
ANTHROPOMETRIC PROFILE OF THE URBAN SENIOR CITIZENS

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Abstract

This cross-sectional study was carried out from January to June 2006 to find out the anthropometric profile of the urban seniors living in three selected areas (Nakhla Para, Badda and Mirpur) of Dhaka city. A total of 317 individuals of both sexes aged 60 years and above were recruited by convenient sampling. Data were collected by a pre-tested questionnaire and a check list. Mean body mass index, waist circumference and waist to hip ratio were 17.8 ± 4.0 , 75.5 ± 12.5 cm and 0.87 ± 0.12 , respectively. Although only 3% elderly were obese, substantial proportion of the sample were overweight. Females were more prone to health risks than male. Measures should be taken to create awareness amongst these populations for controlling their health risk.

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Key words: Anthropometry, elderly, Body Mass Index (BMI), Waist Circumference (WC), Waist to Hip Ratio (WHR).

Introduction

Senior citizens comprise 7.9% of the total global population. Every month 8,000,000 individuals reach 60 years of age in the world and some 360 million people have already reached this age. By the year 2020, more than 1000 million will be over 60 years of whom more than two-thirds will be living in the developing countries. In the near future virtually all countries will face an aging population, although at varying levels of intensity and in different time frames.^{1,2}

In the developing countries aging issues have only recently begun to emerge as a cause of concern. Bangladesh is one of the twenty developing countries with the largest number of senior citizens. About 7.2 million (around 6%) of the total population of Bangladesh constitutes the elderly population. This figure was 1.37, 1.86, 4.90 and 6.05 millions in the year 1911, 1951, 1981 and 1991, respectively.³ By 2025 along with other Asian countries, Bangladesh

will account for almost half of the world's total senior citizens. This change is predicted to have serious consequences.⁴ Most of the elderly in Bangladesh suffer from some basic human problems like such as poor financial support, exclusion, negligence, deprivation, insecurity, senile diseases and absence of proper health and medical care. They become frustrated and suffer from illness without care and company.³

The senior citizens of Bangladesh are suffering from different diseases and malnutrition (under nutrition, overweight and obesity).⁵⁻⁷ Elderly populations of Bangladesh are also suffering from many old age diseases and malnutrition (under nutrition, overweight and obesity).⁶⁻⁸

This study aimed to assess the anthropometric profile of the senior citizens of an urban community with a view to help in formulating appropriate intervention measures to address the health need of the aged.

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Materials and Methods

This cross sectional study was conducted in three areas of Dhaka City named Nakhal Para, Badda and Mirpur among the individuals of both sexes aged 60 years and above. Taking one-third from each area by convenient sampling, a total of 317 respondents were recruited. Non-residents of the study area, severely ill, bed ridden, not able to stand erect and persons with other medical conditions which could make the interview inconvenient were excluded from the study. Data were collected by face-to-face interview of the respondents using a pre-tested questionnaire. Various anthropometric measurements were taken following a standard protocol and recorded in a checklist. For weight (wt), bathroom scale was used, and a non-stretchable tape was used for height (ht), waist circumference (WC) and hip circumference (HC) measurements. The circumference of the waist was measured at the plane midway between the lowest rib margin and the superior iliac crest and circumference of the hip at its maximum width. Collected data were checked, cleaned and edited and analyzed using software SPSS for windows version 11.5. To find out the differences in mean ht, wt, WC, HC and body mass index (BMI) between the sexes grouped t-tests were done. The association between risk categories of BMI, WC, waist to hip ratio (WHR) and sex were tested by χ^2 -tests. A cut-off of $p < 0.05$ was taken as significant.

BMI was calculated with formula weight in Kg / height in meter square. The following cut-off points were used in this study:

<u>Nutritional Status</u>	<u>BMI</u>
Under nutrition	< 18.5
Well nourished	18.50 – 24.99
Overweight	25.00 – 29.99
Obesity	≥ 30.00
<u>Health Risk</u>	<u>WC (cm)</u>
Normal range	Male < 94, Female < 80
Health Risk	Male 95–102, Female 81–88
Substantial Health Risk	Male > 102, Female > 88
<u>Health Risk</u>	<u>WHR</u>
Normal range	Male ≤ 1.00, Female ≤ 0.85
Health Risk	Male ≥ 1.01, Female ≥ 0.86

Results

Higher proportion of females were included in the study and age of the participants ranged from 60 to 95

Table 1: Socio-demographic characteristics of the senior citizens ($n = 317$)

Characteristics	Sex		Total n (%)
	Male n (%)	Female n (%)	
Age in years			
≤ 65	67 (52.0)	105 (55.9)	172 (54.3)
66 – 70	39 (30.2)	48 (25.5)	87 (27.4)
> 70	23 (17.8)	35 (18.6)	58 (18.3)
Marital Status			
Married	112 (86.8)	98 (52.1)	210 (66.2)
Widow/ Separated	17 (13.2)	90 (47.9)	107 (33.8)
Educational Status			
Illiterate	37 (28.7)	86 (45.7)	123 (38.8)
Primary	27 (20.9)	65 (34.6)	92 (29.0)
S.S.C.	31 (24.0)	16 (8.5)	47 (14.8)
H.S.C. & above	28 (21.7)	5 (2.7)	33 (10.4)
Others	6 (4.7)	16 (8.5)	22 (6.9)
Occupational Status			
Retired	52 (40.3)	4 (2.1)	56 (17.7)
Service Holder	12 (9.3)	-	12 (3.8)
Businessman	30 (23.3)	-	30 (9.5)
Self employed	9 (7.0)	1 (0.5)	10 (3.2)
Housewife	-	163 (86.7)	163 (51.4)
Others	26 (20.2)	20 (10.6)	46 (14.5)

years with a mean of 67.1 ± 6.6 years and more than half of them were at or below 65 years. Detailed socio-demographic and economic characteristics were described in an earlier publication which is summarized in Table 1.⁹

On average, females were having significantly lower height, weight, WC whereas no significant difference was noticed in hip circumference and body mass index between the sexes. Anthropometric values by gender are shown in Table 2 and Table 3. Only about 3% of the elderly samples were obese. One-fifth of the males and one-fourth of the females were underweight whereas overweight and obese were about 14% and 17%, respectively. But the observed differences were not statistically significant. Higher proportion of females (10.6% and 35.6%, respectively) were with health risk WC ($p < 0.01$) and WHR (< 0.001) compared to males (0.8% and 7.0%, respectively).

Discussion

Anthropometric methods for assessing the nutritional status in adults are simple and inexpensive. There is limited information to interpret anthropometric data

Table 2: Anthropometric indicators of the senior citizens by sex (n = 317)

Anthropometry	Overall		Sex of the Respondent		p*
	Range	Mean ±SD	Male (mean ±SD)	Female (mean ±SD)	
Height (cm)	134 - 177	152.8 ± 8.3	158.8 ± 7.1	148.6 ± 6.4	<0.001
Weight (kg)	29 - 95	49.8 ± 11.1	54.2 ± 10.7	46.7 ± 10.3	<0.001
Waist Circumference (cm)	43 -120	75.5 ± 12.5	80.4 (±10.5)	72.2 (±12.8)	<0.001
Hip Circumference (cm)	48 - 130	86.6 ± 9.9	87.0 ± 9.1	86.3 ± 10.4	ns
Body Mass Index	13.5-40.1	17.8 ± 4.0	21.8 (±3.5)	21.1 (±4.4)	ns

in elderly populations. Reference values for the evaluation of the anthropometric values in elderly are based upon the studies using young adults or based on statistical definitions of threshold values, rather than on population studies on elderly. So, problems arise when evaluating the elderly. In addition, the lack of anthropometric cross-sectional surveys nationally in the elderly population limits the comparison of these results with other national studies.

In most studies, mentioned below, BMI was found higher in females than males. Other indices found having different findings in different studies. In a study on Filipino adults including approximately 8,500 subjects (20-65 years old), BMI, WC and WHR were found higher for the males than females.¹⁰ In population-based, cross-sectional studies in Chile and Cuba on the elderly, BMI values were significantly higher in women than in men.^{11,12} In another study in Brazil among the elderly, a total of 1,894 older adults (men and women > 60 years) were examined from

Table 3: Anthropometric categories of the elderly samples (n = 317)

	Sex of the Respondent		χ^2	p
	Male No. (%)	Female No. (%)		
BMI				
Underweight	28 (21.7)	52 (27.7)	2.69	ns
Normal	83 (64.3)	104 (55.3)		
Overweight	15 (11.6)	26 (13.8)		
Obese	3 (2.3)	6 (3.2)		
WC Category for Health Risk				
Normal	115 (89.1)	146 (77.7)	12.64	<0.01
Health Risk	13 (10.1)	22 (11.7)		
Substantial Health Risk	1 (0.8)	20 (10.6)		
WHR Category for Health Risk				
Normal	120 (93.0)	121 (64.4)	34.48	<0.001
Health Risk	9 (7.0)	67 (35.6)		

January to March 2001. Body mass index (BMI), waist (WC) and hip (HC) circumferences were measured. BMI was significantly higher (p < 0.01) in women than men (all age groups).¹³ In a cross sectional study on 60-year-old-and older Mexican men and women in Mexico City, the values in the male group were higher than in the female group for WC; women showed higher values in BMI, and hip circumference (p < 0.01).¹⁴ In a Mexican national survey, BMI values indicated that 62.3% of the population and 73.6% of the women were overweight.¹⁵ In a cross-sectional study on randomly selected 3,356 elderly Italian population, BMI was significantly higher in women than in men (27.6 ± 5.7 v. 26.4 ± 3.7; P<0.001). Prevalence of malnutrition was lower than 5% in both genders, whereas obesity was shown to have a higher prevalence in women than in men (28% v. 16%; P<0.001).¹⁶ In another cross-sectional study of 874 free-living, apparently healthy Irish-born elderly individuals aged over 65 years, one-third had a BMI between 20-25 kg/m², approximately two-thirds (68.5% of males and 61% of females) were classified as overweight or obese, almost one-fifth having a BMI over 30 kg/m² (17% of men and 20% of women). Very few were underweight, only 3% having a BMI below 20 kg/m².¹⁷ An institution based study on 305 elderly people, of both sexes, living in six geriatric institutions were assessed. Mean values of the weight, height, body mass index in men were higher than those in women. Of the mean difference of the variables, body mass index was not statistically significant (p > 0.05).¹⁸

In the above mentioned studies, most of the anthropometric measurements are similar to the current study findings with little dissimilarity. As like the current study, mean height, weight, WC, hip circumference and BMI were higher in males in most studies; in categories for BMI, WC and WHR values for females were higher than male. However,

proportion of under nutrition in both sexes was high in this study than overweight and obesity in comparison to other studies which may be due to socio-economic and cultural differences.

In this study, majority of elderly were found well nourished and had no health risk by anthropometric measurements. Females were at a higher health risk compared to males. As the study was conducted only in some selected areas of Dhaka city with a small sample size, the study findings may not represent the actual national situation. Further large scale in-depth studies with appropriate design are recommended to get a detailed national picture.

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