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Full Length Research Paper

## Obesity and Hypertension amongst Traders in Ijebu Ode, Nigeria

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### ABSTRACT

Market traders spend most hours of the day sitting down and involved in many other sedentary activities, conditions which increase the risk of chronic diseases. This study was designed to determine the prevalence of obesity and hypertension amongst market men and women in Ijebu- Ode, Nigeria. A cross-sectional study involving 157 (52.3%) males and 143 (47.7%) females was conducted. Body mass index (BMI) was derived from weight and height measurements; waist circumference (WC) measurement was taken to assess abdominal obesity. Blood pressure was measured using a digital sphygmomanometer. The mean( $\pm$ S.E) age in the study was 39.04(0.658) years, mean( $\pm$ S.E) BMI, SBP and DBP were 26.36(0.32)kgm<sup>-2</sup>, 116.64(1.27)mmHg and 79.50(0.86)mmHg respectively. Based on BMI, the prevalence of overweight and obesity were 25.3% and 26.7%. About 52.0% of the respondents had abdominal obesity. Prevalence of both general and abdominal obesity were significantly higher among females than males ( $p < 0.05$ ). The overall prevalence of hypertension was 16.0%. Body Mass Index was significantly related to both systolic and diastolic blood pressure ( $p < 0.05$ ). Obesity and hypertension among market men and women in Ijebu-Ode constitute health issues of public health importance. Sensitization on prevention and control of these disorders is important to protect those in this community from obesity related health challenges.

**Keywords:** Obesity, hypertension, market men and women, Nigeria.

### INTRODUCTION

Recent global figures indicate that the prevalence of obesity is not just a problem of the developed countries but is also on the increase in the developing world and that 65% of the world's populations live in countries where overweight and obesity kill more people than

underweight (WHO, 2014; Steven et al., 2012). The situation may be worse in African context, where body fatness is associated with beauty, fame and evidence of good living and health particularly in women; furthermore, African men are purported to have a preference for overweight over thin women (Adeboye et al., 2012). In Nigeria, the prevalence of obesity among adults has been estimated to range from 8.1 to 22.2% (Chukwuonye et al., 2013). Similarly, the prevalence of hypertension in sub-Saharan Africa has been estimated range from 19 to 38% (Hendriks et al., 2012); and that among adult Nigerians is placed at 44.9% (Murthy et al., 2013).

Consequences of both obesity and hypertension are enormous. In Nigeria, obesity and hypertension are implicated in various health challenges including diabetes mellitus, dyslipidaemia, gynaecological complications, cancer, stroke, sudden deaths, medical stroke, heart failure, Psychiatric disorders etc (Maduagwu et al., 2012; Mustapha et al., 2012; Ekpenyong et al., 2011; Ogunniyi et al., 2011; Ukoli et al., 2007). Furthermore, excessive body fat is strong

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linked with the risk of hypertension (Wilson *et al.*, 2002). In Nigeria, the risk of hypertension is about two times higher among obese individuals than those with normal body weight (Ekanem *et al.*, 2013; Wahab *et al.*, 2011).

Physical inactivity has been identified as a major cause of excessive body weight and high blood pressure (WHO, 2014; WHO, 2013; Mahfouz *et al.*, 2011). Market men and women spend most hours of the day sitting down and involved in many other sedentary activities and consume diets with mean daily energy intake far higher than recommended levels (Afolabi *et al.*, 2004); conditions that increase their risk of developing obesity and/or hypertension.

Studies on prevalence of obesity and hypertension among various groups in Nigeria are limited to few locations and categories of people, causing paucity of data on prevalence of these conditions in the country. Providing information on the prevalence of obesity and hypertension will contribute to the wealth of knowledge on chronic diseases among Nigerians; help to make informed choices on intervention strategies and as well as evaluate any ongoing attempts to curb these diseases. Hence this study is set to assess the prevalence of obesity and hypertension among market men and women.

## METHODOLOGY

This study adopted a cross sectional and descriptive design. Subjects included market men and women, 18 to 73 years who were randomly selected from Oke-Aje and Ita Osun markets, all in Ijebu Ode, Ogun State, Nigeria.

A total of 300 respondents were selected based on 22.2% prevalence of obesity reported by Chukwuonye *et al.*, (2013) from the findings of a systematic review of obesity among adult Nigerians.

A semi structured questionnaire was used to collect information for this study. Demographic and socio-economic information obtained included age, gender, marital status, religion, occupation, and educational status.

Obesity was assessed using Body Mass Index and waist circumference (WC); hence, anthropometric measurements of weight, height and waist circumference were obtained. Body weights were taken using a digital bathroom scale. The readings were taken to the nearest 0.1kg. Each subject was made to stand erect on the scale with light clothing and without shoes. An object with a known weight was used to standardize the scale readings. Heights were measured to the nearest 0.1cm using the Stadiometer. Subjects were made to stand erect with bare foot and eyes

directed straight ahead. Weight and height measurements were used to calculate body mass index (BMI), which was used to classify subjects according to the World Health Organization (WHO) guidelines (WHO, 2000).

WC (in centimetres) was measured using a flexible, non-stretchable tape measure, at the midpoint between the lower rib border and the iliac crest at the end of expiration while participants were standing upright. Subjects were classified based on the WHO guidelines (WHO, 2008).

Blood pressure measurements were made using Digital sphygmomanometer. Two measurements of Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) (measured in mmHg) were taken. Hypertension was diagnosed according to the "Seventh report of the Joint National Committee (JNC) on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (Chobanian *et al.*, 2003).

All data were analyzed using Statistical Package for Social Science (SPSS) version 15. Frequencies and descriptive statistics of concerned variables were reported. Significant associations between dependent and explanatory variables were determined using appropriate statistical tools.

## RESULTS

**Socio-economic Characteristics and Descriptive Statistics:** A total of three hundred (300) market men and women participated in this study. Respondents were made up of 157 (52.3%) males and 143(47.7%) females. About 78.7% were married, 57.7% had secondary education and more than half (61.0%) were Muslims. The mean  $\pm$ S.E age, weight and height of respondents in the study were  $39.04\pm 0.658$  years,  $72.78\pm 0.79$ kg and  $1.67\pm 0.005$ m respectively. The mean BMI, SBP and DBP were  $26.3\pm 0.32$ kgm<sup>-2</sup>,  $116.64\pm 1.27$ mmHg and  $79.50\pm 0.86$ mmHg respectively.

Based on BMI, the total prevalence of overweight and obesity in this study were 25.3% and 26.7% respectively. Prevalence of overweight and obesity were 21.7% and 29.4% among males; 20.4% and 33.6% among females respectively. Overall, 22.9% and 83.9% of the males and females had abdominal obesity respectively. The overall prevalence of abdominal obesity was 52.0%.

Stage I hypertension was 12.0% and 22.7% for SBP and DBP respectively and stage II hypertension was 3.7% and 8.3% respectively for SBP and DBP. Prevalence of pre-hypertension was 29.7 and 21.3 respectively. The overall prevalence of hypertension was 16.0%.

**Table 1:**  
Socio – demographic characteristic of the respondents

Parameters	Frequency	%
<b>Gender</b>		
Male	157	52.3
Female	143	47.7
Total	300	100.0
<b>Marital status</b>		
Single	47	15.7
Married	236	78.7
Separated	5	1.7
Widowed	12	4.0
Total	300	100.0
<b>Level of Education</b>		
No formal	24	8.0
Primary	66	22.0
Secondary	173	57.7
Post secondary	37	12.3
Total	300	100.0
<b>Religion</b>		
Christian	116	38.7
Muslim	183	61.0
Other	1	0.3
Total	300	100.0

Analysis on the relationship between obesity and hypertension revealed significant association between BMI and both SBP and DBP. These association were observed between BMI and both SBP and DBP at pre-hypertension levels (p=0.000) for both.

**Table 2:**  
Body Mass Index and waist circumference category

Parameter	Male No(%)	Female No(%)	Total No(%)	p-value
<b>BMI</b>				
Underweight	2(0.7)	5(1.7)	7(2.3)	
Normal	89(29.7)	48(16.0)	137(45.7)	
Overweight	34(11.3)	42(14.0)	76(25.3)	0.001
Obese	32(10.7)	48(16.0)	80(26.7)	
Total	157(52.3)	143(47.7)	300(100.0)	
<b>WC</b>				
Normal	121(77.1)	23(16.1)	144(48.0)	0.001
Action Level I	28(17.8)	33(23.1)	61(20.3)	
Action Level II	8(5.1)	87(60.8)	95(31.7)	
Total	157(52.3)	143(47.7)	300(100.0)	

**Table 3:**  
Hypertension categorization

Parameter	Systolic Blood Pressure No(%)	Diastolic Blood Pressure No(%)
Normal	164(54.7)	143(47.7)
Pre-hypertension	89(29.9)	64(21.3)
Stage I	36(12.0)	68(22.7)
Stage II	11(3.7)	25(8.3)
Total	300(100.0)	300(100.0)

**Table 4:**  
The relationship between Obesity and Hypertension (HTN)

Parameters	Underweight No(%)	Normal No(%)	Overweight No(%)	Obese No(%)	Total No(%)	p-value
<b>Systolic Blood Pressure</b>						
Normal	3(1.0)	86(28.7)	38(12.7)	16(5.3)	143(47.7)	
Pre-HTN	3(1.0)	21(7.0)	16(5.3)	24(8.3)	64(21.3)	0.000
Stage I HTN	1(0.3)	23(7.7)	16(5.3)	28(9.3)	68(22.7)	
Stage II HTN	0(0.0)	7(2.3)	6(2.0)	12(4.0)	25(8.3)	
Total	7(2.3)	137(45.7)	76(25.3)	80(26.7)	300(100.0)	
<b>Diastolic Blood Pressure</b>						
Normal	6(2.0)	99(33.0)	41(13.7)	18(6.0)	164(54.7)	
Pre-HTN	1(0.3)	24(8.0)	25(8.3)	39(13.0)	89(29.7)	0.000
Stage I HTN	0(0.0)	13(4.3)	9(3.0)	14(4.7)	36(12.0)	
Stage II HTN	0(0.0)	1(0.3)	1(0.3)	9(3.0)	11(3.7)	
Total	7(2.3)	137(45.7)	76(25.3)	80(26.7)	300(100.0)	

## DISCUSSION

This study recorded high prevalence of both general and abdominal obesity (table 2) among market men and women in Ijebu Ode. The causes of obesity among market traders are not farfetched as these group of people are mostly engaged in sedentary activities, coupled with long hours of physical inactivity and high energy intake (Afolabi *et al.*, 2004). Similar studies equally revealed high prevalence of obesity among market traders across Nigeria (Odugbemi *et al.*, 2012; Awosan *et al.*, 2014). The findings in this study are comparable to 28.1% prevalence of obesity reported among traders in Sokoto state (Awosan *et al.*, 2014), but higher than 12.3% recorded amongst traders in an urban market in Lagos State (Odugbemi *et al.*, 2012). Due to the dearth of information on waist circumferences of market traders in Nigeria, it is difficult to make comparisons with the findings in this study regarding abdominal obesity. However, the prevalence of abdominal obesity from this study is higher than 33.8% reported amongst adults in Ogbomoso, Nigeria (Amole *et al.*, 2011). Both general and abdominal obesity among market men and women are of particular health concern, bearing in mind the health consequences of both conditions facing the adult populations in Nigeria (Maduagwu *et al.*, 2012; Mustapha *et al.*, 2012; Ekpenyong *et al.*, 2011; Ukoli *et al.*, 2007).

The result showed that more women had both general and abdominal obesity than men, and these differences were statistically significant ( $p=0.001$ ). This finding is in line with those from previous studies, where female gender is always found as a significant predictor of obesity (Wahab *et al.*, 2011; Amole *et al.*, 2011). Females are particularly predisposed to obesity due to the natural composition of the body, where females at and over puberty store higher body fat than males. Furthermore, cultural norms in Africa predispose more women to increased body weight as body fatness is associated with beauty, fame and evidence of good living and health among women (Adeboye *et al.*, 2012).

Significant proportions of the respondents in this study were hypertensive as revealed in the 16.0% of hypertension. This rate of hypertension in this study is however lower than the 42.0% recorded in a market population in Enugu, Nigeria (Ulasi *et al.*, 2011). This study did not take into consideration factors that predisposed individuals to hypertension; hence it is difficult to identify the possible cause of lower rate of hypertension in this population. Besides BMI, several other factors including inappropriate dietary intake, increasing age, gender, urban residence (Murthy *et al.*, 2013; Ulasi *et al.*, 2011; Brown *et al.*, 2011), etc have

been identified to increase the risk of hypertension in populations.

There was a significant relationship between BMI and increased blood pressure (table 4). The link between obesity and the risk of hypertension has already been established in studies. Furthermore, previous studies on association between obesity and hypertension in Nigeria established that, obese patients have increased risk of hypertension (Ekanem *et al.*, 2013; Wahab *et al.*, 2011). One implication of this finding is that, the obese individuals are more likely to be faced with double health challenges associated with both hypertension and obesity (Mustapha *et al.*, 2012; Ojji *et al.*, 2009).

In conclusion, obesity and hypertension among market men and women in Ijebu-Ode constitute health issues of public health importance. Sensitization on prevention and control of these disorders is important to protect those in this community from obesity related health challenges.

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