

## NUTRITIONAL, PSYCHOSOCIAL AND PHYSIOLOGICAL ASSESSMENT OF THE ELDERLY 60 YEARS AND ABOVE IN UMUDAGU MBIERI MBAITOLI LOCAL GOVERNMENT AREA, IMO STATE, NIGERIA

**Onyewuchi, O<sup>1</sup>., Afam-Anene, O.C<sup>2</sup>., \*Amadi, Joy A.C<sup>2</sup> and Ajuru, C.G.<sup>3</sup>**

<sup>1</sup>Department of Nutrition and Dietetics, Federal Medical Centre, Owerri, Imo State., Nigeria.

<sup>2</sup>Department of Nutrition and Dietetics, Imo State Polytechnic, Umuagwo P.M.B. 1472 Owerri, Nigeria.

<sup>3</sup>Department of Nutrition and Dietetics, Imo State Polytechnic Umuagwo, Nigeria.

*\*Corresponding author: [Joyevans2012@yahoo.com](mailto:Joyevans2012@yahoo.com)*

### ABSTRACT

**Background:** Adequate nutrition and care is paramount for successful aging.

**Objectives:** The study was to determine the nutritional, psychosocial and physiological status of the elderly.

**Methods:** Two hundred and eighty elderly ( $\geq 60$ ) were randomly selected in Umudagu Mberi, Mbaitolu Local Government, Imo State. Structured and pre-tested questionnaire was used to collect information on socio-economic characteristics, dietary pattern, psychosocial and physiological status. Anthropometric and blood pressure measurement were obtained using standard methods. Statistical Product for Service Solution (SPSS) version 22.0 was used to analyze data.

**Results:** Digestive problem (8.2%) was the major eating problem among the elderly. Psychosocial conditions of the elderly indicate that 56.1% of the subjects cooked food by themselves, while nanny prepared food for 0.4% of the elderly. Most (62.1%) of the elderly received ₦5,000-₦10,000 from their children and relations per month, while 68.2% of the subjects spent ₦5,000 on food and 50.4% shopped by themselves. The mean body mass index of males ( $24.2 \pm 3.2 \text{kg/m}^2$ ) did not differ significantly ( $P > 0.05$ ) from that of the females ( $24.9 \pm 6.2 \text{kg/m}^2$ ). The mean waist-hip ratio of males ( $0.88 \pm 0.06 \text{cm}$ ) was significantly higher ( $P < 0.005$ ) than that of females ( $0.85 \pm 0.08 \text{cm}$ ). Severe systolic and diastolic blood pressure was 10.7% and 4.3% respectively. Majority (80.4%) ate three times daily while 18.6% skipped meals. Daily breakfast intake shows that 57.5% took beverage with bread, 45.4% took foo-foo for lunch while 60.4% took foo-foo and soup for dinner. Fifty-five percent of the elderly were on a therapeutic diet, 33.6% of the subjects were suffering from hypertension and 22.9% were diabetic, 56.8% visits hospital frequently.

**Conclusion:** There are different forms of malnutrition in the study area. The elderly needs support and care for successful aging.

**Key words:** nutritional status, psychosocial, physiological, elderly

### Introduction

According to World Health Organization (1) elderly is defined as people from 60 years and above while DiMaria-Ghalili and Eleine (2) defined an elder as a person from 65 years and above. Ageing is an inevitable natural process programmed into gene at conception (2). Longevity depends on genetics (19%), access to good quality health care (10%), environmental factors such as pollution, economic situation, social condition (20%) and lifestyle (51%) (3). Adequate nutrition throughout life cycle can effectively contribute good nutritional and health status and subsequently enable individuals to age happily. Ageing process is a biological and physiological process which is dynamic and largely beyond human control. Growing old is often associated with fragility, sickness and loss of vitality (4). Numerous changes in body composition and physiology are associated with advancing age (5). Ageing is generally believed to alter nutrient requirements for energy and micronutrients because of changes in lean body mass, physical activity and

intestinal absorption. Energy needs decline with age because of decreased basal metabolism, reduction in lean body mass or sarcopenia and a more sedentary life style (4, 6). Adequate nutrition is necessary for the elderly to become fit, productive and capable of fulfilling their responsibilities in life. People who are well nourished are more productive and subsequently improve their income as well as their contribution to national economy (7).

Many elderly have increased risk for malnutrition (8) which is characterized by inadequate dietary intake, poor appetite, muscle wasting and poor appetite (9). Malnutrition contributes largely to high risk of morbidity and mortality though often unrecognized (10). Anthropometric indices among the elderly shows that most of them are predisposed to accumulation of body fat and loss of fat free mass (11, 12) which predisposes them to obesity. High waist-hip circumference indicates health risk which correlates positively with cardiovascular diseases and lipid

profile (13). On the other hand, underweight is seen among the elderly due to some factors such as loss of appetite and meal skipping (14). However, studies have reported that little of the populations studied are underweight (11, 15). Malnutrition among the elderly leads to increased mortality, prolonged hospitalization, increased falls as well as increase in life-threatening health problems such as stroke, hypertension, respiratory failures, cardiac complications infections, poor immunity and ulcers (16).

Food intake and appetite can also be negatively influenced by impaired visual, auditory and olfactory stimuli which are associated with this age group (17). Age related changes affect food intake such as taste, smell impairment in visual acuity, poor dentition and various cognitive impairment. Swallowing process also affect dietary intake. Adequate salivary secretion is needed to form a food bolus that can be easily swallowed. With increase in age, the occurrence of xerostomia increases due to reduced parotid secretion (18). Inability to prepare food, decreased purchasing capacity and psychosocial problem adversely affects the health and nutritional status of the elderly.

Psychosocial may be seen as both biological and psychological factors which enable individuals to age actively and successfully (19). Successful aging include avoidance of disease, active participation in life activities and good physical and cognitive functions (20). Factors such as social isolation, lost of spouse, sexual inactivity, household chores, financial insecurity, abandonment, lack of good health care could lead to physical or psychological abuse (19). The study evaluated the nutritional, psychosocial and physiological status of elderly in Umudagu, Mberi Imo State, Nigeria.

## **SUBJECTS AND METHODS**

### **Study Area**

The study was carried out in Umudagu Mbieri, Mbaitolu Local Government Area of Imo State. Umudagu is one of the villages in Ihitte-Isi Mbieri autonomous communities. Umudagu is a semi-urban community made up of three kindred namely, Umuomena-Ihe, Umuoparaku and Umunneji. Residents of Umudagu Mbieri include farmers, civil servants, traders, artisans and unemployed. The major agricultural practices include crop farming, especially cassava, yam, cocoyam, vegetables, poultry and livestock. The population of Umudagu Mberi resident was 3, 381, according to National Population Commission (NPC) (21). It is about 8 kilometer North of Owerri. The geography co-ordinates are 5° 35' O" North, 7° 3' O" East (22). The area has a mean annual rainfall that ranges between 1750-2000mm and mean annual temperature of 26.5–27.5°C (22).

### **Study Design**

The study adopted a cross sectional study design.

### **Sample Size**

The estimated population of the elderly in Umudagu was 845 (21). The sample size was calculated using the

formula as described by Yamane (23).

$$n = \frac{1 + N}{e^2}$$

Where n = sample size

1 = constant

N = population size

e = margin of error test of significance using 0.05 (5% test of significance).

The sample size was 271 but additional 9 elderly was added to accommodate dropouts, totaling 280 elderly.

### **Population and Sampling Technique**

The study population consists of male and female elderly  $\geq 60$  years. The elderly were asked to gather at their community hall. Simple random sampling technique using balloting was used in selecting 280 elderly. The sampling technique was conducted for a period of seven days until the required sample size was obtained. The names and addresses of the elderly ( $\geq 60$  years) were obtained for interview and follow-up. The study objectives and protocols were explained to them.

### **Preliminary visit**

The village head was visited on appointment and the study objectives was explained. Announcement for the elderly ( $\geq 60$  years) to gather at the community hall was made using town criers and churches in the study area.

### **Informed consent**

Written and signed consent was obtained from the elderly.

### **Validation of instrument**

Structured questionnaire was validated by three lecturers in the Department of Nutrition and Dietetics, Imo State University, Nigeria. Pre-testing of the questionnaire was carried out at Amaulu, Mberi to ascertain the reliability of the questionnaire.

### **Recruitment of research assistants**

Five research assistants of final students of Nutrition and Dietetics, Faculty of Health Sciences, Imo State University were recruited for the study. The objectives and study protocols especially as it regards to questionnaire administration, anthropometric and blood pressure measurements were explained to them.

### **Data collection**

#### **Questionnaire method**

Structured and pre-tested questionnaire was used to collect information on socio-economic characteristics (age of the elderly, sex, marital status, occupation, income, educational qualification, and number of children), Psychosocial (meal preparation, income received from children and relatives, food expenditure, means of cooking, shopping and number in household), physiological status (eating difficulty, eating problems, changes in eating habit when emotionally upset), Health status (therapeutic diets taken, type of non-communicable diseases experienced and hospital visit)

profile (13). On the other hand, underweight is seen among the elderly due to some factors such as loss of appetite and meal skipping (14). However, studies have reported that little of the populations studied are underweight (11, 15). Malnutrition among the elderly leads to increased mortality, prolonged hospitalization, increased falls as well as increase in life-threatening health problems such as stroke, hypertension, respiratory failures, cardiac complications infections, poor immunity and ulcers (16).

Food intake and appetite can also be negatively influenced by impaired visual, auditory and olfactory stimuli which are associated with this age group (17). Age related changes affect food intake such as taste, smell impairment in visual acuity, poor dentition and various cognitive impairment. Swallowing process also affect dietary intake. Adequate salivary secretion is needed to form a food bolus that can be easily swallowed. With increase in age, the occurrence of xerostomia increases due to reduced parotid secretion (18). Inability to prepare food, decreased purchasing capacity and psychosocial problem adversely affects the health and nutritional status of the elderly. Psychosocial may be seen as both biological and psychological factors which enable individuals to age actively and successfully (19). Successful aging include avoidance of disease, active participation in life activities and good physical and cognitive functions (20). Factors such as social isolation, lost of spouse, sexual inactivity, household chores, financial insecurity, abandonment, lack of good health care could lead to physical or psychological abuse (19). The study evaluated the nutritional, psychosocial and physiological status of elderly in Umudagu, Mberi Imo

#### Classification of BMI

Classification	BMI (kg/m <sup>2</sup> )	principal points
Underweight	<18.50	
Sever thinness	<16.00-16.99	
Moderate thinness	16.00 – 16.99	
Mild thinness	17.00 – 18.49	
Normal range	18.50 – 24.99	
Overweight	≥25.00	
Pre obese	25.00 – 29.99	
Obese	≥30.00	
Obese grade 1	30.00 – 34.99	
Obese grade 11	35.00 – 39.99	
Obese grade 111	≥40.00	

State, Nigeria.

## SUBJECTS AND METHODS

### Study Area

The study was carried out in Umudagu Mbieri, Mbaitolu Local Government Area of Imo State. Umudagu is one of the villages in Ihitte-Isi Mbieri autonomous communities. Umudagu is a semi-urban community made up of three kindred namely, Umuomena-Ihe, Umuoparaku and Umunneji. Residents of Umudagu Mbieri include farmers, civil servants, traders, artisans and unemployed. The major agricultural practices include crop farming, especially cassava, yam, cocoyam, vegetables, poultry and livestock. The population of Umudagu Mberi resident was 3, 381, according to National Population Commission (NPC) (21). It is about 8 kilometer North of Owerri. The geography co-ordinates are 5° 35' O" North, 7° 3' O" East (22). The area has a mean annual rainfall that ranges between 1750-2000m and mean annual temperature of 26.5 – 27.5°C (22).

### Study Design

The study adopted a cross sectional study design.

### Sample Size

The estimated population of the elderly in Umudagu was 845 (21). The sample size was calculated using the formula as described by Yamane (23).

$$n = \frac{1 + N(e)^2}{e^2}$$

Where n = sample size

1 = constant

N = population size

e = margin of error test of significance using 0.05 (5% test of significance).

The sample size was 271 but additional 9 elderly was

Source: WHO (24)

### Waist-Hip Ratio (WHR)

Waist – Hip Ratio (WHR) was calculated according to WHO and O'Dea standard (25, 26)

$\frac{\text{Waist cm}}{\text{Hip}}$

### Classification of WHR

WHR (Male)	WHR (Female)	Health Risk
0.95 or below	0.80 or below	Low risk
0.96–1.0	0.81–0.85	Moderate risk
1.0+	0.85+	High risk

Source: WHO and O'Dea (25, 26)

### Biochemical measurement

#### Blood Pressure

The average of the two readings for both systolic and diastolic was used for data analysis. Hypertension was classified according to WHO and ISH standard (27) for the management of hypertension.

### Classification of Blood Pressure

CATEGORY	SYSTOLIC (mmHg)	DIASTOLIC (mmHg)
Optimal	<120	<80
Normal	<130	<85
High – Normal	130-139	85-89
Grade 1 Hypertension ("mild")	140-159	90-99
Grade 2 Hypertension ("moderate")	160-179	100-109
Grade 3 Hypertension ("severe")	>180	>110
Isolated Systolic Hypertension	>140	<90

Source: WHO and ISH (27)

### Statistical analysis

Information gathered from the questionnaire were coded and analyzed using IBM SPSS Statistics for window version 22.0 Descriptive statistics such as frequencies and percentages were used to analyze data.

### Results

Table I shows the socio-economic characteristics of the elderly. More than half (58.9%) of the elderly were between the ages of 60-69, 38.9% of the elderly were retired civil servants and 33.9% were traders. Most (62.1%) of the elderly earn

Table 1: Socio Economic Characteristics of the elderly

Variables	Frequency	Percentage
<b>Sex</b>		
Male	115	41.9
Female	165	58.9
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Age range</b>		
60-69 years	165	58.9
70-79 years	100	35.7
80-89 years	14	5.0
≥ 90 years	1	0.4
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Marital status</b>		
Married	181	64.6
Widowed	83	29.6
Widower	15	5.4
Single	1	0.4
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Occupation</b>		
Retired civil servant	109	38.9
Trader	95	33.9
Artisan	37	13.2
Others	39	13.9
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Educational Qualification</b>		
Primary education	157	56.1
Secondary education	47	16.8
Tertiary education	62	22.2
No formal education	14	5.0
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Number of children</b>		
≥ 7	116	41.4
4-6	109	38.9
1-3	49	17.5
None	6	2.1
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Average income</b>		
₦3, 000 - ₦ 19, 000	174	62.1
₦20, 000 – ₦ 40, 000	63	22.5
₦41, 000 – ₦ 60,000	33	11.8
₦61, 000 – ₦ 90,000	9	3.2
≥ ₦100, 000	1	0.4
<b>Total</b>	<b>280</b>	<b>100</b>

Physiological status shows that emotional condition affects the eating habits of 34.3% elderly. Digestive problem (8.2%) was the major eating difficulty reported, while most of them had constipation (28.2%) after eating (Table 2).

Table 2: Physiological status of the elderly

Variable	Frequency	Percentage
<b>Changes in eating habit when emotionally upset</b>		
Yes	96	34.3
No	184	65.7
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Eating Difficulty</b>		
Chewing	14	5.0
Swallowing	16	5.7
Digestive problems	23	8.2
None	227	81.1
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Eating problems</b>		
Nausea	8	2.9
Constipation	79	28.2
Indigestion	9	3.2
None	184	65.7
<b>Total</b>	<b>280</b>	<b>100</b>

Psychosocial condition of the elderly indicates that more than half (56.1%) cooked food by themselves, 28.9% had their foods cooked by their wives, 8.2% by sons, 3.2% by daughters and 0.4% by nannies. Most (62.1%) of the elderly receives

**Table 3: Psychosocial Status of the Elderly**

Variable	Frequency	Percentages
<b>Person responsible for meal preparation</b>		
Self	157	56.1
Wife	81	28.9
Daughter	9	3.2
Son	23	8.2
Nanny	1	0.4
Relatives	9	3.2
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Average income received from relation / children</b>		
₦5, 000 – ₦ 10,000	176	62.9
₦11, 000 – ₦ 20,000	52	18.6
₦21, 000 – ₦ 30,000	17	6.1
≥₦31, 000	10	3.6
None	25	8.9
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Weekly Food Expenditure</b>		
₦5, 000 – ₦6,000	191	68.2
₦7, 000- ₦9,000	39	13.9
₦10, 000 - ₦14,000	37	13.2
₦15, 000 - ₦19,000	5	1.8
≥₦20, 000	8	2.9
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Means of cooking</b>		
Stove	97	34.6
Gas cooker	18	6.4
Fire wood	158	56.4
Stove and firewood	7	2.5
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Shopping</b>		
Self	141	50.4
Wife	89	31.8
Daughter	32	11.4
Son	8	2.8
Relatives	10	3.6
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Number in a household</b>		
3-4	199	71.1
5-8	64	22.9
9-12	15	5.4
≥15	2	0.7
<b>Total</b>	<b>280</b>	<b>100</b>

Underweight was more among the female elderly (11.5%) than their male (1.7%) counterpart (Table 4). The male (48.7%) were more overweight while the females (15.2%) were more obese.

**Table 4: BMI classification of the elderly based on their sex.**

Anthropometry	Male		Female		Total	
	F	%	F	%	F	%
Underweight < 18kg/m <sup>2</sup>	2	1.7	19	11.5	21	7.5
Normal 18.5 – 24.9kg/m <sup>2</sup>	55	47.8	72	43.6	127	45.4
Overweight 25.00 – 29.9kg/m <sup>2</sup>	56	48.7	49	29.7	105	37.5
Obese 30.00 – 34.9kg/m <sup>2</sup>	2	1.7	25	15.2	27	9.6
<b>Total</b>	<b>115</b>	<b>100</b>	<b>165</b>	<b>100</b>	<b>280</b>	<b>100</b>

Obesity was observed to be 15.2% among female and 1.7% in males. About 38% of the elderly were overweight. Majority (93.9%) of the female subjects were at risk of chronic diseases using the WHR classification, while 100% of the male subjects were not at risk (Table 5)

**Table 5: Waist-Hip Classification Based on the Sex of the Respondent.**

WHR	Male		Female		Total	
	F	%	F	%	F	%
Males not at risk WHR < 1	115	100	0	0	115	41.1
Females not at risk WHR < 0.8	0	0	10	6.1	10	3.6
Females at risk WHR > 0.8	0	0	155	93.9	155	55.4
<b>Total</b>	<b>115</b>	<b>100</b>	<b>165</b>	<b>100</b>	<b>280</b>	<b>100</b>

The mean weights ( $65.0 \pm 10.0$ kg) of males were significantly ( $P < 0.05$ ) higher than that of females ( $59.5 \pm 15.4$ kg). The mean heights ( $164.1 \pm 8.0$ cm) of males were significantly ( $P < 0.05$ ) higher than that of the females ( $154.1 \pm 5.9$ cm). The mean body mass index ( $24.2 \pm 3.2$ kg/m<sup>2</sup>) of males did not differ significantly ( $P > 0.05$ ) from that of the females ( $24.9 \pm 6.2$ kg/m<sup>2</sup>). The waist circumference ( $84.7 \pm 12.1$ cm) of males did not differ significantly ( $P > 0.05$ ) from that of females. The females had significantly ( $P > 0.05$ ) higher hip circumference ( $100.0 \pm 12.5$ cm) than the males ( $96.7 \pm 9.2$ cm). The mean waist-hip ratio of males ( $0.88 \pm 0.06$ ) was significantly ( $P < 0.005$ ) higher than the females ( $0.85 \pm 0.08$ ) (Table 6).

**Table 6: Association of anthropometric indices and gender**

Variables	Male		Female		t-value	P-value	Remark
	F	X̄ SD	F	X̄ SD			
Weight (kg)	115	$65.0 \pm 10.0$	165	$59.5 \pm 15.4$	3.414	0.001	S
Height (cm)	115	$164.1 \pm 8.0$	165	$154.1 \pm 5.9$	11.99	0.000	S
BMI (kg/m <sup>2</sup> )	115	$24.2 \pm 3.2$	165	$24.9 \pm 6.2$	- 1.119	0.264	NS
Waist circumference (cm)	115	$84.7 \pm 12.1$	165	$85.0 \pm 12.7$	- 183	0.855	NS
Hip circumference (cm)	115	$96.7 \pm 9.2$	165	$100.0 \pm 12.5$	- 2.447	0.015	S
Waist - Hip Ratio (cm)	115	$0.88 \pm 0.06$	165	$0.85 \pm 0.08$	3.621	0.000	S

SN = Not Significant S = significant at ( $P = 0.005$ ).

Majority (80.4%) ate three times daily, Daily breakfast intake shows that 57.5% took beverage and bread for breakfast and 23.9% took foo-foo and soup (Table 7). Daily lunch intake shows that 45.4% took foo-foo and soup, 21.8% took yam pottage and 10% took beans. Dinner intake shows that majority (60.4%) took foo-foo and soup, 16.4% took rice 2.9% took yam. Snacks intake shows that 40.4% took groundnut, biscuits (18.9%), while fruits (31.4%). Seventy percent of the subjects preferred foo-foo and soup which was their traditional food, rice (11.4%), yam (9.6%) while 11.4% did not indicate their best food. Majority (75%) of the elderly had no particular food preference.

Table 7: Feeding pattern of the elderly

Variable	Frequency	Percentages
<b>Meal consumption frequency</b>		
Once	3	1.1
Twice	49	17.5
Thrice	225	80.4
Others specify	3	1.1
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Breakfast</b>		
Tac and bread	161	57.5
Rice	21	7.5
Foo-foo and soup	67	23.9
Others specify	31	11.1
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Lunch</b>		
Beans	28	10.0
Rice	32	11.4
Foo-foo and soup	127	45.4
Yam	61	21.8
Others specify	32	11.4
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Dinner</b>		
Rice	46	16.4
Foo-foo and soup	169	60.4
Yam	8	2.9
Others	57	20.4
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Snacks consumption</b>		
Groundnut	113	40.4
Biscuit	53	18.9
Fruits	88	31.4
Others	26	9.3
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Preferred foods</b>		
Yam	27	9.6
Foo-foo with soup	196	70.0
Rice	25	8.9
Others	32	11.4
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Dislike some foods for a reason</b>		
Yes	70	25
No	210	75
<b>Total</b>	<b>280</b>	<b>100</b>

Fifty-five percent of the elderly were on a therapeutic diet. About 33.6% of the subjects were suffering from hypertension, 22.9% from diabetes mellitus, 15% had both diabetes and hypertensive, 25% had hypercholesterolemia, and 0.4% had cardiovascular disease while 25.7% had none of these diseases. Majority (56.8%) visited hospital frequently while 2.1% did not visit hospital at all. Physical activity observed include trekking (38.9%), farming (36.4%), household chores (21.1%) and jogging (1.4%) (Table 8).



**Table 8: Health status and physical activity of the elderly of the elderly**

Variables	Frequency	Percentages
<b>Number of Therapeutic Diet</b>		
Yes	154	55
No	126	45
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Exercise</b>		
Jogging	4	1.4
Trekking	109	38.9
Farming	102	36.4
Household chores	59	21.1
Others	6	2.1
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Non-Communicable disease Encountered</b>		
Cardiovascular diseases	1	0.4
Diabetes mellitus	64	22.9
Hypertension	94	33.6
Diabetes mellitus and hypertension	42	15.0
Hypercholesterolemia	7	2.5
None	72	25.7
<b>Total</b>	<b>280</b>	<b>100</b>
<b>Frequent hospital visit</b>		
Once per month	84	30
Twice per month	8	2.9
Once in three months	23	8.2
Occasionally	159	56.8
None	6	2.1
<b>Total</b>	<b>280</b>	<b>100</b>

Few (9.6%) and (3.5%) elderly males had severe systolic and diastolic hypertension respectively while 11.5% and 4.8% elderly females had severe systolic and diastolic hypertension. Few (24.3%) and 33% elderly males and 31.5% and 25.5% elderly female had borderline systolic and diastolic blood pressure respectively.

**Table 9: Blood pressure of the elderly by sex**

Reference Ranges	Blood pressure	Male F %	Female F %	Total F %
<b>Normal</b>				
< 120-139 (mmHg)	Systolic	66 57.4	65 39.4	131 46.8
< 80-89 (mmHg)	Diastolic	59 51.3	85 51.5	144 51.4
<b>Borderline</b>				
140-159 (mmHg)	Systolic	28 24.3	52 31.5	80 28.6
90-99 (mmHg)	Diastolic	38 33.0	42 25.5	80 28.6
<b>Moderate</b>				
160-179 (mmHg)	Systolic	10 8.7	29 17.6	39 13.9
100-190 (mmHg)	Diastolic	14 12.2	30 18.2	44 15.7
<b>Severe</b>				
180-189 (mmHg)	Systolic	11 9.6	19 11.5	30 10.7
110-119 (mmHg)	Diastolic	4 3.5	8 4.8	12 4.3

## DISCUSSION

This study showed that there are more female elderly than male and was consistent with Nzeagwu (28). This might be attributed to higher death rate among males than females. Moreover, literature revealed that more women survive to old age than male (29). The study revealed that life expectancy was low because only 5.4% of the population was privileged to reach the age of  $\geq 80$  years. This is consistent with previous studies though higher than the present study (30, 31). Majority of the subjects had formal education. This is similar to the study by Nzeagwu and Uwaegbute (32) who reported that more than 80% of the subjects had formal education.

Few elderly were retired indeed and this is consistent with Oly-Alawuba and Anamazobi (30). However, from 60 and above one should retire home and rest. Many of them were still engaged in one form of occupation or the other due to their merger income and the responsibility of taking care of their children while aging. This could be as a result of the number of children they have, because, about forty-one percent had 7 children and above. This makes it impossible for them to retire even though some of them may be retired from civil service but still find something doing to help make both ends to meet, coupled with the irregularities in payment of pension and gratuity in Nigeria which has been identified as a major challenge facing pensioners in Nigeria (33). The elderly had low income yielding jobs and low income has been identified as a common problem among the elderly. This is consistent with Oly-Alawuba and Anamazobi (30).

The study observed that emotional state influences the eating habit of the elderly. Stress is a major contributory factor to emotional state. Another important factor could be the eating difficulties experienced while eating and after eating. Agarwalla *et al.* (34) reported that 59.5% of the elderly had swallowing and chewing disability. This could be another reason why some of them are emotional. Physiological changes are inevitable when one is aging. Moreover, most of the subjects were involved in different physical activities which are in line with WHO recommendation for older adult stating that, in order to improve cardio-respiratory and muscular fitness, bone and functional health reduce the risk of NCDs, depression and cognitive decline, older adult should do muscle strengthening activities involving major muscle groups. This should be done on two or more days a week (35).

Animasahun and Chapman (19) noted that some of the factors that facilitate unsuccessful aging includes caregivers stress, elder abuse which include abandonment, inadequate and ill-prepared health care, retirement and none payment of pension. All these can be seen in the present study. The findings revealed that most of the subjects, visited hospital occasionally due to poverty and income level which was poor. Most of them received  $\leq$  ₦19,000 from their children and

relatives which is not enough to meet their nutritional and health needs. Ene-Obong (36) observed that the quality and quantity of food consumed to a considerable extent depends on income. Income sources of the elderly were inadequate to cater for their nutritional and health needs. Most of the elderly spent  $\leq$  6,000 on food and it influenced their feeding pattern because some of them were skipping meals coupled with monotonous diet taken by the elderly. The fact that more than half of the elderly studied prepared their foods indicated that they are still active. This can be explained by the number of elderly that are still working. However, in the developed world they have an organized system that takes care of the elderly. This was contrary to the report of Ogwumike and Abodem (37) who reported that old age especially in developing countries, is often accompanied by preventable diminished physical capacity.

Overweight and obesity were prevalent among the elderly. This is similar to Nishida and Mucavele (38) and Ochayi and Thacher (39) but disagrees with Oly-Alawuba and Anamazobi (30) who reported the prevalence of underweight among the elderly in Ibiasoegbe, Imo State, Nigeria while Nzeagwu and Okoroacha (31) reported high incidence of underweight, overweight and obesity. This could be as result of their socio economic background which could make them to consume more energy dense foods which are mostly cheaper than good protein source. Limited resources might also have contributed to this. The female elderly were more at risk of chronic disease because they were obese. This was in agreement with Nzeagwu and Uwaegbute (32) on nutritional status of the similar population group. They reported that overweight is usually common among men than women of the same age while obesity is more common among women. WHR is a stronger predictor of myocardial infarction or mortality risk than BMI or waist circumference alone (40). Females were at risk of chronic diseases using WHR. This is because of abdominal fat deposit coupled with physical inactivity and decline of metabolic rate with aging, physiological condition such as menopausal estrogen deficiency in elderly woman. Abdominal fat distribution has been associates with a range of adverse health consequences including an increased risk of cardiovascular and cerebrovascular disease, impaired glucose tolerance and hypertriglyceridemia even when the BMI is in the healthy range (32).

More than half of the elderly were on therapeutic diet because of the prevalence of diet-related non-communicable diseases observed. This was possible because the elderly visited the hospital. The role of registered dietitians in hospital settings includes development of care plans and therapeutic diet modification. Boyle (41) reported that the leading cause of death for adult of various ages include heart disease, cancer, stroke, diabetes, chronic lung diseases and all the diseases have been associated with behavioral risk factors. High blood pressure was

prevalent among the elderly. This supports Brown (42) which states that hypertension is the only chronic condition that has high prevalence in elderly. This also revealed that blood pressure; both systolic and diastolic of female were higher than males. This could be as a result of high prevalence of overweight and obesity among the female elderly.

### Conclusion

There is prevalence of both overweight and obesity among the elderly. Overweight was more among the male while obesity was higher among the females. The elderly in the study area experienced some physiological changes which are paramount during aging. The elderly in the study area take monotonous diet while some of them skipped their meals. The elderly were subsequently predisposed to different forms of chronic diseases. There is need for nutrition education and support to the elderly.

### REFERENCES

1. United Nations (2001). United Nations Population Division. Personal correspondence with Marybeth Weinberger, chief, Population and Development.
2. DiMaria-Ghalili, R.A. and Eleine, A. (2005). Nutrition in older adults. *American Journal of Nutrition*, 5 (3): 40-50.
3. Brown, J.E. (2011). Nutrition through the life cycle. 4<sup>th</sup> International ed. Wadsworth Cengage Learning
4. Rofles, S.R., Pinna, K. and Whitney, E. (2006). Understanding Normal and Clinical Nutrition, 7<sup>th</sup> ed. Thomson Wadsworth USA: 555-560
5. Boyle, M.A. and Holben, D.H. (2006). Community Nutrition in Action. An Entrepreneurial Approach 4<sup>th</sup> Edition Thompson Wadsworth: pp388-393.
6. Payette, H. and Shatensterin, B. (2005). Determinant of healthy Eating in Community – Dwelling Elderly People. *Canadian Journal of Public Health*, 3: S27-31.
7. Food and Agricultural Organization (FAO) (2001). In Cooperating Nutrition Consideration into Agricultural Research Plans and Programmes – Guidelines on Resource for Advancing Nutritional Well-being FAO publication, Rome: 34-40.
8. Wells, J. and Dumbrell, A. (2006). Nutrition and Ageing Assessment and Treatment of Compromise Nutritional status in frail Elderly patient: 67-79.
9. Simon, A.R. (2007). Nutritional support strategy for protein energy malnutrition (PEM) in the elderly (HAS/SRP). A clinical practical guideline. Committee for health strategic assessment. NCBI (National Centre for Biotechnology Information), Bethesda, MD, USA: 6-11
10. Todorovic, V., Russell, C., Stratton, R., Ward, J., and Elia, M. (2003). The MUST Explanatory Booklet: a guide to the Malnutrition Universal Screening Tool (MUST) for adults. *British Association for Parenteral and Enteral Nutrition*: 319-336.
11. Nzeagwu, O.C and Ebere, U.C (2016). Assessment of Nutritional vulnerability of the elderly using mini nutritional assessment (MNA) tool and malnutrition Universal Screening (MUST). *Journal of Dietitians Association of Nigeria*, 7: 44-51
12. Rossman, I. (1997). Anatomic and body composition changes with ageing In: Finch CE editor. Handbook of the biology of ageing, New York: Van Nostrend Reindold: 189
13. Scott, B.J. (2007). Frame Sizes, circumferences and skinfold in Carolyn, D.B., Dwyer, J.T. and Feldman, E.B. (ed). CRC Press. (Amanzon, USA).
14. Walkimoto, P. and Block, G. (2001). Dietary intake, dietary patterns and changes with age: An epidemiological perspective. *Journal of Gerontology of Medical Science*, 5665: 65-80
15. Bakare, E.O., Ojofeitimi, E.O. and Akinyemi, A. (2004). Nutritional assessment and health status of the elderly in South Western Nigeria. Paper presented at the union for African Population science. African Conference on Ageing at Johannesburg, South Africa.
16. Chen, C.C., Schilling, L.S. and Lyder C.H. (2001): A Concept Analysis of Malnutrition in the Elderly. *Journal of Advance Nursing*, 36(1): 131-42.
17. Schiffman, S.S. and Warwic Z.S. (1993): Effect of Flavor Enhancement of Foods for the Elderly on Nutritional Status: Food Intake, Biochemical Indices and Anthropometric Measures. *Physiology and Behavior*, 53: 395-402.
18. Turner, M.D. and Ship, J.A. (2007). Dry mouth and its effects on the oral health of elderly people. *Journal of American Dental Association*, 138 (suppl 1): 15S-20S
19. Animasahun, V.J. and Chapman, H.J. (2017).

- Psychosocial health challenges of the elderly in Nigeria: a narrative review. *African Health Sciences*, 17(2): 575-582.
20. Rowe, J.W. and Kahn, R.L. (1997). Successful aging. *Gerontologist*, 37(4):433-440
  21. National Population Commission. (2006). Locality Summary Listing Mbaitolu Local Government Area. Imo State.
  22. Wikipedia (2017). Mberi. Retrieved 20<sup>th</sup> Oct. 2016
  23. Yamane, T. (1967). *Statistics: An introductory analysis*. 2<sup>nd</sup> Ed. New York; Haper and Row.
  24. WHO (2006). Global Database on Body Mass Index (BMI). Retrieved July 27, 2012.
  25. WHO (200b). Global strategy for the prevention and control of noncommunicable diseases. Geneva, World Organization (WHO).
  26. O'Dea, M.J (2002). The relationship of adiposity and hypertension. *American Journal of Hypertension*; 15: 780-786.
  27. World Health Organization, International Society of Hypertension Writing Group. (2003). World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. *Journal of Hypertension*, 21:1983-1992.
  28. Nzeagwu, O.C. (2016). Evaluation of Nutritional Status using anthropometry and biochemical indices of community dwelling older persons in Nigeria. *Current Research in Nutrition and Food Science*: 4
  29. Frank, G.C. (2008). *Older Adult in Community Nutrition. Applying Epidemiology to Contemporary Practice* 2<sup>nd</sup> ed. USA. Jones and Bartlett Publishers Inc. USA: 491-51.
  30. Oly-Alawuba, N.M and Anamazobi, A.E (2016). Anthropometric indices and risk factors of malnutrition among elderly in Ibiasoegbe community, Oru west Local Government Area, Imo State. *Journal of Dietitians Association of Nigeria*, 7: 52-61.
  31. Nzeagwu, O.C. and Okorocho, G. (2012). Assessment of Nutritional Vulnerability of Hospitalized Elderly. *Journal of Dietitians Association of Nigeria*, 3: 21-33.
  32. Nzeagwu, O.C. and Uwaegbute A.C. (2014). Nutrient Intake and Functional Ability of Older Person by Gender and Age. *Journal of Nutritional Science*, 35(1): 51-59.
  33. Baiyewu, O. Bella, A.E. Adeyemi, J.D. Bamgboye, E.A. and Jegede, R.O. (2007): Health Problems and Socio-Demographic Findings in Elderly Nigerians. *African Journal of Medicine Science*, 26:13-17.
  34. Agarwalla, R., Saikia, A.M., and Baruah, R. (2015). Assessment of the nutritional status of the elderly and its correlates. *Journal of Family and Community Health*, 22(1): 39-43.
  35. WHO (2015): Global Strategy on Diet, Physical Activity and Health Recommended Levels of Physical Activity for Adult Aged 65 and Above [www.who.int/diet\\_physical\\_activity/factsheet/olderadult/en](http://www.who.int/diet_physical_activity/factsheet/olderadult/en).
  36. Ene-Bong, H.N. (2001): *Eating Right: A Nutrition Guide*. University of Calabar Press, Calabar: 127.
  37. Ogwumike, F.O. Aboderin, I. (2005) Exploring the Links between Old age and Poverty in Anglophone West Africa: Evidence from Nigeria and Ghana. *Generations Reviews*, 15(2): 7-15.
  38. Nishida C and Mucavele, P. (2005): Monitory the Rapidly Emerging Public Health Problem of overweight and Obesity. The WHO Global Data based on Body Mass Index. *SCN News*, 29 (Lute 2004 – Early 2005): 5-10.
  39. Ochayi, B. and Thacher, I.D. (2008). Overweight and Obesity among elderly Nigerians. *Highland Medical Research Journal*, 6(1-2):
  40. Gunderson, E.P. Sternferd B, Wellons M.F., Whitemen R.A. Chang, V. Queensberry J.R. (2008): Child Bearing may increase Visceral Adipose Tissue Independent of Overall Increase in Body Fat. *Obesity (sliver spring)*, 16: 1078-1084.
  41. Boyle M.A. and Holben D.H. (2006): *Community Nutrition in Action. An Entrepreneurial Approach* 4<sup>th</sup> Edition. Thompson Wadsworth: 388-393.
  42. Brown, J.E (2011): *Nutrition throughout Life Cycle* 4<sup>th</sup> Edition Wadsworth. USA: 455-485.