



Identification of Obesity Measures to Predict Blood Pressure of Farmers

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Abstract

Blood Pressure has emerged as 3rd global risk factor for health and even for life, according to WHO report and India that is known as country of villages and country of farmers is going to be capital of hypokinetic diseases that include diabetes, hypertension, osteoarthritis. Objective of this study was to find out the relationship of various obesity measures with blood pressure of farmers. For this purpose fifty farmers of 30-50 years from different villages of Varanasi district were selected randomly. BMI, WC and WHR were selected as measures of obesity and also predictor variables for this study while blood pressure was chosen as criterion variables. Standard and reliable measures were used to measure the variables and to obtain the data. To achieve the objectives of present study and to test the hypothesis descriptive statistics, Pearson product moment correlation, multiple correlation and linear regression was used at 0.05 level of significance. Results revealed that BMI and WC are significantly correlated with BP, while joint correlation of predictor variables is .566. On basis of findings it is concluded BMI is most influenced measure in relation to blood pressure in cases of farmers. Finally on basis of obtained result it can be conclude that obesity can be a cause of elevated blood pressure in relation to farmers.

Key Words: BMI, Waist Circumference (WC), Waist Hip Ratio (WHR).

1. Introduction:

Since last decades there have been several professional changes taken place in Indian society, like industrialization, economic development, technical development and many more. These changes lead to change in life style, eating habit, nature of work and many more. These professional changes also caused to incensement in level of competition in professional life and also in general life. Modernization and technical development have also affected the working system and reduce the effort of individuals and making them inactive, which leads to storage of extra fat which cause to several health related complication like obesity, diabetes, elevated blood pressure and other non-communicable disease. One of the most significant detrimental effects of modern-day technology has been an increase in chronic conditions which are related to a lack of physical activity, like hypertension, heart diseases, chronic low back pain and obesity.

Obesity can occur at any age. It is one of the most deterrent health hazards in the world, affecting more than 30% of the global population. Obesity is perhaps the most prevalent form of malnutrition in modern world, both among adult and children. It is significantly correlated with various diseases, which are responsible for increased morbidity and mortality. Obesity is defined either by increased waist circumference (WC), waist-height ratio (WHtR), conicity index (CI) waist-hip ratio (WHR) and/or body mass index (BMI). A 10 years study has shown that people who carry their excess weight around the middle are at higher risk of high blood pressure. The rate of blood pressure is increasing in Indians. Records say the overall rate of blood pressure has been decreased 2.7mmhg in women's while it increased 2.4mmhg in Indian women's. Where the overall rate in men's has decreased to 2.2mmhg while it increased 2.3mmhg in Indian men's.

Modern need has arisen to keep the nation healthy and fit. The well founded health base is an asset to the country and any profession that need to improve their health, may be given proper support and knowledge. In the present study researcher has tried to find out the relationship between selected anthropometric variables with the blood pressure of farmers.

2. Methodology:

For this purpose fifty farmers of 30-50 years from different villages of Varanasi district were selected randomly. BMI, WC and WHR were selected as measures of obesity and also predictor variables for this study while blood pressure was chosen as criterion variables. Standard and reliable measures were used to measure the variables and to obtain the data. To achieve the objectives of present study and to test the hypothesis descriptive statistics, Pearson product moment correlation, multiple correlation and linear regression was used at 0.05 level of significance.

3. Findings of the Study:

Table - I

Descriptive Statistics of Farmers in Relation to Blood Pressure, Body Mass Index, Waist Circumference and Waist Hip Ratio

Variables	N	Mean	SD	Range	Min.	Max.	S. Err.
HEIGHT	50	1.698	.066	.28	1.56	1.84	.009
WEIGHT	50	68.450	6.689	32.50	51.00	83.50	.945
BMI	50	23.687	1.062	6.31	20.96	27.27	.150
WC	50	82.728	3.437	21.80	78.20	100.00	.486
HC	50	89.578	2.759	17.80	82.20	100.00	.390
WHR	50	.923	.025	.16	.89	1.05	.003
SYSTOLIC BP	50	122.50	6.135	27.00	110.00	137.00	.867
DIASTOLIC BP	50	82.48	3.072	15.00	75.00	90.00	.434
AVERAGE BP	50	95.820	3.523	19.00	86.67	105.67	.498

Table - II

Relationship of Selected Independent Variables (Body Mass Index, Waist Circumference and Waist Hip Ratio) with Dependent Variable (Blood Pressure) of Farmers

Independent Variable	Criterion Variable	Correlation Coefficient
Body Mass Index	Blood Pressure	.562*
Waist Circumference		.451*
Waist Hip Ratio		.205

*r required for significant at 0.05 level of significance and df (48)

*r 0.05(48) = .273

Table: II revealed that there was significant relation between Body Mass Index to Blood Pressure and Waist Circumference to Blood Pressure. Where obtained values .562 and .451 were greater than tabulated value .273 at 0.05(48). This means that Body Mass Index and Waist Circumference were significantly related with Blood Pressure while Waist Hip Ratio had no significant relation with Blood Pressure in relation to farmers.

Table – III

Standardized Coefficient Table for Predictor Variables of Farmers

Model		Standardized Coefficients		
		Beta	T	Sig.
1	(Constant)	47.813	3.437	.001
	Body Mass Index	.572	2.595	.013
	Waist Circumference	-.093	-.390	.698
	Waist Hip Ratio	.096	.511	.612

The beta value revealed that Body Mass Index had most significant influence on Blood Pressure. Beta value of Body Mass Index revealed that change of one standard deviation in the Body Mass Index cause change of 0.572 standard deviation in the criterion variable (Blood Pressure).

Table - IV
Regression Model for Farmers

R	R Square	Adjusted R Square	Std. Error of the Estimate
.566	.320	.276	2.998
Predictors: Waist Hip Ratio (WHR), Body Mass Index (BMI), Waist Circumference (WC)			
Blood Pressure = 47.813 + .572 (BMI) - .093 (WC) + .096 (WHR)			

This regression model revealed that selected predictor variables were significantly related with Blood Pressure where R represents the total correlation between all the predictor variables and the criterion variable. Thus the obtained multiple correlation value was found significant $0.566 > 0.273$ at $0.05(46)$.

R^2 represent the total amount of variance accounted for in the criterion variable (Blood Pressure) by the predictor variables. Thus, the amount of variance was 32 % for farmers in relation to Blood Pressure.

Adjusted R^2 is a reduced value for R square which represent the actual variance in criterion variables due to predictors. Therefore the actual variance was 27.6 % in Blood Pressure of farmers.

Table – V
ANOVA Table for Regression Model of Farmers

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	194.837	3	64.946	7.22	.00
	Residual	413.565	46	8.991		
	Total	608.402	49			

F value obtained from this ANOVA table revealed that our regression model is significant or not for prediction. Obtained F value 7.22 was significant at 0.05 level of significance, which means that regression model cause variance in criterion variable (Blood Pressure) for farmers.

4. Conclusion and Discussion:

According to standardized coefficient table only Body Mass Index cause variance in Blood Pressure of farmers, while Waist Circumference and Waist Hip Ratio is not causing variance in Blood Pressure, but correlation revealed that Body Mass Index, Waist Circumference and Waist Hip Ratio was found significantly correlated with Blood Pressure. This result may cause by some other confounders who were not consider in this study but try to control by scholar. Obesity was consider as factor for Blood Pressure in this study but it is well known fact that there are numerous factors along with obesity who have substantial effect on Blood Pressure i. e heredity, stress, inactiveness, too salty food and such others. Basically Blood Pressure is too dangerous as well as to soothing in care and treatment.

Beck revealed in his study that strong influence of Body Mass Index and Waist Circumference on the Blood Pressure levels. These two indexes are thus characterized as important predictors, whose screening may help prevent the consequences, such as the higher risk of obesity and hypertension. While Kaur told that in his study men showed progressive rise in systolic hypertension beyond fifth decade of life. Bivariate analysis showed significant relationship of hypertension with age, sedentary occupation, body mass index (Body Mass Index), diet, ischemic heart disease, and smoking. Multivariate analysis revealed age and Body Mass Index as risk factors, and non-vegetarian diet as protective factor with respect to hypertension. According to Liu the appropriate cut-off values of Body Mass Index, waist circumference and Waist Hip Ratio to predict the presence of multiple metabolic risk factors were 22.85 and 23.30 kg/m² in males and females, respectively.

5. Discussion of Findings:

Yalcin et al. Conducted a study in which they revealed that waist circumference measurements above the cut-off points suggesting a high cardiovascular risk. Waist circumference was found to be an independent risk factor for blood pressure in men according to linear regression models developed by Yalcin et al. they also suggest that in primary care waist circumference should be a useful tool screening for and following android obesity in patients with elevated blood pressure.

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