

## ASSESSMENT OF NORMAL WEIGHT IN MALES OF THE AGE GROUP OF 40-60 YEARS WITH RESPECT TO HEIGHT : A NEW FORMULA

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**Abstract :** In the present work, 3000 male human subjects were studied for their health status and endeavour was made to establish the relation between the height and weight. Male individuals between the age group of 40 to 60 years were studied; their heights were between 140-180 cm. They were grouped as Group I-weight above  $(\text{Height in cm} - 100 \text{ cm}) \times \text{kg/cm}$ , Group II-weight between Group I and Group III subjects and Group III-weight below Group I subjects at least by 15%. It was found that Group II subjects were less sufferer from disease like, diabetics, coronary heart diseases, hypertension etc. than Group I subjects, Group III subjects were also similarly less affected by diseases but they are more prone to tiredness to accustomed work than Group II subjects. So it is concluded that the weight of Group II subjects should be considered standard.

**Key words :** body weight                      height                      obesity  
diabetes                                          hypertension                      ischaemia

### INTRODUCTION

Obesity is associated with ischaemic cardiopathy (1, 2, 3), high cholesterol (4, 5) diabetes and also hypertension (6, 7, 8). Besides it is also a contributory factor of high morbidity. One third of the population in the USA is estimated to be ever-weight with associated decrease in life expectancy (10, 11, 12). It has been estimated that if a cure were found for cancer, the life expectancy would be increased by two years while if obesity would be cured the life

expectancy would be increased by four years (13). Uptil now medical scientist cannot contribute a general formula or criterion by which we can evaluate that a person has got normal weight. It is also difficult because of the diversity of the heights and difference in weight due to sex. But a predicted or desired weight is essential to define obesity and low weight in human beings. In general the animals are not becoming obese who are in nature and toil hard to procure food. They take uncooked natural food and may be less prone to obesity.

Obesity is now determined by Body Mass Index or Quetelet Index which is calculated by dividing the body weight in kilogram by height in meters square (14). It is erroneous to measure subcutaneous fat and skin fold etc. to determine or diagnose in obese (15). Similarly it is also not known who are under-weight. Besides clinical low weight also be called undernourished but what should be the actual criteria are ill defined. Now that all these methods are cumbersome and inadequate in accuracy to it is worth trying to formulate a weight formula in respect to height.

#### METHODS

Male human subjects from different offices in Calcutta were taken between the age group of forty and sixty years. The heights of these subjects were between 140-180 cm.

The weights and heights were taken ; cholesterol and blood glucose were measured by the methods described by King and Wooton (16). Besides Blood Pressure and E.C.G. were also recorded. History of tiredness to accustomed work was taken.

The subjects of the present investigation were divided into three groups; total number of subjects were 3000 with one thousand in each group.

Group I: Weight above  

$$\frac{\text{Height in cm} - 100 \text{ cm} \times \text{kg}}{\text{cm}}$$

Group II: Weight between group I and group III subjects.

Group III: Weight below group I subjects at least by 15%

#### RESULTS

Table I shows that of 1000 subjects of group I, the cholesterol level was above 250 mg% in 10.5% subjects while it was below that level in 89.5% persons. But in group II and group III subject cholesterol level above 250 mg% were in 4.5% and 2.3% subjects respectively. The post prandial blood sugar level was above 120 mg% in 12.1% subjects of group I, 5.9% subjects of group II and 6.1% subjects in group III. This result of group I is highly significant ( $P < 0.001$ ) when compared to group II and III. Again Diastolic Blood pressure was above 90 mm of Hg in 10.0% subjects of group I while it

TABLE I : Serum Cholesterol, Sugar, Blood Pressure and E.C.G. changes in different group subjects.

	<i>Cholesterol</i>	<i>Blood glucose</i> <i>Post Prandial</i>	<i>Blood pressure</i> <i>Diastolic</i>	<i>E.C.G.</i>	<i>Feeling of tiredness to</i> <i>accostomed work</i>
	Above 250 mg/dl	Above 120 mg/dl	Above 90 mm of Hg	Ischaemia	
Group I (n=1000)	10.5%	12.1%	10.0%	8.1%	51%
Group II (n=1000)	4.5%	5.9%	4.2%	5.2%	11%
Group III (n=1000)	2.3%	6.1%	4.1%	4.7%	28%

was higher in 4.2% and 4.1% subjects in group II and group III respectively. This result of group I is highly significant when compared to group II and group III ( $P < 0.001$ ). Ischaemic changes were also more in group I than in group II & III subjects. Besides the number of subjects feeling tiredness in group I, group II and group III subjects were 51.0%, 11.0% and 28.0% respectively.

### DISCUSSION

Obesity is a curse to the affluent society and it contribute several diseases only because of the over nutrition or higher weight (17, 18, 19) but upto now no actual formula is contributed by the scientists which can easily help stamp an obese. The term obesity is implied to an excess adipose tissue but meaning of excess is hard to define. Barring aesthetic considerations obesity can best be viewed as any degree of excess adiposity that imparts a health risk. But the cut off between obese and normal can only be approximated (15). The methods adopted for the measurements of obesity particularly skinfold or triceps fatfold are

source of several errors (20, 21). Present work might be a satisfactory alternative to the present day formulae. From this investigation it is obvious that in group II people, the incidence of disease is lower than group I. The results show that incidence of high cholesterol level in group I was 10.5% more; the blood glucose was higher in 12%; higher blood pressure was 10% and Ischaemia was 8% higher than those of group II while these results were slightly better in group III but these were statistically insignificant. Moreover, the group III people were less efficient than group II as 28% of them felt tired to accustomed work while the group II subject only 11% felt tired to accustomed work. So it is reasonable to surmise that the normal weight of a person should not exceed as given below : (Height in cm - 100 cm)  $\times$  kg/cm i.e. if a person has the height of 167 cm his weight should not exceed (167 cm - 100 cm)  $\times$  kg/cm or 67 kg. Above that the weight, the person will suffer from obesity and those who are less in weight by 15% of the above said formula i.e. (67  $\times$  15/100) kg or below 56.95 kg would be regarded as under-nourished or under-weight.

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