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Food preference and body mass index of elderly in Port Harcourt, Nigeria as an index of their nutritional status in Nigeria

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Abstract
In order to minimize malnutrition among the elderly and to optimize their health, research is needed to establish dietary preference and anthropometric that are useful for judging the nutritional status of the older persons in Port Harcourt municipality who has lived continuously for at least five years in Port Harcourt. 250 elderly subjects aged 60 years and above were randomly selected for the study. A structured questionnaire was used to elicit relevant information from the subjects. Data was analyzed using simple descriptive statistics. The result showed most of the elderly subjects to be within age of 60-65 years (71.6%). More than half of the elderly (53.2%) were obese with BMI values > 30kg/m^2 and more of them were underweight. Although this study using MBI, documented few of the elderly subjects of study to be at nutritional risk, a high level of obesity was revealed among them. Thus, there is the need to educate these groups of respondents on the dangers associated with obesity.

Keywords: malnutrition, elderly, ageing, nutrition and poverty

Introduction
This number and population of older Nigerians have grown rapidly in recent years and is expected to continue to grow. A report by the United States National Institute of Ageing shows that with improved life expectancy, as the population of old people will continue to be more than that of young ones. The report valid Nigeria 24th out of the 25 largest countries with elderly population. Due to the melting point status of Port Harcourt in the Niger Delta Region of the country with the fastest growth rate in Nigeria (Nigeria census 2006), it is known that adequate nutritional intake are essential to promote optimal physical, mental and emotional health (Butter and Lewis, 1982). Thus adequate nutrition affects quality of life of the elderly population. One third to one half of the health problems are directly related to a compromised nutritional status (Dwenousky and Awapo (1997), in addition, the elderly are particularly vulnerable to misleading and fraudulent health food information due to poverty, loneliness, depression and chronic illness and impaired judgment with reduced ability to evaluate information.
Nutrition is a important determinant of health in person over the age of 65. Malnutrition in the elderly is often under diagnosed. Careful nutrition assessment is necessary for both the successful diagnosis and development of comprehensive treatment plans for malnutrition in this population group. Over the past decades, the importance of nutritional status has been increasingly recognized in a variety of conditions including cancer, heart disease and dementia in person over the age of 65 (Lorefalt and Genowiak 2006). Although there is no uniform accepted deficiencies of malnutrition in the elderly, some common indications includes involuntary weight loss, abnormal body mass index (BMI), specific vitamin deficiencies and decreased dietary intake (Shotenstein, 2003). Malnutrition in elderly patience is regularly under diagnosed (Garibala, 2000) and many physician have expressed their need for more education regarding nutrition status in elderly patients (Mihalynuk and Knoff 2005) [7], for examples, health practitioners may not readily recognized weight loss in the elderly as a morbid symptom of malnutrition.
The elderly also often have multiple comorbidities that contribute to overall nutritional compromise. Given these complex contributing factors, a careful nutritional assessment is necessary for both the successful diagnosis of malnutrition in the elderly and the development of appropriate and comprehensive treatment plans.
These study was undertaken to assess the factors that affects their food preference and body mass index in assessing their nutrition status.

Materials and Methods
Study Area
The study was carried out in Port Harcourt metropolis, a major city in Niger Delta Region in Nigeria. A major center for economic activities in Nigeria. The metropolis is mainly constituted by the people of Ikwerre Ethnic Nationality, but due to its urban status and hospitality of the people, there is influx of other nationalities to the metropolis. Their occupations are farming, fishing and trading, with major oil company headquarters and several government officers.

Sample size determination
The sample size was determined using the fisher's formula (Person, *et al.*, 2002) [9].

$$n = \frac{Z^2.p.q}{d^2}$$

Where n = minimum sample size
P = prevalence of the attribute i.e. the proportion of the population having the characteristics measured
d = the precision of the study which is 5% (0.05)
q = 1 – p
Z^2 = the area under the curve corresponding to a 95% confidence interval which is 1.96.

According to the Mini Nutritional Assessment MNA, De-Luis, *et al.*; 2011 review of the literature on nutritional status of the elderly by Nestle Nutrition Institute, 9% of the subjects had one form of malnutrition or the order. 9% was used as the proportion of the population having the characteristic being measured (P) and 95% level of confidence was used.
Therefore, for the purpose of the study, P is 0.09, and the minimum sample size n was calculated as;

$$n = \frac{(1.96)^2 \, x \, 0.09 \; x \; 0.91}{(0.05)^2} = 225.90$$

However, this was increased to 250 to make up for contingencies (incomplete questionnaires, non responsive respondents as well as to improve representation).

Sampling Procedure
The target subjects of the study were the elderly aged 60 years and above. Multistage sampling procedure was used for the selection of the subjects of the study. The subjects were randomly selected from churches that had highest population of elderly in different parts of Port Harcourt. The churches selected were used as study site for four different Sundays. Prior to the study, announcements were made in the selected churches, seven days before the study days through the chaplains of the different churches.
A structured questionnaire which provided information on the socio economic characteristics of the subjects. Measurement of height and weight were taken using standard procedures. The Body Mass Index (BMI) was calculated. Data were analyzed using simple descriptive statistics of means and percentages.

Results
The elderly subjects of study were found to be within the age of 60 -75years, with a higher proportion (71.6%) in Table 1, which 71-75 age grade were about 10.8%.
Secondary education was found to be the highest level of education attained by most (43.2%), while 8.4% had no formal education. Trading was the most occupation being engaged by the elderly (56.8%). This was followed by pension (32.4%).

Table 1: Socio Demographic Characteristics of the Subjects

Characteristics	Frequency	Percentage (%)
Age		
60-65	179	71.6
66-70	44	17.6
71-75	27	10.8
Total	250	100
Sex		
Male	81	32.4
Female	169	67.6
Total	250	100
Educational Status		
No formal education	21	8.4
Primary	22	8.8
Secondary	108	43.2
Vocational	61	24.4
Tertiary	38	15.2
Total	250	100
Occupation		
Pensioner/unemployed	81	32.4
Civil servant	27	10.8
Trading/forming	142	56.8
Total	250	100

Table 2, shows the respective factors that influenced the food preference of the elderly. 38.85% of the respondents reported that their low income level adversely affected their preference for food choice, while health status followed with 33.81%.

Table 2: Factors that influences their food preference

Variable	Percentage (%)
Health status	33.81
Income status	38.85
Likeability	15.83
Availability	11.51
Total	100

Table 3, shows the food preference of respondents according to the table, 50.36% of the respondents take protein related food at least once a week, 38.78% take protein food daily while 20.56% take protein food daily while 20.86% take protein food 2.4 times monthly 100% of the respondents consumes carbohydrate base food daily, 57.55% takes fruits and vegetables at least weekly and 35.25% daily. The rest of the result of the subjects opinion is on table 3.

Table 3: Percentage distribution of usual consumption pattern among the elderly

Type of Food	Percentage (%)
Protein foods	28.78
Daily	50.36
At least weekly	20.86
2-4 times monthly	
Total	100
Diary food products	Percentage
Daily	33.09
At least weekly	38.13
2-4 times monthly	18.71
Soldom/never	10.07
Total	100
Carbohydrate foods	Percentage
Daily	10
At least weekly	0
2-4 times monthly	0
Seldom/never	0
Total	100
Fruits /vegetable	
Daily	35.25
At least weekly	57.55
2-4 times monthly	7.19
Seldom/never	0
Total	100
Sweets	
Daily	32.88
At least weekly	29.49
2-4 times monthly	60.43
Seldom/never	7.19
Total	100

The anthropometric measurements of the respondents, using body mass index (BMS) shows that more than half of the of them (53.4%) were obese as shown in Table 4. While 30.2 of them were overweight with 10.4% of them were of normal weight.

Table 4: Authropomtric measurements of the respondents using body mass index (BMI)

Body mass index (kg/m^2)	Percentage (%)
< 18.5 underweight	0
18.5 – 24.9 normal weight	16.2
25.0 – 29.9 overweight	30.6
>30 obese	53.2
Total	100

Discussion

The demographic aspects of the elderly in Port Harcourt metropolis such as age, educational level and occupation goes a long way in explaining the nutritional status of these respondent. Information on age in this study has helped in ranking the elderly men and women into ages 60-75 years. It is from the data on age that demography allows one to track changes in size of population and changes that occurs in health status on ageing. Another important demographic characteristics is the educational level of the respondents. Most of the elderly have secondary school education, regarded in some community as literate.

Despite the urbanization of the study location, 56.8% of respondents were either traders/farmers depending solely on what they get from trading/farming, while 32.4% are pensioners. Food consumption is basic to all living beings however the choice of food is influenced by many factors like health status, income level, likeability, availability etc.

Studies have shown that it is more common for the elderly to be underweight than overweight or obese because at this stage, they are physical active with decrease interest in food due to diminished taste, smell, loneliness and depression which are all associated with the aging process (Steen, 1988), however none of the elderly subject of this study was found to be underweight but overweight and obese. The elderly studied are of high educational status with reasonable occupation, especially farming and trading which could affect their food intake hence their nutrition/status. Also the absence of underweight portrayed a health eating preference as observed by Vangban and morrow (1989) [13]. This study revealed high rate of overweight and obese among the elderly. Such findings was observed by Gales (2006) [4]. He reported that obese is now a problem of the poor everywhere and it is increasing is more households. In these study he elderly consumed more energy dense food which are mostly cheaper than good protein sources, fruits and vegetables. Thiam, *et al.* (2006) reported that in sub Sahara Africa, overweight and obesity are becoming a problem.

Conclusion

This study revealed that majority of the subjects were overweight/obese using BMI as a tool. This showed some levels of malnutrition as well as risk of heart disease and diabetes. There is therefore a need to assess the elderly using different parameters. Similar studies should be carried out in rural setting.

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