

Height, Weight and BMI among Punjabi Males

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KEY WORDS Height. BMI. Overweight. Underweight.

ABSTRACT Body Mass Index (BMI), weight and height of 1000 adult Punjabi males ranging in age from 18 to 30 yrs. were investigated during 1999 to find out the deviations in BMI towards overnutrition and undernutrition. The present sample has mean values of weight, height and BMI as 66.75 kg, 161.5 cm and 22.70, respectively. According to WHO criteria of BMI, 4.8% of the present sample is underweight as compared to 14.1% which is overweight. About 80% of the sample is well saddled within normal ranges. Tendencies of the present sample belonging to middle and higher classes even at younger ages are towards overweight. The overweight tendencies have a linkage with obesity related disorders resulting in reduced health expectancy.

INTRODUCTION

Tall and heavily built men have always been cherished as good soldiers in the armies of all times. They have been assumed to exude confidence, strength and dedication. Body weight and height have not only been considered as the indicators of social prestige, but their relationship has been used by the insurance companies to find out the relative health risks to their customers. The dawn of the new millennium has sounded alarm bells for the onset of the an epidemic of obesity. Now the incidence of obese people in the world has nearly equalled to that of the undernourished (Campbell, 2000). Body Mass Index (BMI) which is expressed as weight (kg)/height (metres)², has been used by the WHO (1995) as a criterion for thinness and overweight by providing cut-offs for each category. According to this criteria, the population can be screened to find out the proportion of normal, undernourished and obese people. In most of the adults, the body weight is maintained at a constant level in spite of the large daily variations in the food intake. This superb precision with which body weight is maintained is a pointer toward an efficient biological system which balances energy input and energy output (Friedman, 2000). An important element of the physiological system which regulates food intake and body weight by

acting on nerve cells in the brain is the hormone leptin. However, this biological system is put to stress and fails if constant overconsumption or underconsumption takes place leading to deviation in body weight. Weight and height are also good indicators of a nation's progress in socio-economic terms (Tanner, 1994).

BMI studies indicate that lower values are associated with morbidity from undernutrition (Campbell & Ulijaszek, 1994) while higher values have obesity related disorders and problems (Freidman, 2000; Kopelman, 2000; Ulijaszek, 2000). Therefore, height and weight can be used as a mirror of the standard of living of the people and also to designate them as normal, overweight and thin. Keeping in mind this importance of height and weight, a survey of a large sample of 1000 young Punjabi males has been undertaken with a view to assessing height and weight and to finding out the deviation in normal body weight in this population.

MATERIAL AND METHOD

The present cross-sectional study has been conducted on 1000 males ranging in age between 18 and 30 years inhabiting different parts of Punjab. Most of the data have been taken from colleges and universities and therefore, it is a type of cluster sampling. The subjects generally belong to middle and upper middle social strata and were measured during October and November, 1999. Stature and body mass of each subject was measured following the standard techniques (Tanner et al., 1969). Body Mass Index (BMI) has been calculated as:

$$\text{BMI} = \text{Weight (kg)} / \text{Height}^2 \text{ (metre)}$$

RESULTS

The mean values of body mass, height and BMI of the present sample are 66.75 kg, 171.5 cm and 22.70, respectively (Table 1). Table 2 provides information about Body Mass Index

Table 1: Mean, SD, SEM of height, weight and BMI of the present sample

Variable	Mean	SD	SEM
Height (cm)	171.480	6.300	0.199
Weight (kg)	66.750	8.325	0.263
BMI	22.700	9.405	0.297

Table 2: Incidence of persons according to WHO criteria

BMI	Grade	No. of subjects	% Distribution
< 16	Grade 3 Thinness	2	0.2
16 - 16.99	Grade 2 Thinness	6	0.6
17 - 18.49	Grade 1 Thinness	40	4.0
18.5 - 24.99	Normal	799	79.9
25 - 29.99	Grade 1 Overweight	141	14.1
30 - 39.99	Grade 2 Overweight	12	1.2
≥ 40	Grade 3 Overweight	-	-

Table 3: Number and percentage distribution of BMI according to age

Age (yrs)	BMI < 20		BMI 20-24.99		BMI 25 - 29.99		BMI ≥ 30	
	N	%	N	%	N	%	N	%
< 18	20	58.82	9	26.47	4	11.76	1	2.94
19 - 21	67	21.61	200	64.51	42	13.54	1	0.32
22 - 24	35	7.79	354	78.61	55	12.24	6	1.33
25 - 27	13	7.3	130	72.47	34	19.10	2	1.12
28 - 30	3	12.5	16	66.66	4	16.66	1	4.16
> 30	-	-	1	33.33	1	33.33	1	33.33

(BMI) in Punjabi males and its grading according to WHO (1995) classification. According to the WHO classification, the BMI values between 18.50 to 24.99 are considered normal and in the present study, 79.90% of the population is in this category. Only 4.8% of the population can be designated as thin (BMI < 18.50). Those having a BMI ≥ 25.00 constitute 15.3%, out of which 14.1% are in Grade 1 overweight and 1.2% in Grade 2 overweight categories.

Realising a large range of the ages of the subjects (from 18-30 years), a 3 year age interval has been made for further analysis. Table 3 displays a clear trend of shift of the BMI towards higher ranges with the advancing age. At the age of 18 years, 58.85% of the subjects fall in the range of BMI < 20. However, from 19 years onwards, majority of the sample exhibit values of BMI in the normal range of 20-24.99.

DISCUSSION

About eighty per cent of the present popula-

tion is placed within the normal standards of BMI as given by WHO (1995). It is reasonable to assume that the relationship between weight and height of Punjabi males is well within the defined limits which may be termed as healthy. According to James et al. (1988) and Ferro-Luzzi et al. (1992), the degrees of underweight for a given height have been defined as chronic energy deficiency (CED) on the basis of BMI and cut-offs at 18.5, 17 and 16 have been recommended for defining mild, moderate and severe chronic energy deficiency, respectively. Accordingly, the present sample has only 4% of the subjects falling in mild CED whereas for those in moderate and severe CED categories, the proportion is negligible. On the other hand, the BMI values above 25 have been attributed to overnu-

trition and are termed as overweight and obese. The present sample has a relatively greater tendency to be on the overweight side in comparison to be on the underweight side. A clear indication of a shift in the BMI towards overweight grade 1 and grade 2 of the present sample with increase in age between 18 and 30 years reinforces the viewpoint of overweight tendencies in this group. Andhra Pradesh males studied by Reddy (1998) have shown a BMI less than 20 for the age group of 20-30 years which indicates that they have lower BMI than that of the present population which is more towards the heavier side than the former.

There are indications that the present Punjabi population is advancing towards being overweight even if the evidence from 18-30 years in the BMI shift is considered. Overweight as designated by BMI generally has increased prevalence of obesity related disorders including hypertension, coronary heart disease, diabetes (Willett et al., 1999). Punjab state has been passing through the stage of economic transition as

a result of Green Revolution and industrialization whose functional consequences are a shift from dietary deficit to that of dietary excess (especially in the middle and upper strata of society). Obesity related health problems are going to take the form of an epidemic if awareness and intervention are not properly introduced in our society. This does not, however, underplay the importance of undernutrition which is so rampant in the lower strata of society. The deviations on both sides of BMI lead to a greater load of morbidity leading to a reduced health expectancy which are taxing to the families, society and the whole nation in terms of money, care, manpower and other resources.

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