causes of morbidity and mortality worldwide (WHO, 2002) 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 (WHO, 2011).

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% (Ulas et al., 2011).

Uncontrolled hypertension is associated with serious and organ damage including heart disease, stroke, blindness and renal diseases, (Kuharl et al., 2007).

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 (Custfidi et al., 2000). 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 (Onadijo et al., 2003).

71 The market in Nigeria is a meeting place for distribution of goods (and
72 even producers of some goods, especially food items produced by
73 small scale farmers) and consumers, represents the soul of every
74 community in Nigeria . The nature of businesses carried out by
75 traders also involves travelling from one location to another in order to
76 purchase goods for sales. This work environment influence both
77 eating habit and lifestyles of the traders. According to Afolabi (2004),
78 they consume diets, with mean daily energy intake for higher than
79 recommended level. They also over eat as a result of stress, sometimes
80 the skip their meals, some traders, according to Afolabi, et al., (2004)
81 also consume salt-laden fast foods while at work both market men
82 and women traders, spend most hours at the day sitting down and
83 involved in many other sedentary activities and alcohol consumption
84 is the order of the day (Afolabi et al., 2004).

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

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

94
95
96

97 **SUBJECTS AND METHODS**

98 **Study Design**

99 This was descriptive cross-sectional study in nature.

100 **Study Area**

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

103 The population consists of 215 adult males and females market
104 traders aged 21 to 60 years from the major markets in Port Harcourt
105 City, namely, Mile 1, Mile 3 and Creek road market with population of
106 1500.

107 108 **Sample Size and Sampling technique**

109 To determine the sample size for the study, the prevalence of
110 hypertension in the Niger Delta region according to Ofuya, (2007)
111 which was 16.0% using the Cochran formula in the calculation.

$$112 \quad n = \frac{Z^2 Pq}{d^2}$$

113 Where n = the minimum sample size in the study population

114 Z = Standard normal deviation, 1.96 which corresponds to
115 95% confidence level.

116 P = prevalence rate, 16.0% = 0.16 according to Ofuya et al.,
117 2007.

118 q = $1 - P = 1 - 0.16 = 0.84$

119 d = desired precision = 5% (0.05)

$$120 \quad \text{then } n = \frac{1.96^2 \times 0.16 \times 0.84}{0.05^2} = 206.5 = 207$$

121 The minimum sample size was estimated at 207
 122 Add 10% attrition: 10% of 207 =
 123 $10 \times 207 = 20.7$
 124 $100 = 20.7 + 207 = 228$.
 125 228 selected market traders were randomly recruited in the study.
 126 Some questionnaires were not useable after collection of data.
 127 Therefore, it was adjusted from 228 to 215.

128

129 **Date Collection**

130 Six research assistants made up of nutrition and food science and
 131 technology. Students were trained on questionnaire administration
 132 and measurement procedures. A structured questionnaire which was
 133 validated by lectures in Home Science and management Department
 134 and pretested on a group of adults in mile 3 market, was used for data
 135 collection. Information on their socio-demographic characteristics as
 136 well as other information's on their anthropometric and blood
 137 pressure.

138

139 **Weight and Height Measurement**

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

143

144 **Blood Pressure Measurement**

145 Blood pressure measurements were made using digital
 146 sphygmomanometer (OMRON blood monitor) three measurements were

147 taken at intervals, and mean value of the measurements was
 148 calculated to determine the blood pressure status of the individuals
 149 (Ogah, et al., 2013). Hypertension was defined as when the systolic
 150 blood pressure was ≥ 90 mmHg.

151 152 **Data Analysis**

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

157 158 **RESULTS**

159 Tables 1 shows the socio-demographic characteristics of the
 160 respondents. About half (53.50%) of the respondent were female while
 161 male were 46.5%. Many of the subjects (34.4%) were of the age range
 162 of 21-30years, while 42.8% were of age range of 31-40years. most of
 163 the respondent were married (50.0%), while 62% had up to secondary
 164 education.

165 **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

166

167 Their occupation is trading which constituted these study.

168

169

170

171 **Table 2: Blood Pressure profile of the respondents**

172

Blood pressure	percentages %
$< \frac{120}{80}$ (<i>normal</i>)	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

183

184

185

186 The blood pressure of the participants in Port Harcourt shown in
 187 Table 2. It shows that low proportion (20.5%) has a normal blood
 188 pressure value. More than half (63.3%) were in the category of
 189 prehypertension and 15.3% were in stage 1 hypertension category.

190

191 **Table 3: BM1 of the participants**

192

Variable	Percentages %
<18.5 (underweight)	9.3
18.5 – 24.0 (normal range)	45.7
25 – 29.9 (over weight)	27.6
30.0 and above (base)	21.4
Total	100

193

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

197 Table 4 shows the eating habit of the subjects.

198 **Table 4: Food preference of Respondents**

199

Variable	Percentages %
Time of eating per day	
Three times	47.4
Two times	5.1
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	12.1
Total	100

Salt intake

High	50.2
Low	42.8
Moderate	42.8
Total	100

Consumption of fatty food

Always	83.0
Sometimes	56.0
Rarely	76.0
Total	100

In table 4, most of the subject (47.4%) had 3 times a day. About (19.6%) skip meals. Only 31.6% enjoy breakfast meal. Dinner is the major food of the day with 34.0% enjoy the dinner meal. Fruit and vegetable consumption is low (32.1%), while the intake of salt is high (50.2%). Also the intake of fatty foods are high (83.0%).

Table 5: Relationship between gender and blood pressure

Variables	Gender		Total	X²; p-value
Blood pressure	Male %	Female %	%	
Normal	15.0	27.0	42	22.304

($\frac{120}{80}$ - $\frac{139}{89}$)	58.3	69.0	136	
Pre-hypertension				
($\frac{140}{90}$ - $\frac{159}{99}$)	25.2	4.0	33	0.000
Stage 1 hypertension				
($\geq \frac{160}{100}$)	1.7	0.0	2	
Stage 2 hypertension				
Total			215	

Significant at $P < 0.05$.

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: 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	11.6
Every day	7.9
Once a month	42.8
Twice a month	32.0
Total	100

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 which 41.4% claimed not to drink alcohols majority (20.9%) of the respondents claim that they engaged in physical activity, which 79.1% did not. The rest of the result is shown on the Table 4.

Table 7: Relationship between BMI and gender %

Variables	Gender		Total	P-value
BMI	Male	Female		
< 18.5 (underweight	3.5	16.0	19.5	10.002
18.5 – 24.9 (Normal range)				
25.0-29.9 (overweight)	33.0	29.0	62	0.019
30.0 and above (obese)	17.4	14.0	31.4	
Total	115	100	215	

Table based metabolic index was the relationship between based metabolic index of the male and female traders are shown in Table 7.

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 29.0%) and (17.4% versus 14.0%) respectively and this was significant ($P < 0.05$).

DISCUSSION

Majority of the subjects (62.7%) had secondary school education which presumed high interacy level, this corroborates other reports (Ogah, 2006) which gave a literacy level of 85.6% in Abia State where similar study was carried out. The participants were traders by occupation.

The World Health Organization (WHO) recommends measurement of BMI as a universal criterion of overweight ($>25\text{kg/m}^2$) and obesity ($>30\text{kg/m}^2$) (WHO 2000).

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, 2013). 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, 2012). The result of the lifestyle and eating behaviour of the respondents showed that they were invovled in habits such as taking alcohol drinks (58.6%), physical in 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 (50.29) and fatty foods (38.6%). Those who consume fruits and vegetable, once per week and 2-3 days per week (32.1%).

Physical inactivity, alcoholism, smoking intake of salt and fatty foods are known associated vulnerable lifestyle conditions for developing hypertension. 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 American Heart Federation (AHF) who stated that dietary salt intake is a significant factor in raising blood pressure. Also Ogah (2006) 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, (2012) who reported high prevalence of cigarette smoking by males among traders in Lagos, Nigeria. Afolabi et al, (2004) also made similar findings where alcoholism and physical inactivity was common among the participants, conditions for developing high blood pressure. 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.

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. Healthy eating habits such as high intake of fruits and vegetables, low intake of alcohol, saturated fats and sweets should be emphasized.

REFERENCES

- Afolabi, W. A. Addo A. A. and Sonibare, M. A. (2004). Activity pattern energy intake and Obesity among Nigerian urban market women. *Int. J. Food Sci. Nutri* 55(2) 85 – 90.
- Cuspidi, C. Landtil, L, Sampieri, L, Michav, L. Macca, G, Rocanova, J. L. Salerno, M, Fusi, V. Leonelti, G and Zanchetti, A. (2000) Prevalence of target organ damage in treated hypertensive patients: different impact of clinic and ambulatory blood presusr control. *Journal of Hypertension* 18: 803 – 809.
- Ekanem, U. S.; Opara, D. C. and Akaowo, C. D. (2013). High Blood pressures in a semi-urban community in south – south Nigeria, a community – based study *African Health Sciences* 13(1): 56 – 61.
- Kumar, S. Mahabalaraju, D. K and Anoroopa, M. S. (2007). Prevalence of Obesity and its influencing fact among affluent school children of Davangere City *Ind. J. Com. Med*, 32(1): 1-5.
- Odugbemi, F. O.; Onajobe, A. T. and Osibogun, A.O. (2012). Prevalence of Cardiovascular risk factors amongst traders in an urban market in Lagos, Nigeria. *Nigeria Postgraduate Medicine* 19(1) 1- 6.

320 Ofuya, Z. M. (2007). The incidence of hypertension among selected
321 population of adults in Niger Delta Region of Nigeria south east. Asian
322 J. Trop med Pub. Health 38(5) 947 – 9.
323
324 Ogah O. S. (2006). Hypertension in Sub-sahara African populations. The
325 burden of hypertension in Nigeria Ethnic Disparities, 16(4) 765.
326
327 Opadijoet, O. G. Omotoso A. B. O and Akande, A. A. (2003). Relationship of
328 electrocardiographic left ventricular hypertrophy to blood pressure,
329 body mass index, serum lipid and blood sugar levels in adult
330 Nigerians. African Journal of Medicine and medical sciences, 32(4),
331 395 – 399.
332
333 Wasi, I. I, Ijoma, C.K. Onwubere, B. J. C., Arodiwe, E. Onodugo, O. and
334 Okafor, C. (2011). High prevalence and low awareness of hypertension
335 in a market population in Enugu, Nigeria. Int. J. Hypertension 8695 –
336 8697.
337
338 WHO (2000). Obesity: Preventing and managing the global epidemics: Report
339 of a Who consultation technical Report series. No894, Geneva,
340 Switzerland.
341 WHO (2011). Global status report on non-communicable diseases in 2010.
342 World Health Organisation, Geneva Switzerland.
343
344 WHO (2013) Obesity and overweight WHO fact sheet. World Health
345 Organisation Geneva, Switzerland.
346
347