



Prevalence of Obesity and Hypertension among Federal Polytechnic Ede Staff

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Abstract- Obesity and hypertension are serious public health concern because of its strong association with adult most especially obesity and the related which has adverse health consequences. The study evaluates the prevalence of obesity and hypertension among Federal Polytechnic Ede staff, the purpose of the study was to determine the rate of obesity and its relationship with hypertension among genders. 1046 staff (ages 20 to 60 and above) participated in the study. General knowledge on socio-demographic characteristics, feeding pattern and general nutritional knowledge questions were obtained using a questionnaire. The body mass index (BMI) of the staff was determined as weight (kg)/height (m) to detect overweight and obesity. Fifty- four percent of the participants assessed were males while forty-six percent were females. The mean (SD) BMI for females and males were 25.01 ± 3.9 (Kg/m^2) and 26.76 ± 4.75 (Kg/m^2) respectively. Body Mass Index was significantly higher in females than in males ($P < 0.05$). Also the blood pressure of the staff was determined as systolic /diastolic (mmHg). The mean blood pressure for both the gender was classified according to age group. Blood pressure was high among female than male of age group of 41-50 and 51-60 with their mean blood pressure of $120 \pm 7.84/80 \pm 7.84$ and $125 \pm 7.85/80 \pm 7.85$, $120 \pm 4.08/75 \pm 4.08$ and $127 \pm 3.58/82 \pm 3.58$ respectively This study found that women of age 60 and above were hypertensive than their male counterparts. The federal polytechnic Ede staff workers need to modify their lifestyle pattern with inclusion of fruits and vegetables, less intake of fried and can foods, and salt.

Key words: Fruits, Hypertension, Obesity, Prevalence, *Systolic /diastolic Vegetables*.

1. Introduction

Obesity is the leading preventable cause of death worldwide especially in the developed nations with increasing prevalence in adults and children and it is view as one of the most serious public health concern [Wang & Lobsteir 2006, Ng etal 2014]. It increases the likelihood of various diseases particularly heart diseases, type II diabetes, obstructive sleep apnea, certain type of cancer and osteoarthritis. WHO define obesity as a condition characterized by excess body fat typically defined in clinical settings as a body mass index [BMI] of 30 or above [Michael etal 2007, Judith, 2005].

Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity and genetic susceptibility. Low calorie, normal protein, vitamin and mineral (except sodium), restricted carbohydrate, restricted fat and liberal fluid, high fibre diet are given in such cases.

However, hypertension is defined as persistence high blood pressure [Paul et. al, 2007]. Blood pressure is summarized by two measurements; systolic and diastolic which depends on whether the heart muscle is contracting (systole) or relaxed. However, the systolic blood pressure is most important in terms of identifying risk and predicting diseases.

It is often referring to as persistent increase in blood pressure, although people cannot feel the physical effects of hypertension, it is a primary risk factor for atherosclerosis and cardiovascular diseases. High blood pressure causes the heart to work harder to eject blood into the arteries; this effort weakens heart muscle and increases the risk of developing heart arrhythmias, congestive heart failure, and even sudden death. Hypertension is also a primary cause of stroke and kidney failure. Pressure [Paul et. al, 2007]. In the analysis of world wide data according to Kearney (2005), stated that Lancet 2005 shown that by 2025

about 75% of the world hypertension population will be in developing countries and hypertension is major cause of chronic kidney & Renal Diseases in Nigeria. [Ulasi, 2010]

2. Methodology

2.1. Area of study

The area of study was Federal Polytechnic Ede, Osun State, Nigeria. It is a technological institution in education, research and training targeted as sustainable development of the Nation. The institution has a population of 8,400 students and 1046 member of staff

2.2. Data collection method

A cross sectional study design was used; about 300 subjects were recruited among the staff in Federal Polytechnic Ede cut across all the departments in the institution. Subjects were selected based on random sampling technique. The data were collected using structured and self-administered questionnaire to gather information on socio-economic status, eating habit, and anthropometric assessment to investigate subjects' nutritional status.

2.3 Materials

There are different materials that were used in the course of evaluating/checking the prevalence of obesity and hypertension among the staffs in Federal Polytechnic Ede, Osun State. The materials used are: Bathroom scale, Tape measure, Sphygmomanometer.

2.4. Data analysis

Data collected from the study were presented using percentage, anthropometric parameter were expressed as mean standard deviation using Statistical Package for Social Science [SPSS, version 21] and level of significant was [p-value] set at 0.05.

3. Result

The socio-demographic information shown in Table 1 show the total population of the respondents in percentage. It also gives information about the marital status and religion of the respondents but the percentage of Muslim respondents of 55.7% is higher when compare to others concerning the marital status, the percentage of those married as compare to others was found to be higher with the value of 73.7%. The respondents were classified based on gender. The percentage of male is 54.1% which is higher than that of female with percentage of 45.5%

The mean [\pm SD] with respect to age and gender for systolic and diastolic pressure of the respondents is shown in Table 2 with respect to age group, the blood pressure is higher in men than in women at similar age of 20-30 with men having mean blood pressure of $120\pm 3.92\text{mmHg}/80\pm 3.92\text{mmHg}$ and women of similar age having $5\pm 2.90\text{mmHg}/75\pm 2.90\text{mmHg}$ but over view of the results indicate that the blood pressure increased with age in both gender and extremely high in both systolic and diastolic in female of age group 60 years and above.

Mean Anthropometric variables of respondents is shown in Table 3 which shows the mean [BMI] of 25.01 ± 3.9 and 26.76 ± 4.75 for male and female respectfully but in Table 4, the overall prevalence of obesity was 25.81 ± 4.40 . Obesity increased with age up to the age group 60 and above in male respondents but there was marked different in age 60 and above in the female respondents.

The mean income and amount spend on food in Table 5 indicated that 33.65% of the respondents were receiving between 66,000 and 100,000 per month as take home and majority of them spend within minimum range of 1000 – 10,000 per month on food. However, the Table 6 shown that quit number of respondents preparing their meal at home (78.5%), majority of them love taking fried food at least three times a week (56.1%) and also many of the respondents in this study usually adding salt when taking their meal (27.7%).

Table 1. Socio-demographic information of the respondents

Gender	Frequency	Percent
Male	157	54.1
Female	132	45.5
Marital Status		
Single	61	21.1
Married	213	73.7
Widowed	10	3.5
Divorced	5	1.7
Others	0	0
Religion		
Christianity	125	43.3
Islam	161	55.7
Traditional religion	3	1.0

Table 2. Mean for blood pressure of the respondents with respect to gender and age group

AGE GROUP	FREQUENCY	Systolic/diastolic(mmHg)
MALE		
20-30	25	120±3.92/80±3.92
31-40	46	120±7.21/85±7.21
41-50	50	120±7.84/80±7.84
51-60	26	120±4.08/75±4.08
60 and above	10	125±1.57/85±1.57
FEMALE		
20-30	17	115±2.90/75±2.90
31-40	45	118±7.68/75±7.68
41-50	46	125±7.85/80±7.85
51-60	21	127±3.58/82±3.58
60 and above	3	135±0.59/90±0.59

Table 3 Mean for anthropometric variables of the respondents.

Parameters	Male	Female	Overall
Weight	71.48 ± 12.74	75.46 ± 14.19	73.30 ± 14.19
Height	1.69 ± 0.9	1.68 ± 0.9	1.68 ± 0.9
Body mass index	25.01 ± 3.9	26.76 ± 4.75	25.81 ± 4.40

Table 4. Mean for Anthropometric variables of the respondents with respect to gender and age group

AGE GROUP	FREQUENCY	BODY MASS INDEX
MALE		
20-30	25	22.05±3.91
31-40	46	24.45±7.20
41-50	50	25.03±7.82
51-60	26	26.22±4.07
60 and above	10	28.55±1.56
FEMALE		
20-30	17	23.65±2.90
31-40	45	26.35±7.68
41-50	46	29.05±7.85
51-60	21	30.55±3.58
60 and above	3	35.05±0.51

Table 5. Income and amount spend on food

	Frequent	Percentage
i. Total income per month in thousand		
25-45	55	19.0
46-65	51	17.6
66-100	97	33.6
100-200	60	22.8
above 200	20	6.9
ii. Amount Spend On Food Per Week		
<10000	170	79.3
10000=20000	95	32.8
20000-30000	17	5.6
30000-50000	4	1.3
More	3	1.0

Table 6. Food habit

	Frequency	Percentage
i. meals taking per day?		
1	6	5.2
2	58	20.3
3	178	61.6
>3	37	12.8
ii. where the meals is taking		
home	227	78.5
friends	6	2.1
Eateries	22	7.6
Buy	13	4.5
Other	21	7.3
iii. frequency of fried food		
Daily	51	17.7
1-3 times a week	162	56.1
Rarely	63	21.7
Never	13	4.5
iv. Frequency of taking fried foods		
usually	34	11.8
sometimes	74	26.0
rarely	83	28.6
never	97	33.6

v. Freq. of adding salt when eating.	90	31.1
often	80	27.7
Usually	18	6.2
sometimes	99	34.3
rarely	2	0.7
never		

4. Discussion and Results

The socio-demographic information shown in Table 1 show the total population of the respondents in percentage. It also gives information about the marital status and religion of the respondents. The respondents were classified based on gender. The percentage of male is 54.1% which is higher than that of female with percentage of 45.5. Concerning the marital status, the percentage of those married as compare to others was found to be higher with the value of 73.7%. The percentage of Muslim respondents of 55.7% is higher when compare to others.

The mean [\pm SD] with respect to age and gender for systolic and diastolic pressure of the respondents are shown in Table 2 with respect to age group, the blood pressure is higher in men than in women of similar age group 20-40, men having mean blood pressure of $120\pm 3.92/80\pm 3.92$ and women of similar age having $115\pm 2.90/75\pm 2.90$, this may be as result of level activities and stress under go by men, the level obesity among women has shown the influence of obesity on hypertension, in this study blood pressure considerably high among female compare to male counterpart and at age group 60 and above hypertension is pronounced among female compare to male with mean blood pressure of $135\pm 0.59/90\pm 0.59$ and $125\pm 1.57/85\pm 1.57$ respectively. Study has shown that female of this age are prone to hypertension due to so many strenuous activities and stress that exert pressure on the heart.

Previous study shown that women within the menopausal range of 51-60 and 60 above have blood pressure increase to level even higher than in men this may be due to the loss of oestrogen. [Jane, 2006]. Lifestyle Modifications Adoption of healthy lifestyles by all persons is critical for the prevention of high BP and is an indispensable part of the management of those with hypertension. [Whelton,2002]. Weight loss of as little as 10 lbs (4.5 kg) reduces BP and/or prevents hypertension in a large proportion of overweight persons, although the ideal is to maintain normal body weight [He etal 2000]. Mean Anthropometric variables of respondents is shown in Table 3 which shows that females in this study have significant high weight and the mean Body Mass Index [BMI] in this study were 26.76 ± 4.75 and male 25.01 ± 3.9 .

The Body mass index (BMI) of the respondents has shown in Table 4 with respect to age group, the BMI increases with the age, age group 20-40 has normal BMI while age 41-60 and were overweight in male but only age group 20-30 has normal BMI, from age group 31-50 years were overweight while age group 51-60 years and above has various grade of obesity among female. This study indicated that prevalence of general obesity in females was significantly higher than that of males, this may be due to the fact that men tends to be physically active **this** show a kind of relationship with the findings of Sodjinou etal [2008] **in** the North West Province, South Africa where they investigated the association between measures and determinants of obesity in African women. They found that physical inactivity showed the strongest association with measures of obesity in their study and also men tend to have high Basal Metabolic Rate [BMR] compare to female. [Elaine, 2010]. Also the post pregnancy weight and the effect of menopause tends to contribute to this extra weight since they become heavier with each child and most of them tends to retain this extra weight after they give birth. The study is in line with the study of Shu-Kang etal [2014]. In addition, some women do not engage in physical activity not connected to their work and most of their work designation in the polytechnic is mainly sedentary. [Paul et.al, 2007]. In addition, since most of them are housewives, they tend to eat leftover food since they do not want it thrown away and thus may have influence in their weight.

Study has shown that exercise has close link with reduction in weight; physical activity is the most variable component of energy expenditure increase in energy expenditure through exercise and other forms of

physical activity are important components of effective interventions to enhance weight loss and the prevention of weight gain. Adequate levels of exercise and physical activity to achieve this appear to be 60-90 minutes daily, which is recommended by the USDA [Jakicic, 2006].

Gordon et al, 1989 stated that routine physical exercise is health, promoting for all people. Exercise is important for weight management enhance physical and psychologic fitness, better work capacity, improved body composition, and increased High Density Lipoprotein, cholesterol values and even offers greater benefits for person with high blood pressure, lower the risk for atherosclerotic cardiovascular disease, type 1 or 2 diabetes etc. While with respect to age group, male tends to show considerable increase in BMI with increase in age because physical activities tend to be lower with increase in age such as those within the age group of 51 - 60 and 60 and above. Percentage of people taking fruits and vegetables rarely in table 6, 34.3% was higher when compare to others. Also the percentage of those include fried food in their diet 1-3 times a week was also found to be higher 56.1%, fried food contains high cholesterol which may influence obesity or increase weight and also most can foods contain excess salt. Studies have shown the correlation between salt intake and hypertensions, in human evidence for an association between Sodium chloride (NaCl) intake and blood pressure is provided by both observation and intervention studies. [Law et al,1991, & Overlack et al 1993]. Adoption of the Dietary Approaches to Stop Hypertension (DASH) eating plan, which is a diet rich in fruits, vegetables, and low fat dairy products with a reduced content of dietary cholesterol as well as saturated and total fat (modification of whole diet). It is rich in potassium and calcium content. Dietary sodium should be reduced to no more than 100 mmol per day (2.4 g of sodium).94–96.

Apart from influence of NaCl genetic can elevate blood pressure, the experimental model of hypertension and increasing information in the human provide convincing evidence for genetic susceptibility and genetic resistance to the effects of dietary NaCl on arterial pressure. [Cowley et al,2001] also some studies addressed the potential role of specific genetic polymorphisms in salt sensitivity of blood pressure in human [Beeks et al,2004]. Thus, in this study their feeding habit and amount spend on food influences their nutritional status such as their weight, body mass index (BMI) and blood pressure, since some of them take less fruits and vegetables, eat refined foods such as bread, cereals, crackers etc., inclusion of fried foods, non-inclusion of whole fiber in their diet which can help to reduce the incidence of obesity, is responsible for most of the high BMI. And since increase in body fat is responsible for increase in blood pressure because association exist between obesity and hypertension [Bethesda, 2003], longitudinal study carried out shown direct correlation that exist between change in weight and change in blood pressure over time even when dietary salt intake is held constant [Wright et al, 2003], Obesity related hypertension has been variously ascribed to hyperolemia and increased cardiac output without an appropriate reduction of peripheral resistance to increased sympathetic nervous system activity and to insulin resistance. [Krieger & Landsberg 1995].

5. Conclusion

Life style modification has been recommended as adjunctive or definitive therapy for hypertension: weight reduction if overweight, aerobic exercise, limited salt intake etc (Burt et al, 1995). In general, hypertension, obesity and other chronic diseases awareness, treatments and control is generally low in developing country. From the conclusion, the following recommendations are made;

1. Effort should be made to ensure that more awareness on obesity and hypertension should be done.
2. All institution should employ Dietitian in their medical centre for counseling of the staff members on the benefits of nutrition on their health status.
3. The staff should endeavour to include high fibre foods and fruits in their diets and exercise should be encouraged.
4. There should be awareness on the limit in the intake of salt, most especially, the hypertensive staff.
5. There is also a need for increased public health education to increase the awareness of hypertension and obesity in Nigeria.

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