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Research article

Dietary Pattern, Lifestyle and Nutritional Status of Hypertensive Outpatients Attending University College Hospital, Ibadan, Nigeria

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ABSTRACT

Inappropriate eating habits and sedentary lifestyle predispose to hypertension. This study assessed dietary pattern, lifestyle and nutritional status of hypertensive outpatients attending Cardiology Clinic of University College Hospital, Ibadan. This research was descriptive and cross-sectional, including 92 hypertensive patients (37 males; 55 females). Interviewer-administered and Food Frequency Questionnaires were used for socio-demographic and lifestyle data, and dietary pattern respectively. The patients' anthropometry was assessed. Mean of their last four blood pressure readings was calculated. Descriptive and inferential statistics were employed at $p < 0.05$. The patients' mean age was 55.7 ± 13.32 years. Majority were married. Many had secondary and tertiary education. Up to 87.0% did not drink alcohol and 98.9% never smoked cigarette. Most of them worked for 6 days while 53.2% engaged in moderate physical fitness 1-2 days a week but less than 30 minutes per day. Only few (26.1%) received dietary counseling from dietitians. Breakfast was mostly consumed. Half of them cooked their foods at home while others ate with food vendors every week. Fruits and vegetables were rarely consumed. Large number had Body Mass Index $\geq 25 \text{ kg/m}^2$. BMI of the male and female patients was statistically different ($\chi^2 = 10.299$, $p < 0.006$). Most females and males of the hypertensive patients had waist-to-hip ratio above cut off points. More than half had uncontrolled blood pressure. Many were young adults and elderly who had not visited dietitians, and did not regularly consume fruits and vegetables. Majority had sedentary lifestyle. Female patients were more obese and overweighted with poor control of hypertension than male patients.

Keywords: *Dietary pattern, lifestyle, nutrition status, hypertension*

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INTRODUCTION

Hypertension (also known as high blood pressure) is a chronic disease which has been reported to be common mostly among elderly and young adults and it is a public health challenge in Africa and Nigeria especially (Yameogo et al., 2012, Mbah, 2013, Adediran et al., 2013). In a study conducted in Enugu, Nigeria by Adediran et al. (2013), it was Hypertension reported that hypertension increases with age from 11% among people aged 20-29 years to 40.7% in the 60-69 years individuals.

Hypertension has led to hospitalizations of many people and it remains a major risk factor for cardiovascular and many other non-communicable diseases such as stroke, congestive heart failure (CHF), myocardial infarction (MI), peripheral vascular disease, chronic kidney disease and overall mortality (Chobanian et al., 2003, Fox et al., 2004).

In 2015, World Health Organisation report indicated an increase in the prevalence of hypertension from 600 million in 1980 to nearly 1 billion in 2008. There was also prediction that hypertension associated morbidity in Sub-Saharan Africa may rise to 20% by the year 2020 if control measure is not put in place by both the health care providers and the patients themselves (Vander, 2003).

The diagnosis of high blood pressure in adults is made when the average of two or more diastolic blood pressure measurements on at least two subsequent visits is ≥ 90 mmHg, or when the average of multiple systolic blood pressure readings on two or more subsequent visits is ≥ 140 mmHg (ESH/ESC, 2013). The modifiable risk factors observed to be associated to hypertension include poor diet (high consumption of sugar, salt, saturated and total fat, stress and unhealthy lifestyle (smoking, alcohol consumption and physical inactivity) Awosan et al., 2014, Ibekwe, 2015).

The relationship between diet and hypertension has been established by many studies. Diet has been used as a therapeutic mean of preventing, managing and treating hypertension and other chronic diseases (Appel et al., 2010, Bellows and Moore, 2014; Ibekwe, 2015).

Dietary pattern of an individual reflects the type and amount of foods consumed together. It accounts for the cumulative effect of foods and nutrients (Nilofer et al., 2015). This is because of the collinear effect of nutrients within foods, and difficulty in detecting smaller effects of individual foods and nutrients on disease outcome makes approach of using single foods not effective (Hu, 2002). Inappropriate eating habits and frequency of the foods taken coupled with unhealthy lifestyles has predisposed many people to hypertension (Ibekwe, 2015).

The dietary regimen recommended for prevention and treatment of hypertension is the Dietary Approach to Stop Hypertension (DASH) eating plan, which has been found to be more effective in lowering blood pressure if combined with reduced salt intake (National Institute of Health (NIH)/National Heart, Lung and Blood Institute (NHLBI), 2006). DASH is an eating plan characterized by eating daily at least 4-5 portions/servings of fruits, vegetables, complex carbohydrates and low-fat dairy products. It is a diet rich in fruits and vegetables (4-5 servings/day) and low-fat dairy products (2-3 servings/day) and it includes whole grains, poultry, fish, and nuts (Bellows and Moore, 2014).

Adequate nutrition is essential to prevent and manage hypertension for variety of reasons. It enhances optimal cardiovascular function, muscle strength, respiratory ventilation, protection from infection, wound healing and psychological well-being (Martin, 2006). However, previous studies had reported that therapeutic options for hypertension treatment include diet and lifestyle changes (including weight loss, smoking cessation, and increased physical activity), antihypertensive drugs, and surgery in special situations (Nguyen et al., 2013). Lifestyle modification has helped to control high blood pressure (Adel et al., 2014). Increased rate of hypertension among hypertensive patients has been traced to low state of health, higher prevalence of obesity, incorrect eating habits and a lack of motivation for improvement of the nutritional state and rational eating (Pimenta et al., 2008 and Bojar et al., 2011).

Body Mass Index and Waist-to-Hip ratio are easier and more convenient anthropometric parameters out of many measurements used in determining the nutritional status of people. Moreover, the management, prevention and/or treatment of many non-communicable diseases such as hypertension have been found successful with the dietary regimen (often combined with regular moderate intensity physical activity such as brisk walking and cycling lasting for at least 30 min/day, to be observed at least thrice weekly (Awosan et al., 2014).

This study was conducted to determine the nutritional status, dietary pattern, lifestyle and nutritional status of hypertensive patients attending University College Hospital in Ibadan, Nigeria so that appropriate intervention strategies will be taken to help control hypertension among the patients.

MATERIALS AND METHODS

Study Design, Population and Location: This was a descriptive cross-sectional study carried out among the ninety-two (92) hypertensive outpatients, 55 females and 37 males attending Cardiology Clinic of Medical Outpatients in University College Hospital, Ibadan, Oyo State, Nigeria. The University College Hospital, (UCH) Ibadan is a tertiary institution which patients from different parts of the country are generally referred for efficient medical care.

Selection of Patients: Alternative diagnosed hypertensive patients aged 20 years and above, who had been attending Cardiology Clinic of Medical Outpatient Clinic of University College Hospital in Ibadan, for treatment, for at least five visits, were recruited into the study, as they were waiting to see their physician.

Data Collection Procedure: A pretested, semi-structured, interviewer-administered questionnaire was used to obtain data on the socio-demographic characteristics and lifestyle of the patients. Dietary pattern of the patients was assessed by using the Food Frequency Questionnaire (FFQ). Weights (kg) and Height (m) of the patients were assessed. Body Mass Index (BMI) in kg/m² and waist-to-hip ratio were calculated to determine the nutritional status of the patients. BMI (kg/m²) was classified into underweight (<18.5), normal weight (18.5-24.9), overweight (25.0-29.9) and obesity (\geq 30.0) while Waist and Hip circumferences (cm) were assessed by using non-stretchable measuring tape Waist-to-hip ratio of the patients according to sex was based on the specification of World Health Organisation (WHO, 2008). The last four (4) blood pressure readings of the patients were obtained from the patients' hospital records and the mean of the readings was determined. Blood pressure of the patients was classified based on the European Society of Hypertension and the European Society of Cardiology classification (ESH/ESC, 2013).

Data Analysis: Data collected were analysed by using Statistical Package for Social Science (SPSS) version 20. Descriptive statistics such as mean with their standard deviation, frequency and percentage were employed as required. Chi square test was used to compare differences between proportions at 5% level of significance ($p < 0.05$).

Ethical Consideration: Ethical approval for the study was obtained from the University of Ibadan/University College Hospital (UCH), Ibadan Institutional Review Board, Institute of Advanced Medical Research and Training (IAMRAT).

RESULTS

Socio-demographic Characteristics of the Patients: The age of the patients ranged from 21 to 82 years with the mean age of 55.7 ± 13.32 years. Majority (56.5%) of the hypertensive patients were within the age of 55 and above. Most (85.9%) of the patients were Yoruba and others (14.1%) were Igbo, Hausa, Irobo, Isoko and Edo. Majority (73.9%) of the patients were Christians. Most (85.9%) of the patients were married and a high proportion (78.3%) of them were monogamous.

Table 1:
Socio-demographic Characteristics of the Patients

Characteristics	Female (n=55) n (%)	Male (n=37) n (%)	Total (n=92) n (%)	X ²	P value
Age (years)					
Mean (SD)	54.8(13.39)	57.1(13.26)	55.7(13.32)		
Range	21-82	23-79	21-82		
21-37	6(10.9)	2(5.4)	8(8.7)	1.433	0.698
38-54	20(36.4)	12(32.4)	32(34.8)		
≥55	29(52.7)	23(62.1)	52(56.5)		
Ethnicity					
Yoruba	50(90.9)	29(78.4)	79(85.9)	3.539	0.316
Igbo	2(3.6)	3(8.1)	5(5.4)		
Hausa	0(0.0)	1(2.7)	1(1.1)		
Others (Irobo, Edo, Isoko)	3(5.5)	4(10.8)	7(7.6)		
Religion					
Christianity	42(76.4)	26(70.3)	68(73.9)	0.426	0.514
Islam	13(23.6)	11(29.7)	24(26.1)		
Marital Status					
Single	2(3.6)	2(5.4)	4(4.3)	3.724	0.293
Married	45(81.9)	34(91.9)	79(85.9)		
Divorce/Separated	2(3.6)	0(0.0)	2(2.2)		
Widowed	6(10.9)	1(2.7)	7(7.6)		
Family Status					
Monogamy	45(81.8)	27(73.0)	72(78.3)	1.017	0.313
Polygamy	10(18.2)	10(27.0)	20(21.7)		
Level of Education					
No formal education	5(9.1)	5(13.5)	10(10.9)	5.064	0.167
Primary education	9(16.3)	2(5.4)	11(12.0)		
Secondary education	15(27.3)	6(16.2)	21(22.8)		
Tertiary education	26(47.3)	24(64.9)	50(54.3)		
Occupational Status					
Artisan	3(5.5)	1(2.7)	4(4.3)	10.248	0.017*
Trader	28(50.9)	7(18.9)	35(38.0)		
Civil servant	9(16.4)	9(24.3)	18(19.6)		
Retiree	15(27.2)	20(54.1)	35(38.1)		
Income (₦)					
< 50,000	43(74.1)	15(25.9)	58(63.0)	13.925	0.003*
50,000-99,500	6(33.3)	12(66.7)	18(19.6)		
100,000-149,500	4(44.4)	5(55.6)	9(9.8)		
≥150,000	2(28.6)	5(71.4)	7(7.6)		

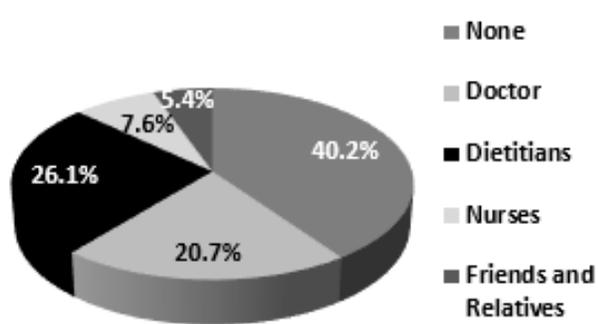


Figure 1:
Sources of Dietary Counseling received by the Patients

Majority (77.1%) of the patients had either secondary or tertiary education. Large numbers (76.1%) were either civil servants or retirees. Most of the patients (63.0%) earned less than 50,000 Naira a month and there was significant

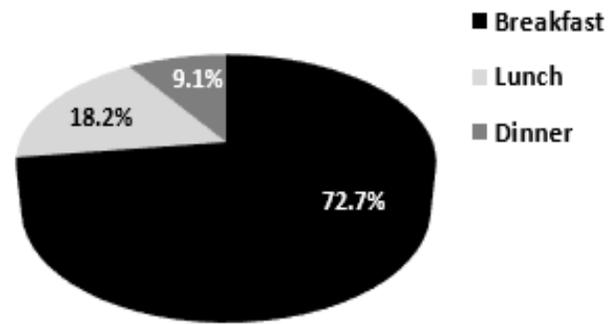


Figure 2:
Meal mostly eaten by the Patients

difference in the income earned between female and male patients (p<0.003) (Table 1).

Table 2: Lifestyle Characteristics of the Patients

Lifestyle Characteristics of Respondents	Female (n=55) n (%)	Male (n=37) n (%)	Total (n=92) n (%)	X²	P value
Alcohol consumption					
Yes	3(5.5)	9(24.3)	12(13.0)	6.944	0.004*
No	52(94.5)	28(75.7)	80(87.0)		
Respondents Smoke Cigarette					
Yes	0(0.0)	1(2.7)	1(1.1)	1.503	0.220
No	55(100.0)	36(97.3)	91(98.9)		
Salt consumption in food					
Yes	43(58.9)	30(41.1)	73(79.3)	0.113	0.736
No	12(63.2)	7(36.8)	19(20.7)		
Adding extra salt to cooked food					
Yes	3(42.9)	4(57.1)	7(7.6)	0.903	0.342
No	52(61.2)	33(38.8)	85(92.4)		
Consumption of too much fat in food					
Yes	9(60.0)	6(40.0)	15(16.3)	0.000	0.985
No	46(59.7)	31(40.3)	77(83.7)		
No of working days per week					
None	7(12.8)	5(5.4)	12(13.0)	2.933	0.710
1 day	2(3.6)	2(2.2)	4(4.3)		
2-3 days	2(3.6)	4(4.3)	6(6.5)		
4-6 days	23(41.8)	15(40.5)	38(41.3)		
Daily	21(38.2)	11(29.7)	32(34.8)		
Time spent working per day					
None	7(12.7)	5(13.5)	12(13.0)	6.840	0.233
< 1 hour	5(9.1)	5(13.5)	10(10.9)		
1-3 hour(s)	4(7.3)	2(5.5)	6(6.5)		
4-6 hours	6(10.9)	10(27.0)	16(17.4)		
7-9 hours	26(47.3)	14(37.8)	40(43.5)		
10 hours and above	7(12.7)	1(2.7)	8(8.7)		
Respondents sit while working					
Yes	44(80.0)	30(81.1)	74(80.4)	0.016	0.898
No	11(20.0)	7(18.9)	18(19.6)		
Time spent sitting by Respondents while working per day					
Not working	11(20.0)	7(18.9)	18(19.6)	9.232	0.100
< 30mins	13(23.7)	1(2.7)	14(15.2)		
30-60mins	8(14.5)	5(13.5)	13(14.1)		
90-120mins	8(14.5)	10(27.1)	18(19.6)		
180-240mins	11(20.0)	9(24.3)	20(21.7)		
>240mins	4(7.3)	5(13.5)	9(9.8)		
Work-related activities of Respondents					
Inactive	7(12.7)	5(13.5)	12(13.0)	2.157	0.340
Vigorous Intense Work	1(1.8)	3(8.1)	4(4.3)		
Sedentary Activity	47(85.5)	29(78.4)	76(82.6)		
Types of Fitness/Recreational Activities of Respondents					
No physical fitness	20(36.4)	11(29.7)	31(33.6)	7.480	0.024*
Vigorous activities	4(7.3)	8(21.6)	12(13.1)		
Moderate activities	31(56.3)	18(48.6)	49(53.3)		
Days for Fitness in a Week					
No fitness	20(36.4)	11(29.7)	31(33.6)	1.045	0.903
1-2 days	19(34.5)	12(32.4)	31(33.7)		
3-4 days	8(14.5)	8(21.6)	16(17.4)		
5-6 days	1(1.8)	1(2.7)	2(2.2)		
Everyday	7(12.7)	5(13.5)	12(13.1)		
Time spent doing the fitness/day					
No fitness	20(36.4)	11(29.7)	31(33.6)	6.181	0.289
< 10mins	8(14.5)	3(8.1)	11(12.0)		
10-20 mins	19(34.5)	12(32.4)	31(33.7)		
30-40 mins	7(12.7)	7(18.9)	14(15.2)		
50-60 mins	0(0.0)	3(8.1)	3(3.3)		
> 60 mins	1(1.8)	1(2.7)	2(2.2)		

Table 3:

Frequency of Foods consumed by the Patients per Week

Food Groups	Never 0x/week n(%)	Rarely 1x/week n(%)	Occasionally 2x/week n(%)	Frequently 3-6x/week n(%)	Daily 7x/week n(%)
Cereals					
Ogi (Pap)	7(7.6)	11(12.0)	31(33.7)	31(33.7)	12(13.0)
Roots & Tubers					
Yam products	4(4.3)	11(12.0)	39(42.4)	34(37.0)	4(4.3)
Legumes					
Cowpea	7(7.6)	9(9.8)	33(35.9)	39(42.4)	4(4.3)
Meat & Meat Products					
Beef	17(18.5)	27(29.3)	27(29.3)	17(18.5)	4(4.3)
Fish	0(0.0)	8(8.7)	15(16.3)	49(53.3)	20(21.7)
Milk & Milk Products					
Skimmed milk	72(78.3)	6(6.5)	9(9.8)	5(5.4)	0(0.0)
Full fat milk	34(37.0)	7(7.6)	34(37.0)	10(10.9)	7(7.6)
Fat & Oil					
Margarine	63(68.5)	20(21.7)	6(6.5)	3(3.3)	0(0.0)
Vegetable oil	11(12.0)	12(13.0)	29(31.5)	35(38.0)	5(5.4)
Mayonnaise	73(79.3)	14(15.2)	3(3.3)	1(1.1)	1(1.1)
Fruits & Vegetables					
Green leafy vegetable	1(1.1)	6(6.5)	49(53.3)	26(28.3)	10(10.9)
Pineapple	28(30.4)	33(35.9)	13(14.1)	16(17.4)	2(2.2)
Watermelon	17(18.5)	18(19.6)	32(34.8)	20(21.7)	5(5.4)
Apple	15(16.3)	24(26.1)	29(31.5)	20(21.7)	4(4.3)
Banana	11(12.0)	23(25.0)	41(44.6)	13(14.1)	4(4.3)
Spices					
Million cube	8(8.7)	17(18.5)	35(38.0)	21(22.8)	11(12.0)
Locust beans	4(4.3)	6(6.5)	17(18.5)	45(48.9)	20(21.7)
Garlic	41(44.6)	15(16.3)	9(9.8)	22(23.9)	5(5.4)
Beverages					
Tea	26(28.3)	16(17.4)	22(23.9)	15(16.3)	13(14.1)

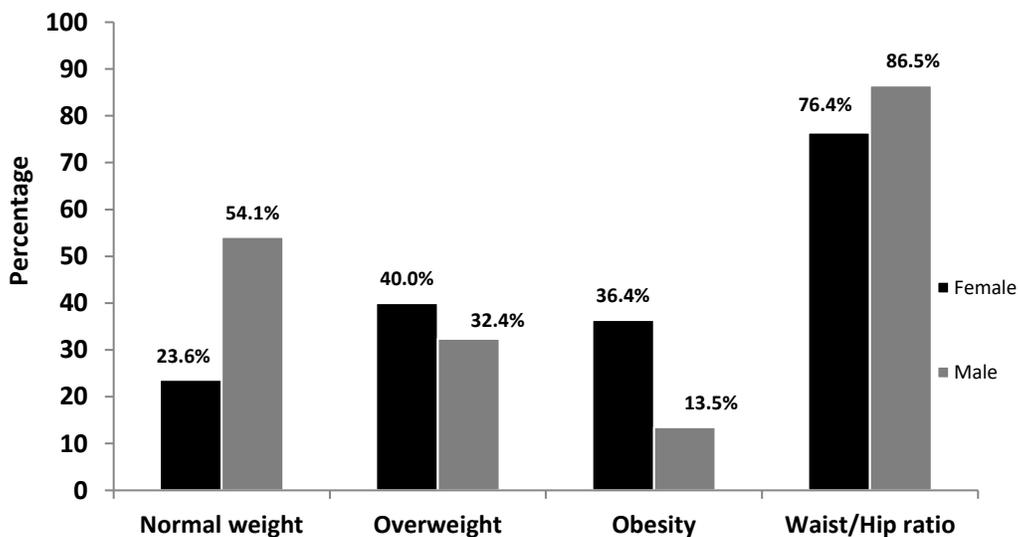


Figure 3: Nutritional Status of the Patients

Eating Habit and Dietary Pattern of the Patients: Large number (40.2%) of the patients never received dietary counseling and only a few (26.1%) had ever visited a dietitian while 33.7% received counsel from doctors, nurses, friends or relatives (Fig. 1).

A large proportion (72.7%) of the patients ate breakfast every day while 18.2% and 9.1% consumed lunch and dinner

regularly respectively (Fig. 2). Most (54.5%) of the patients cooked their foods at home while 45.5% of them ate up to three times with a food vendor in a week. The staples regularly consumed by the patients were pap (46.7%), yam products (41.3%) and cowpea (46.7%). The major source of the patients' protein was fish (75.0%) and cowpea (46.7%) (Table 3).

Table 4: The Level of Blood Pressure by Gender among the Hypertensive Patients

Gender	Level of Blood Pressure		Total n (%)	X ²	P-value
	< 140/90mmHg n (%)	≥140/90mmHg n (%)			
Male	15(31.9)	22(48.9)	37(40.2)	2.755	0.97
Female	32(68.1)	23(51.1)	55(59.8)		
Total	47(51.1)	45(48.9)	92(100.0)		

Fruits and green leafy vegetable were either consumed rarely or occasionally by most of the patients. Only a few of them consumed pineapple (19.6%), watermelon (27.1%), apple (26.0%) and banana (18.4%) on regular basis. Locust bean (70.6%) was the common spice used in cooking by the patients (Table 2).

Lifestyle Characteristics of the Patients: As presented in Table 2, majority (75.7%) of the patients did not drink alcohol while 98.9% neither smoked cigarette. The number of the male patients who drank alcohol was significantly higher compared with their female counterparts ($p < 0.05$). Although considerable number (79.3%) of the patients consumed salt but only very few (7.6%) of them add extra salt to the cooked food on the table. Only very few (16.3%) of the patients were consuming too much fat and fatty foods. A large proportion (76.1%) of them worked 4-7 days per week. Less than half (43.5%) of the patients spent up to 8 hours at their working place/day and most (80.4%) of the patients sat down to do their work daily.

Most (82.6%) of the patients were involved in sedentary work. Half (53.2%) of the patients claimed to be engaged in moderate physical fitness activities. However, only 20.7% had the fitness for 30 minutes or more per day. About a third (32.7%) of the patients had the fitness activities up to 3 days or more in a week. Male patients engaged in various types of recreational activities compared with their female counterparts ($p < 0.024$).

Nutritional Status of the Patients: The nutritional status of the patients is presented in fig. 3. None of the patient was underweight. Only 35.1% had normal weight and large proportion (64.1%) were either overweight or obese. Females were more overweight (40.0%) and obese (36.4%) when compared with the male counterparts (32.4%) and (13.5%) respectively. The females patients were significantly more overweight than their male counterparts ($\chi^2 = 10.299$, $p < 0.006$).

Most (76.4%) female and (86.5%) male patients had waist-to-hip ratio above the 0.88 and 0.90 specified as normal by the World Health Organisation (2008) for healthy living respectively (Fig. 3).

Blood Pressure of the Patients: The level of uncontrolled hypertension observed in this study was 48.9%. More female patients (51.1%) had their blood pressure uncontrolled compared to the male patients (48.9 %) without any significant difference ($p < 0.97$) (Table 4).

DISCUSSION

Hypertensive outpatients who participated in this study were within the age 38-71years. This observation is similar to the previous observation made by Adediran *et al.*, (2013) and

Allagoa *et al.*, (2014) which indicated that hypertension was not only observed among older adults but also among younger population. Most of the patients were educated and majority of them had secondary and tertiary education. This observation is also in line with the report of Allagoa *et al.*, (2014) which indicated that hypertensive patients who attended tertiary hospitals in Bayelsa, Nigeria were well enlightened.

Drinking of alcohol and cigarette smoking were relatively low among the patients in this study. This might be because majority of the patients were either Christians or Moslems. The two religions were against smoking and alcohol drinking. Other reason might be due to the fact that most of the patients might have been informed by the healthcare givers on the negative effect of alcohol intake and smoking on hypertension.

Many studies in Nigeria had reported the consumption of high salt and fat among the hypertensive patients (Allagoa *et al.*, 2014 and Awosan *et al.*, 2014). This study observed that percentage of patients who add salt to cooked food was very low compared to the observation of Allagoa *et al.*, (2014) among the hypertensive patients in Bayelsa State, Nigeria. Consumption of fat among the hypertensive outpatients in this study was also found to be minimal in contrast to the report of Awosan *et al.*, (2014) among the hypertensive patients in Sokoto, Nigeria. This could be that many of the patients in this study had been counseled by the physicians to reduce salt and fat intakes because of the association of excessive salt and high fat intakes to hypertension.

Many of the patients in this study were observed to live a sedentary lifestyle. Quite a number of them spent eight hours sitting while working. Those who claimed to engage in moderate physical exercise or fitness performed occasional brisk walking less than 30 minutes twice a week. The report of Loh *et al.*, (2013) in Malaysia indicated that people who engaged in moderate physical activity had additional 40% odds of getting hypertension when compared to those with high physical activity. This indicates that people with hypertension especially those that are obese must be encouraged to take regular moderate physical exercise for 30 minutes at least three times a week. However, the hypertensive patients should see the physiotherapists who would recommend appropriate exercise which is commensurate to their cardiac function.

Physical inactivity has become a public health problem all over the world. Awosan *et al.*, (2014) made it clear that on the global level, around 31% of adults aged 18 years and over were insufficiently active in 2008 (men 28% and women 34%). WHO report indicated that approximately 3.2 million deaths each year are attributable to insufficient physical activity.

The current high level of physical inactivity is believed to be partly due to insufficient participation in physical activity during leisure time and an increase in sedentary behavior during occupational and domestic activities (WHO, 2013b). This suggests that regular physical activity must be encouraged for everyone and healthcare professionals need to encourage the hypertensive patients to visit physiotherapists for the appropriate physical activity which the patients need to engage in for optimal health.

Large numbers of the patients in this study were found to be taking breakfast. But this is contrast to the report of Awosan *et al.*, (2014) who reported large intake of lunch and a low intake of breakfast among the hypertensive patients in Sokoto, Nigeria. The intake of breakfast by large number of the patients in our study might be due to the fact that a lot of the patients were on medication which thus required to be taken every morning after breakfast.

The National Institute of Health and National Heart, Lung and Blood Institute (2006) recommended Dietary Approach to Stop Hypertension (DASH) as the dietary approach to stop hypertension which involves eating a lot of fruits and vegetables. It was observed from this study that fruits and vegetables were only occasionally consumed by the hypertensive patients and not on a daily basis. One of the reasons could be because only few of the hypertensive outpatients visited dietitians to receive dietary counseling, which has devoid them the privilege of knowing the role of diet in ameliorating hypertension.

This habit observed among the hypertensive outpatients is similar to the findings of Awosan *et al.*, (2014) who reported that many hypertensive patients consumed fruits and vegetables less than three times in a week or not at all. This calls for attention of the physicians and other healthcare givers to direct the patients to the professional dietitians who will be able to plan and guide them on proper dietary regimen.

Body Mass Index of the patients in this study revealed that most of the hypertensive patients were overweight and obese. Many studies conducted in Nigeria and other countries had also established the relationship between hypertension and excessive weight gain among the hypertensive women (Yuko *et al.*, 2011 and Adediran *et al.*, 2013).

Also, several studies such as Suliburska *et al.*, 2012 and WHO, (2013a) reported that women were more obese than men. This study confirmed that obesity was more prevalent among hypertensive women compared to men. Overweight and obesity are risks for developing metabolic disorders which indicates that women are more at the risk of metabolic disorders than men in the studied area. Measures to maintain normal weight such as having dietary counseling and exercise should be encouraged among hypertensive patients most especially among women.

It was observed among the patients in this study that blood pressure was poorly controlled. However, the level of uncontrolled blood pressure among the patients in this study was less than the proportion reported by Adebolu and Naidoo, (2014) in a study among the outpatients attending a tertiary hospital in Kwazulu-Natal.

Majority of the patients in this study were civil servants and retirees. Most of them earned less than fifty thousand naira as income every month. This low financial status might have

contributed to inadequate dietary intake and purchase of prescribed drugs causing poor control of blood pressure among the patients.

Blood pressure was found to be more poorly controlled among the female patients than the male patients in this study. This could be associated with the high prevalence of overweight and obesity among the female patients. It could also be due to poor treatment adherence, low physical exercise and menopausal effect among older women as reported by many researchers (Megan *et al.*, 2008).

It is evident from this study that majority of the hypertensive patients attending University College Hospital, Ibadan were both young adults and elderly. The patients were not engaged in regular physical activities and lived a sedentary lifestyle. Breakfast was usually taken but fruits and vegetables were not adequately consumed by the patients. A lot of the hypertensive patients had not consulted dietitians for dietary counseling. The female hypertensive patients were found to be more overweight and obese than male patients, and poor control of high blood pressure was more common among the females than their male counterparts.

Hypertensive outpatients should be encouraged to maintain normal weight, visit dietitians to receive dietary counseling and also visit the physiotherapists for appropriate physical exercise.

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REFERENCES

- Adediran O.S., Okpara I.C., Adeniyi O.S., Jimoh A.K. (2013):** Hypertension Prevalence in an Urban and Rural Area of Nigeria. *Journal of Medicine and Medical Sciences*, 4(4):149-154
- Adel, A., Soad Hassan, A.E., Doaa, A. E. (2014):** Effect of Lifestyle Intervention Program on Controlling Hypertension among Older Adults. *Journal of Education and Practice*, 5(5):61-71.
- Allagoa E.L., Kotingo I.V., Mukoro D. G. (2014):** Some Risk factors among hypertensive Clients in an Outpatient Clinic of a Tertiary Health Centre, Southern Nigeria. *IOSR Journal of Dental and Medical Sciences*, 13(4):40-45
- Awosan K. J., Ibrahim M. T. O., Essien E., Yusuf, A. A. and Okolo, A.C. (2014):** Dietary Pattern, Lifestyle, Nutrition Status and Prevalence of Hypertension among Traders in Sokoto Central market, Sokoto, Nigeria. *International Journal of Nutrition and Metabolism*; 6(1):9-17.
- Bellows L. and Moore R. (2014):** Diet and Hypertension. An Article from Colorado State University Extension Food and Nutrition. *Reference No. 9.318*
- Bojar I, Humeniuk E, Owoc A, Wierzba W, Wojtyła. (2011):** Exposing women to workplace stress factors as a risk factor for developing arterial hypertension: *Annals of Agricultural and Environmental Medicine*, 18: 175-182.
- Chobanian A.V., Bakris G. L., Black H. R. (2003):** Seventh Report of the Joint National Committee on Prevention,

- Detection, Evaluation, and Treatment of High Blood Pressure. *Journal of American Heart Association*, 42(6): 1206–1252
- European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC) (2013):** Guidelines for the Management of Arterial Hypertension *Journal of Hypertension*, 31(7):1281–1357
- Fox C.S, Larson M.G, Leip E.P, Culleton B, Wilson P.W, Levy D. (2004):** Predictors of new-onset kidney disease in a community-based population. *JAMA*; 291(7):844-50.
- Hu F.B. (2002):** Dietary pattern analysis: a new direction in nutritional epidemiology. *Current Opinion in Lipidology* 13:3-9.
- Ibekwe R.U. (2015):** Modifiable Risk Factors of Hypertension and Socio-demographic Profile in Oghara, Delta State; Prevalence and Correlates. *Annals of Medical and Health Science Research*, 5(1):71–77
- Loh K.W., Rani F., Chan T. C., Loh H. Y., Ng C. W., Moy. F. M. (2013):** Association between Risk Factors and Hypertension in Perak, Malaysia. *Medical Journal of Malaysia*, 68(4):291-296
- Mbah B.O., Eme P.E., and Ezeji J. (2013):** Prevalence and Risk Factors of Hypertension among Middle-Aged Adults in Ahiazu Mbaise Local Government Area, Imo State, Nigeria. *International Journal of Basic & Applied Sciences*, 13: 26–30
- Megan, C., Jane, F. R., and Pamela, O. (2008):** Menopause and Hypertension: An Age-Old Debate. *American Journal of Hypertension*, 8(51):952-959
- National Institute of Health (NIH) / National Heart, Lung and Blood Institute (NHLBI) (2006):** Your guide to lowering your blood pressure. DASH eating plan. US Department of Health and Human Services. Available at: <http://www.nhlbi.nih.gov/health/public/heart/hbp/dash>
- Nguyen H., Olaide A. O., Janani R. and Aman, A. (2013):** A Review of Nutritional Factors in Hypertension Management. *International Journal of Hypertension*, 13:1-12
- Nilofer F. S., Elizabeth R. B.J. (2015):** Dietary patterns and their association with hypertension among Pakistani urban adults. *Asia Pacific Journal of Clinical Nutrition* 24(4):710-719.
- Pimenta A.M., Kac G, Gazzinelli A, Correa-Oliveira R, Velásquez-Meléndez G. (2008):** Association between central obesity, triglycerides and hypertension in a rural area in Brazil. *Arq Bras Cardiol.*; 90(6):386-392.
- Suliburska J., Bogdański P., Grażyna D., Danuta P., Jacek, P., Wioletta, Ż., Hanna, K. (2012):** An assessment of dietary intake and state of nutritional in hypertensive patients from rural and urban areas of Greater Poland. *Annals of Agricultural and Environmental Medicine*, 19 (3): 339-343
- Vander, S.M.A. (2003):** Cardiovascular disease in Sub-Saharan Africa; A disaster waiting to happen. *Netherlands Journal of Medicine*, 3(61):32-36.
- World Health Organisation (2008):** Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation, Geneva.
- World Health Organisation (2013a):** Obesity and Overweight. WHO Fact Sheet. World Health Organization. Geneva, Switzerland. Available at: <http://www.who.int/mediacentre/factsheet/>
- World Health Organisation (2013b):** Global Strategy on Diet, Physical Activity and Health. WHO Fact Sheet. World Health Organization, Geneva, Switzerland. Available at: <http://www.int/dietphysicalactivity/>
- World Health Organisation (2015):** Raised blood pressure, Situation and trends. An article from Global Health Observatory (GHO) data, 2015.
- Yaméogo N.V., Kagambèga L.J., Millogo R.C., Kologo K.J., Yaméogo, A.A., Mandi, G.D., Ilboudo, E., Toguyeni B.J., Samadoulougou, A.K. and Zabsonré, P. (2012):** Factors Associated with poor Blood Pressure Control in Hypertensive Black Africans: Cross-sectional study of 456 hypertensive patients from Burkina Faso. *Annales De Cardiologie Et D'Angéiologie (Paris)*, 62(1):38-42
- Yuko, O., Takuya, T. and Kanako, K. (2011):** Relationship between Blood Pressure Control Status and Lifestyle in Hypertensive Outpatients. *An Article of Internal Medicine* (50):2107-2112