

BLOOD PRESSURE AND BODY COMPOSITION IN ADULT BAZIGAR FEMALES OF PUNJAB

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Abstract: In the present study, an attempt has been made to study the relationship between blood pressure, body fat and fat free mass in 150 adult Bazigar females of Punjab. Significant correlations were observed between blood pressure and total body fat, but no significant correlation between fat free mass and any measure of blood pressure in Bazigar females.

Keywords: Blood pressure; Body fat; Fat free mass; Bazigar, Punjab.

Introduction

In adults, blood pressure is recognized as being clearly associated with variables of body composition (Stamler et al. 1975, 1978, Siervogel et al. 1982, Sandin et al. 1986). Few previous studies of the determinants of blood pressure have been based on the measures of body composition that allow a separation of total body mass into total body fat and fat free mass (Johnson et al. 1975; Steine et al. 1975; Sandin et al. 1986, 1990, Sidhu and Kumari 1992). But in a study which related to age adjusted systolic blood pressure to weight, fatness and a trunk versus leg fat patterning index, neither fatness nor fat patterning were significant, once weight had entered the regression equation (Stallone et al. 1982). In India, systematic studies on the association of body composition with blood pressure are meagre. The aim of the present study is to report the relationship of total body fat and fat free mass with blood pressure among the Bazigar females of Punjab. Bazigar is a Persian word, meaning "he who does Bazi" or any sort of game or play, but it is applied only to jugglers and acrobats. Bazigars are a gipsy tribe of vagrant habits. Most of them are settled in the vicinity of large villages or towns. As the name indicates, the Bazigars are acrobats by profession and tradition. They used to make their living by display and show of acrobatic exercises. But now, many of them have abandoned acrobatics and work as agricultural and industrial workers. The females of this community also work with their man folk.

Material and Methods

The present study is based on a cross-sectional sample of 150 Bazigar females of Punjab ranging in age from 20-60 years. All subjects were drawn from the district Faridkot, Ludhiana, Gurdaspur, Patiala and Amritsar of Punjab state.

The blood pressure levels were measured after anthropometric measurements to put the subject at ease. Three consecutive readings of blood pressure were taken with mercury sphygmomanometer for both systolic and diastolic pressures and their mean values were used in subsequent analysis. For blood pressure measurements, the recommendations of Rose and Blackburn (1968) were followed. Pulse pressure (systolic blood pressure – diastolic blood

pressure) was calculated using the method given by Siervogel et al. (1982). All anthropometric measurements were taken by following the standard procedure (Weiner and Lourie 1969).

For body fat estimation, body density has been calculated using equations of Durnin and Womersley (1974). Body density is then converted into percent body fat by applying the equation of Brožek et al. (1963). Total body fat has been computed by the following equation:

$$\text{Fat (kg)} = \frac{\text{Percent body fat} \times \text{Body weight (kg)}}{100}$$

Fat free mass has been estimated as suggested by Durnin and Rahaman (1967.)

Fat free mass = Body weight – Body fat

Results and Discussion

Table 1 presents the means and standard deviations of some blood pressure variables and body composition variables in adult Bazigar females of Punjab. The effect of age on blood pressure has been identified by earlier investigations (Stamler et al. 1975, Sambasivaro and Veerraju 1981, Siervogel et al. 1982, Sandin et al. 1990, Sidhu and Kumari 1992). This was also observed in Bazigar females of the present study as based on the coefficient of determination (R^2). But in the present sample as based on R^2 , there is little age effect on various parameters of blood pressure and body composition as compared to Bania females of Punjab (Sidhu and Kumari 1992).

Table 1. Age adjusted variables, the proportion of total variation accounted for by the age and partial correlation between body composition variables and blood pressure in Bazigar females of Punjab

Variables	Mean	S.D.	Total variation accounted for by age R^2	Partical correlation	
				TBF	FFM
SBP	103.4	8.5	0.09	0.24*	0.09
DBP	64.9	6.9	0.16	0.29*	0.03
PP	38.8	7.2	0.02	0.05	0.08
TBF	12.9	4.1	0.05		
FFM	32.6	5.0	0.09		

SBP = Systolic blood pressure; DBP = Diastolic blood pressure; PP = Pulse pressure;

R^2 = Coefficient of determination; TBF = Total body fat; FFM = Fat free mass;

* $p < 0.01$.

The above mentioned age effect is removed before determining the relationship between body composition and blood pressure. Partial correlation between blood pressure and body composition variables was calculated. Females of Bazigar community are mainly engaged in hard manual work and generally undernourished due to their lower socio-economic status, that is why weight gain in middle years is quite less in this tribal community (Sidhu & Kumari 1992) than the economically prosperous populations. There is an evidence that the increased body weight in adults is due to an increase in the amount of fat (Forbes 1978, Sidhu and Sidhu

1987). In the present study, there is a positive relationship ($p < 0.01$) between total body fat and systolic and diastolic blood pressure, but there is no association between the fat free mass and blood pressure. Thus, the association of blood pressure with body weight could be due to the increased total body fat (Siervogel et al. 1982, Sidhu and Kumari 1992). This shows that the increased fatness rather than the increased body mass may be responsible for the association between the blood pressure and the weight.

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