

ECONOMIC STATUS AND BMI OF ELDERLY PEOPLE:

AN ANTHROPOMETRIC STUDY OF KOLKATA

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Abstract: This paper presents anthropometric data on elderly people in India. Data were collected in the metropolitan city Kolkata, West Bengal. In all 100 elderly people (males and females, aged 65 years and above) took part in the study. The BMI (Body Mass Index) of elderly males and females were compared with Income status of elderly people.

Keywords: Elderly, Anthropometry, BMI (Body Mass Index), Economic Status

Introduction

Statistics from around the world show that the proportion of elderly people in the population has been steadily increasing over the last decades. According to United Nations Population Fund (UNFPA) and Help Age International, India has around 100 million elderly at present and the number is expected to increase to 323 million, constituting 20 per cent of the total population, by 2050.¹ This trend in population change appears to be emerging in most economically developed countries. Tremendous improvements in medical technologies and health care delivery systems are believed to be the main reasons for this change in the elderly population. Diseases that were once thought to be fatal can now either be cured or at least life span can be increased by several years. People are living longer now than ever before.

Old age is the later part of life, which is characterized by deterioration in physical capacities. This deterioration brings changes in the person's active participation (in general, physically) in different areas of life, role-playing and role performance and from economic self-sufficiency to dependence.

In the traditional Indian society, the aged occupied position of power and prestige. In the pre-industrial agrarian Indian society most of the aged people remained financially independent throughout their life. Moreover, the prevailing economic, political and social value systems which were based on the preservation of inherited inequality enabled the aged people to enjoy

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leadership roles in the joint family, caste group and the village community (De Souza, 1982).ⁱⁱ This traditional system provided social, economic and emotional security to the aged. But, industrialisation, urbanisation and modernization have changed the values of traditional Indian society, which resulted into the change of role and status of old (aged) people. Social structure of the family, community and village has also changed slowly, as results of which the knowledge and experience of old (aged) people are not considered significant. Economic hardships, health problems, family responsibilities and disturbed (family) relations are the major problems faced by the elderly people. Due to the pressing needs of family and their personal requirements they have to work as long as they live. The health care facilities for the aged have been a big question. So far as the availability and availing of these facilities is concerned, Desai (1987), while analyzing the health situation of the rural aged pointed out that “to reach a hospital or to get a doctor means money and the rural poor are too poor to afford it. So to suffer and die without even the prospect of a healing hand is the lot of the rural aged.”ⁱⁱⁱ

Neglecting the elderly, an unimaginable condition in agrarian society, has begun to occur (Pillai, 1988). A number of factors contribute to the changing status of the aged, the foremost being the breaking of joint family system. Individualism and materialism are the other important factors, which are growing rapidly among the modern youth.^{iv}

In a study of the problems of the aged and need for social intervention in the states of Haryana and Himachal Pradesh it was found that aged suffer from many problems like lack of proper housing, proper care and attention in families. While examining their status, the study found that majority of the aged were not optimistic about any change in their present situation and they did not think that family members, neighbours or aged themselves could do anything in this regard. The study found that main problems of the aged have been economic hardships and physical sufferings because of loss of occupation and physical vitality and over and above the rural folk are deprived of basic minimum amenities (Upadhyay, 1992).^v

In a study conducted in Kerala, concluded that the attitude, both professional and general seems to be that the illness was an essential part of old age and most of the illness of the old have no cure but only palliatives (Nayar, 2000).^{vi}

In his study of Health Status of the rural aged in Andhra Pradesh, Rao and others found that health problems tend to increase with advancing age and very often the problems aggravate due to neglect, poor economic status, social deprivation and inappropriate dietary intake. It was found that a higher proportion of the total respondents (sample of 300 elderly) stated that they were suffering from serious illness and lack of medical facilities in the villages and poor economic condition might be responsible for the lower health status of the villagers (Rao and others, 2003).^{vii}

In a study conducted by Braja Mohan Otta (1989) he found that landless aged people suffer from severe problems than landed aged i.e. loss of authority, status, low income, problems of loneliness, breakdown of joint family. He also found that the higher percentage of landless aged people reduce their needs and suffer from mal-adjustment.^{viii}

Anthropometry is an essential tool in geriatric nutritional assessment used to evaluate underweight and obesity conditions, which are both important risk factors for severe diseases and disability among the elderly (Jensen & Rogers, 1998; Visser et al. 1998).^{ix} Anthropometric measurements used to assess the elderly are usually easy to obtain and measure and are non-invasive and inexpensive (Kuczmarski, Kuczmarski, & Najjar, 2000).^x The main measurements are weight, height, girths, and skin folds (Menezes & Marrcui, 2005).^{xi} Arm circumference can be efficiently used to classify the nutritional risk and/or status of an individual and calf circumference has been referenced as a sensitive indicator of lean mass loss among the elderly (WHO, 1997).^{xii} The process of aging itself involves a great number of physiological and nutritional changes such as an increase in body weight and height loss. Furthermore, this leads to a reduction in fat-free mass, which is closely associated with increased fat mass. In fact, the reduction or stability in body weight may mask an increase in body fat mass as a result of aging and the loss of muscle mass in people. Therefore, the assessment of lean body mass and body fat mass and their relationship is of great importance for people over the age of 60. Changes in the total or peripheral muscle mass and adipose tissue can be a good indicator of the risk factors for many diseases.

The accumulation of body fat is usually located in the area of the trunk and visceral sites. It is well known that being overweight and obesity are closely linked to an increased risk of

cardiovascular disease, as well as with chronic disorders and disabilities (Musta, Spadano, Coakley, Field, Colditz, & Dietz, 1999).^{xiii} Both the body mass index and waist circumference have been used as markers of obesity and adiposity to study their relation to chronic diseases (Janssen, Katzmarzyk, & Ross, 2004).^{xiv} Waist size is a marker of abdominal fat depots responsible for the occurrence of insulin resistance. It was found that males that have a waist circumference over 94 cm are at increased risk, and over 102 cm at very high risk for the development of co morbidity, especially of the cardiovascular system. An increased risk of developing these complications was determined in the case of females with a waist size over 80 cm, and a strongly increased risk in the case of females with a waist size of over 88 cm (WHO, 1997).^{xv}

There is no doubt that mankind would have much more use of a deeper study of the last stage of human life. In fact, a lack of data and the heterogeneity of the experimental design and measurement techniques in the evaluation indicate the need for a meta-analysis. The need is reflected in order to define the current state information based on research that would connect body composition and aging.

This paper aims to understand the relation between BMI (Body Mass Index) and economic status of the elderly people.

Methodology

Sampling:

Participants for the study were purposively selected from the general public, old people's homes located in the metropolitan Kolkata area in West Bengal, India. Total 100 respondents were interviewed, 52 males and 48 females. All participants were of normal physical health and were active in life at the time of the measurements conducted for the study.

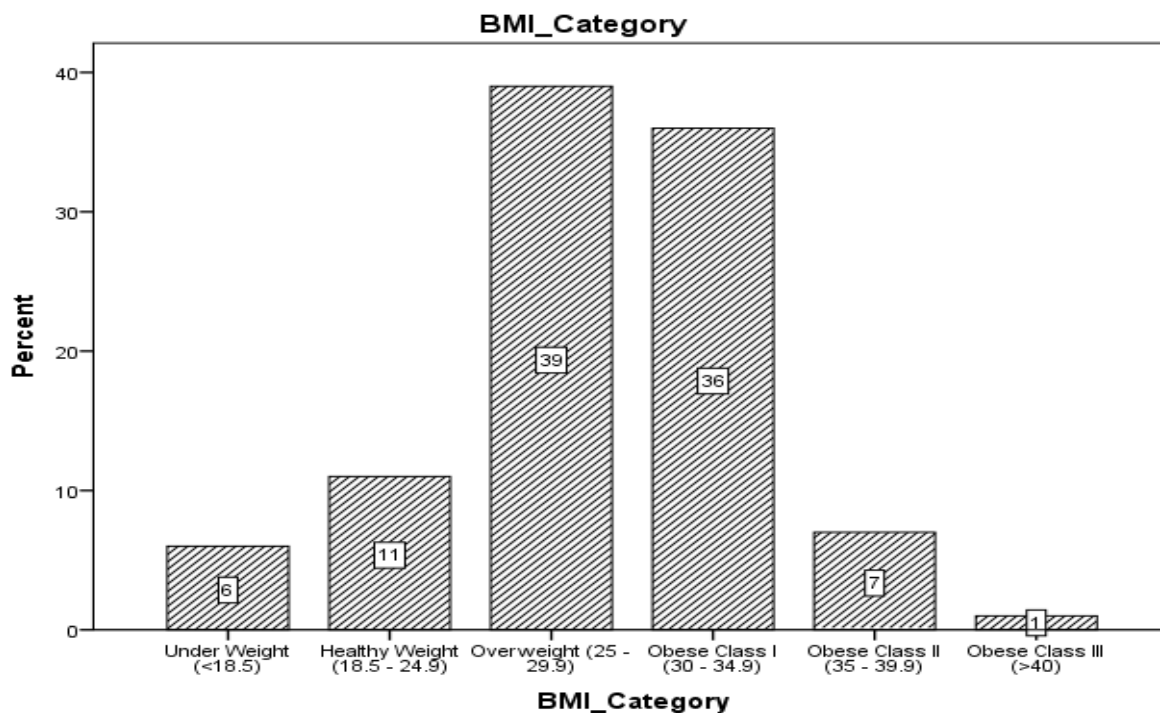
Data Analysis:

Data were analysed using SPSS. The program was used first to check accuracy of entries by checking on outliers and then for the statistical analysis.

BMI_Category					
	BMI Category	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under Weight (<18.5)	6	6.0	6.0	6.0
	Healthy Weight (18.5 - 24.9)	11	11.0	11.0	17.0
	Overweight (25 - 29.9)	39	39.0	39.0	56.0

Obese Class I (30 - 34.9)	36	36.0	36.0	92.0
Obese Class II (35 - 39.9)	7	7.0	7.0	99.0
Obese Class III (>40)	1	1.0	1.0	100.0
Total	100	100.0	100.0	

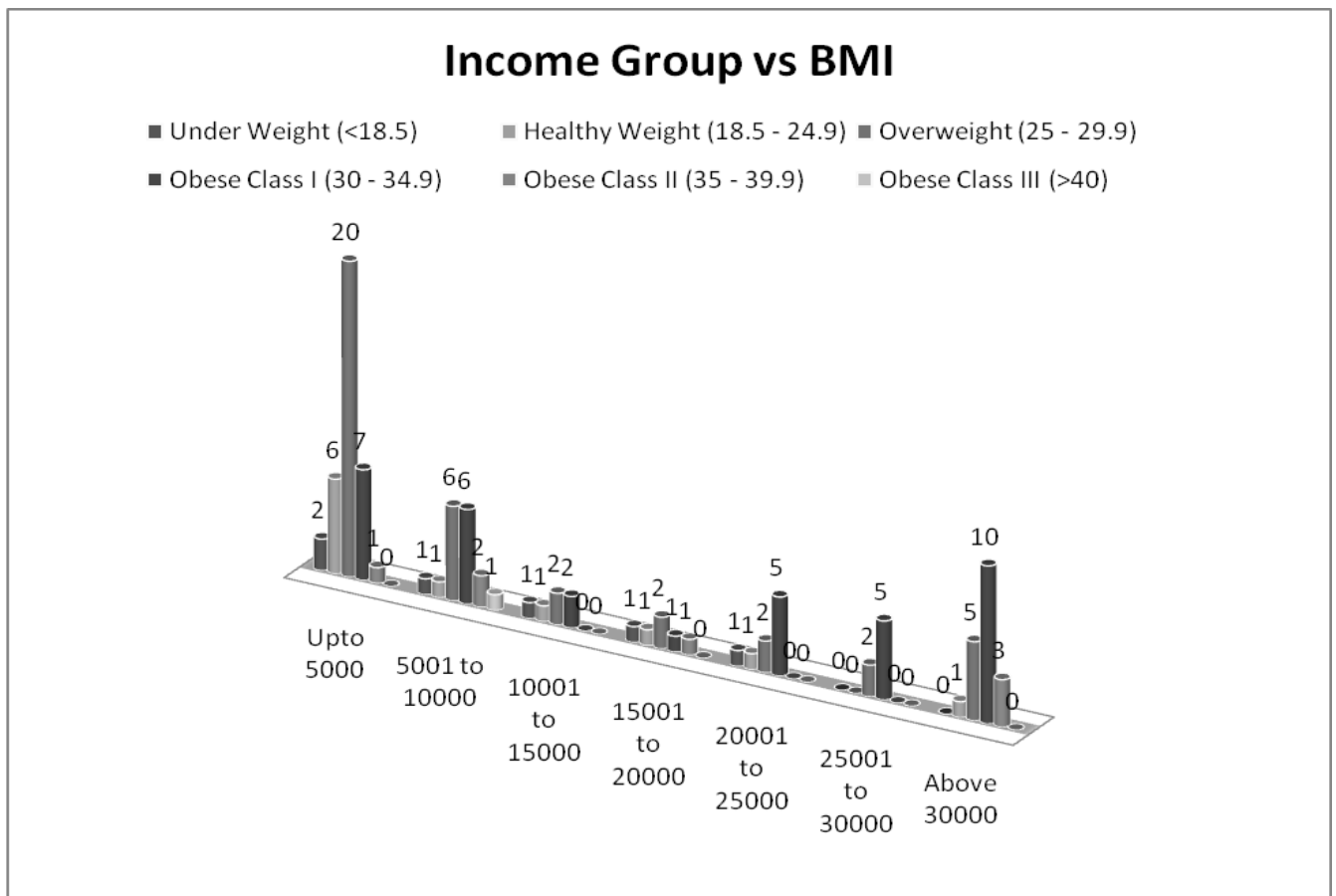
Table 1.1



INCOME_GROUP * BMI_Category Cross Tabulation

Income Group	BMI_Category						Total
	Under Weight (<18.5)	Healthy Weight (18.5 - 24.9)	Overweight (25 - 29.9)	Obese Class I (30 - 34.9)	Obese Class II (35 - 39.9)	Obese Class III (>40)	
Up to 5000	2	6	20	7	1	0	36
5001 to 10000	1	1	6	6	2	1	17
10001 to 15000	1	1	2	2	0	0	6
15001 to 20000	1	1	2	1	1	0	6
20001 to 25000	1	1	2	5	0	0	9
25001 to 30000	0	0	2	5	0	0	7
Above 30000	0	1	5	10	3	0	19
Total	6	11	39	36	7	1	100

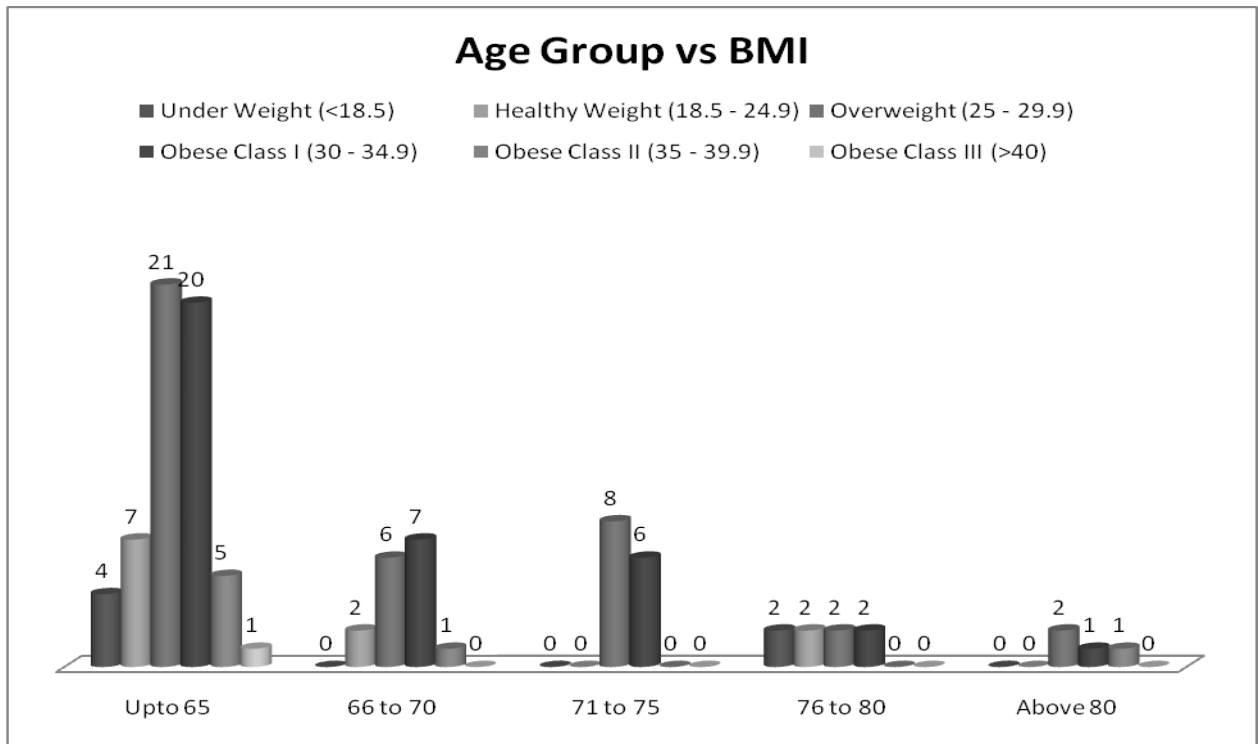
Table 1.2



Age_Group * BMI_Category Crosstabulation

Age Group	BMI_Category						Total
	Under Weight (<18.5)	Healthy Weight (18.5 - 24.9)	Overweight (25 - 29.9)	Obese Class I (30 - 34.9)	Obese Class II (35 - 39.9)	Obese Class III (>40)	
Upto 65	4	7	21	20	5	1	58
66 to 70	0	2	6	7	1	0	16
71 to 75	0	0	8	6	0	0	14
76 to 80	2	2	2	2	0	0	8
Above 80	0	0	2	1	1	0	4
Total	6	11	39	36	7	1	100

Table 1.3



Age_Group * BMI_Category * GENDER Crosstabulation

Count			BMI_Category						Total
			Under Weight (<18.5)	Healthy Weight (18.5 - 24.9)	Overweig ht (25 - 29.9)	Obese Class I (30 - 34.9)	Obese Class II (35 - 39.9)	Obese Class III (>40)	
FEMALE	Age_Group	Upto 65	4	7	14	3		1	29
		66 to 70	0	1	5	1		0	7
		71 to 75	0	0	6	1		0	7
		76 to 80	1	1	2	0		0	4
		Above 80	0	0	1	0		0	1
		Total	5	9	28	5		1	48
MALE	Age_Group	Upto 65	0	0	7	17	5		29
		66 to 70	0	1	1	6	1		9
		71 to 75	0	0	2	5	0		7
		76 to 80	1	1	0	2	0		4
		Above 80	0	0	1	1	1		3
		Total	1	2	11	31	7		52
Total	Age_Group	Upto 65	4	7	21	20	5	1	58
		66 to 70	0	2	6	7	1	0	16
		71 to 75	0	0	8	6	0	0	14
		76 to 80	2	2	2	2	0	0	8
		Above 80	0	0	2	1	1	0	4
		Total	6	11	39	36	7	1	100

Results:

As observed the effect of income on BMI of the respondents: Majority of them with income up to 5000 was overweight, they were 20 in numbers, 6 were in healthy weight, 2 were underweight, 7 respondents were in class one obese and only 1 was in class two obese category. Whether 10 respondents with the income group 30000 and above were in obese class one and 7 were in obese class two categories, no one was in underweight only 1 respondent was healthy BMI and 5 respondents were in overweight category. Income group 5001 to 10000, only one respondent was underweight BMI, 1 was healthy, 6 were in overweight BMI, 6 were in obese class and 2 were in obese class two categories. In income group 10001 to 15000, 15001 to 20000, 20001 to 25000 and 25001 to 30000, underweight BMI was 1, healthy weight BMI was 1, over weight BMI categories were 2 and 5 while in obese one they were 2, 1 and 5 and in class two obese category they were 1 and 3.

As observed the effect of age on BMI of the respondents: majority of them were overweight in the age group of 65, they were 21 in numbers, 20 were in class I obese, 5 were in class II obese, 1 was in class III obese, 4 were under weight and only 7 respondents were in healthy weight categories. In 66 to 70 age groups, 6 respondents were overweight, 7 were in class I obese category, 1 was in class II obese, only 2 were in healthy weight category and nobody was in underweight category. In age groups 71 to 75, 8 respondents were in overweight category 6 were in class I obese category and nobody was in underweight, healthy and obese class III categories. In age group 76 to 80, 2 respondents were in underweight, 2 were in healthy, 2 were in overweight and 1 was in class I and II obese categories. In age group 80 and above, only 2 respondents were overweight and 1 was in class I and class II categories, nobody was in healthy, underweight and class III categories.

As observed the BMI according to gender: total 48 females and 52 males have been observed. Total numbers of females of age groups 65 to above 80 in underweight category were 5, in healthy weight 9, in overweight category they were 28, and class I and class III obese category they were counted 5 and 1, no one was in class II obese category. Whether total number of males in the age group of 65 to above 80 were in underweight category was 1, healthy weight 2, overweight 11, class I obese 31 and in class II obese category were 7.

Conclusions:

Instrumental variable estimates yield no evidence that income affects weight or the probability of being underweight, healthy weight, overweight, or obese among elderly. The strongest conclusions one can draw from our analysis that increase in income will not increase or decrease BMI among men and women.

Among elderly, being underweight is an outcome of great interest because it is associated with significant risks for mortality and morbidity (Corrada et al., 2006).^{xvi} So we fail to detect any impact of income on the probability of being underweight.

Obesity is another risk factor for morbidity among the elderly (Heiat et al., 2001)^{xvii} and the researcher find no impact of income on BMI of the elderly people. Finally, the results provide no evidence that rising income was partly responsible for the recent rise in elderly BMI.

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