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Nutritional Status of Elderly in Asaba, Delta State, Nigeria

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Abstract: This study described three anthropometric measures (height, weight and Body Mass Index [BMI]) of elderly in Asaba, Nigeria. Data was derived from 176 subjects who attended the Medical Lectures of the Ebreme foundation for the elderly in Asaba. The SPSS (Statistic Package for Social Science) version 17.0 was used for data analysis. This study had 62.5% males and 37.5% females. Approximately 18.2% was aged 50-59 years, 43.8% (60-69 years), 29% (70-79 years) and only 9.1% aged 80 years or more. The general population had a mean weight of 70.98±13.98 kg, height 1.61±0.11 m and BMI 27.36±5.60 kg/m^2. The male subjects had significant lower body weight (70.55±12.07 kg) and BMI (25.90±4.2160 kg/m^2) than the females (71.70±16.76 kg and 29.79±6.7060 kg/m^2 respectively) with taller height (1.65±0.08 m) than the women (1.55±0.12 m). The weight and height decreased with age; 50-59 year group had 79.75±15.21 kg, 60-69 years (70.56±12.58 kg), 70-79 years (69.25±13.49 kg) while from 80 years and above had 61.00±10.62 kg. The height decreased from 1.66±0.07 meters (50-59 years group) to 1.54±0.17 meters (from 80 years and above). This study revealed that the nutritional indices of the elderly in Asaba, Nigeria decline with higher magnitude before the age of 60 years and from 80 years. This call for special nutritional and health attention to the aged before and after their 60th and 80th birthday respectively.

Key words: Elderly, anthropometric measures, body weight, height, BMI

INTRODUCTION

Nutritional Status refers to the nutritional state of the body as expressed according to scientifically tested parameters which included weight, height and Body Mass Index (BMI). Height and weight are two of the most easily obtained anthropometric measures and have been used extensively in screening and monitoring programs because overweight and obesity have been considered as risk factors for various diseases (Knowler *et al*., 1991; Lee *et al*., 1995; Solomon and Manson, 1997).

Anthropometry has been used at different ages for assessing health and nutritional well-being. But the distributions of body composition are usually generated for children, adolescents and adults between the ages of 19 and 64 years, most of them from the perspective of nutrition (Kuskowska-Wolk and Bergstrom, 1993; Seidell *et al*., 1995; Al-Isa, 1997). Kuczmarski and his associates (1994) confirmed that the mean values of BMI increased with each 10-year increment until 50 through 59 years of age for both men and women and then decreased with age. However, researchers had called for more attention to the changes in body composition related to aging (Baumgartner *et al*., 1995; Launer and Harris, 1996). For cross-national comparison, Launer and Harris (1996) compared anthropometric data (height, weight and BMI) from 19 geographically and ethnically varied samples of community-dwelling elderly people. Across the studies there were large differences in the prevalence of overweight and underweight, but in all studies the mean values of height and BMI decreased with age.

Therefore, it is important to generate more information on body composition of elderly persons in Nigeria, to contribute more empirical evidence to aging studies.

This present study however, focuses on the body composition of an elderly population sample in Asaba, Nigeria.

MATERIALS AND METHODS

A total of 176 willingly participants completed this study in Asaba. Asaba is the capital of Delta state, South-South Nigeria. The survey was conducted from April to May, 2009 in the Federal Medical Centre, Asaba. Subjects were recruited from the attendees to the April quarterly medical lectures of the Ebreme foundation of the elderly, a non Government Organization. The subjects were grouped in batches giving appointment over a period of 4 weeks for screening and data collection at the Federal Medical Center, Asaba. The Ethical Committee on human study at the Federal Medical Center, Asaba granted approval for this study protocol.

Three major anthropometric measures; body weight, height and BMI were used in the present study. The height and weight of the subjects were measured simultaneously by using standard hospital weighing balance and height measure (SMIC Health Scale, Made

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in China). Body weight was measured to the nearest 0.1 kg, with the participant wearing light clothes and without shoes, jackets, caps and heavy ornaments. Standing height without shoes was measured to the nearest 0.1 cm. BMI was calculated as the weight (in kg) divided by height (in m^2). The criteria of the World Health Organization (Seidell and Flegal, 1997) were adopted to measure the prevalence of overweight and obesity. The subjects falling in the BMI categories between 25 and 29.9 were considered overweight; those with a BMI 30 and above were obese. A descriptive analysis was performed to generate relationship of height, weight and BMI of these elderly persons by age and gender.

Analysis of data: All data were coded and entered into the SPSS (Statistic Package for Social Science) version 17.0. The categorical variables were presented as frequencies and percentages. The differences in mean values of height, weight and BMI among different age groups and between sexes were examined by ANOVA analysis. Statistical significance was set at 95% confidence interval.

RESULTS

The sex and age distributions are shown in Table 1. A total of 176 elderly subjects included in this study had 110 (62.5%) men and 66 (37.5%) women. Approximately 18.2% of the subjects were aged 50-59 years, 43.8% aged 60-69 years, 29% aged 70-79 years and only 9.1% aged 80 years or more.

The mean values of weight, height and BMI are presented in Table 2. The general population had a mean weight of 70.98±13.98 kg, height 1.61±0.11 m and BMI 27.36±5.60 kg/m^2. According to gender, the elderly men had lower body weight (70.55±12.07 kg) and BMI (25.90±4.2160 kg/m^2) than the elderly women (71.70±16.76 kg and 29.79±6.7060 kg/m^2 respectively) but they were taller in height (1.65±0.08 m) than the elderly women (1.55±0.12 m). The difference in height and BMI were statistically different between male and female elderly ($p<0.05$; F-value 43.082 and 22.35 respectively) whereas the difference in weight was not significant (F-value 0.274, p-value 0.601).

Table 1: Sex and age distribution of subjects

	Frequency	Percent
Sex		
Male	110	62.5
Female	66	37.5
Total	176	100
Age group		
50-59	32	18.2
60-69	77	43.8
70-79	51	29
80 and above	16	9.1
Total	176	100

Table 3 described the distributions of weight, height and BMI according to age. The mean value of weight decreased with age; 50-59 year old group had 79.75±15.21 kg, 60-69 years had 70.56±12.58 kg, 70-79 years had 69.25±13.49 kg while 80 years and above had 61.00±10.62 kg. Similar decreasing trends were also found in the height and BMI of the elderly subjects. The height decreased from 1.66±0.07 meters (50-59 years old age group) to 1.54±0.17 meters (elderly age 80 years and above). BMI also decreased from 29.18±5.86 kg/m^2 among the group of 50-59 years old to 26.70±9.15 kg/m^2 among elderly of 80 years and above. The magnitude of decrease in the weight and height were relatively more before the age of 60 years and 80 years. The decrease between the group of 60-69 years and 70-79 years were relatively small. The decreasing rates among the age groups were statistically significant in weight and height ($p<0.05$) while in BMI, the difference was not significant (F-value 1.563; p-value 0.200).

DISCUSSION

Information on body composition of the elderly is needed for proper evaluation of their nutritional and functional status. The potential change in body composition may lead to associated changes in some other risk factors of diseases, especially for elderly persons. However, little is known about the value of anthropometric data for predicting the health status of older people.

As expected, our study found the elderly men taller whereas the elderly women were heavier with higher BMI. The higher value of mean weight can be translated into the higher mean BMI. The finding of higher BMI

Table 2: Mean values of body weight, height and Body Mass Index (BMI) of subjects according to sex

	Male	Female	Total	F-value	p-value
Weight (kg)	70.55±12.07	71.70±16.76	70.98±13.98	0.274	0.601
Height (m)	1.65±0.08	1.55±0.12	1.61±0.11	43.082	0.000
BMI (kg/m^2)	25.90±4.21	29.79±6.70	27.36±5.60	22.35	0.000

Table 3: Mean values of body weight, height and Body Mass Index (BMI) of subjects according to age

	50-59 years	60-69 years	70-79 years	80 years and above	Total	F-value	p-value
Weight (kg)	79.75±15.21	70.56±12.58	69.25±13.49	61.00±10.62	70.98±13.98	8.069	0.000
Height (m)	1.66±0.07	1.61±0.11	1.61±0.09	1.54±0.17	1.61±0.11	4.113	0.008
BMI (kg/m^2)	29.18±5.86	27.25±5.06	26.57±4.61	26.70±9.15	27.36±5.60	1.563	0.200

among the women in this study population is comparable with that of Herng-Chia *et al.* (2000), which also found elderly males taller than the females. A Nigerian study on 65-78 year old subjects from rural and urban areas of the south-western region of Nigeria also reported that male subjects were significantly taller than female subjects (Oguntona and Kuku, 2000). Therefore, the higher body weight among the elderly females could be contributed to fat deposits rather than skeletal weight since the male were taller. A decreasing pattern of height, weight and BMI values with age was demonstrated among the elderly in this our study. The magnitude of decrease in the BMI, weight and height were relatively more before the age of 60 years and after 80 years. This revealed that from the age of 60-80 years the elderly demonstrate minimal change in their nutritional status. Previous studies had reported an increasing trend in BMI only up to older adults (Huang *et al.*, 1992; Curb and Marcus, 1991). Also, Kuczmarski and his associates (1994) confirmed that the mean values of BMI increased with each 10-year increment until 50 through 59 years of age for both men and women and then decreased with age.

Though this study showed significant declined in height and weight with the subjects' age, however, the non significant declined in their BMI with age could be attributed the low magnitude in their decline in weight. This is because Launer and Harris (1996) reported that for BMI to decline with age, weight must also decline and to a greater extent than height.

The mean BMI (27.36±5.60 kg/m^2) of the general population indicated that these elderly were neither underweight nor obese according to WHO classification of BMI (WHO, 2000). This finding is in agreement with an earlier study on food habit of same population where healthy eating habit was portrayed (Odenigbo *et al.*, 2009). These findings suggest that their adequate food intake influenced the overall nutritional status.

Conclusion: The anthropometric indices (body weight, height and BMI) of the elderly in Asaba, Nigeria declined with age. The decline was minimal from age of 60-80 years but had higher magnitude before the age of 60 years and above 80 years. This call for special nutritional and health attention to the aged before and after their 60th and 80th birthday respectively.

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