VARIATION OF BMI AS PER PRAKRITI IN DIABETIC AND HYPERTENSIVE INDIVIDUALS BY WALKING

Sushma Tiwari¹, Sangeeta Gehlot²
¹Department of Kriya Sharir, State Ayurvedic College & Hospital, Handia, Allahabad, Uttar Pradesh, India
²Department of Kriya Sharir, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India

ABSTRACT

Study purpose: To assess the variation of BMI after 3 months of physical exercise (walking) as per Prakriti (constitution) in hypertensive and diabetic individuals. Aim: To explore control of BMI by exercise as per Prakriti (Constitution) in hypertensive and diabetic individuals. Setting: Isotonic exercises have been performed by the patients from O.P.D. of Banaras Hindu University and some patients of Mummukshu bhawan Kashi, Varanasi. Contestants: one hundred sixty seven patients completed 3 months isotonic exercise assessment. Interventions: Short-term exercise therapy (3 months). Measurements: Variations in BMI after walking as per Prakriti in hypertensive and diabetic individuals. Results: After 3 months of exercise, there were statistically significant decrease in all BMI scores for hypertensive exercise (HTNE) group (p < 0.01 HS) in Vata-Pitta Prakriti individuals, while increase in BMI was found in HTNC (Hypertensive control group) (p < 0.01 HS). No significant change was noted in diabetic exercise (DME) individuals (p>0.05) in the all three Prakriti while increased BMI was observed in DMC (Diabetic control) group in Vata-Pitta individuals p<0.001 (HS). Conclusion: Short-term exercise therapy has shown encouraging results in terms of decrease in BMI for hypertensive and individuals while no significant result was observed in diabetic exercise group.

Key words: Exercise, Hypertension, Diabetes, BMI.

INTRODUCTION

The aim of this study was to control body mass index through physical exercise (walking) as per Prakriti of individuals. The BMI is the actual body weight divided by the height squared (kg/m2). This index provides acceptable assess of obesity in people who are not hypertrophied athletes. So, it is the most important tool to access the obesity. Obesity increases the causation of many abnormalities like high cholesterol level, high blood pressure, metabolic syndrome, coronary heart disease, heart failure, diabites or high blood sugar level (insulin resistance or pre-diabetes), cancer of breast, uterus, ovaries, colon, prostate, kidney and pancreas, Gallstones and other gallbladder disorders. Walking is an important measure to control the obesity. Ayurveda as the science of living, which is based on the principles of nature, focuses on the balance of the physiological functions to maintain perfect health and health of healthy person. The doshas like vata, pitta and kapha represents the variations, improper interaction of sense and sense objects; unwhole-
some acts performed by body and mind are all responsible for the disturbance of doshas. Ahara (diet) and vihara (physical exercise) play a crucial role towards maintaining the body in a state of perfect health. Qualitative and quantitative, unchangeable preponderance of dosha from birth to death is called as Prakriti, a deciding factor during prognosis and treatment of diseases. Prakriti is a state which is formed at the time of fertilization due to renown of Dosha.[1],[2]

**Methodology:**

**Range of cases:**
All these cases of Hypertension, Diabetes mellitus individuals were registered from Kayachikitsa O.P.D., IMS, BHU, for the duration of Jan 2009 to Jan 2011 and some individuals were enrolled from the Kashi Mumukshu, Bhavan, Assi, Varanasi. The selection was random irrespective of sex, occupation and socioeconomic deliberation. All the patients belonged to age group of 35 to 65 years. One follow up has been assessed during the research work i.e. initially, after 3 months.

In the present work effect of physical exercise (walking) has been observed among diabetic and hypertensive individuals through BMI as per Prakriti (constitution). Isotonic exercise was prescribed for Diabetic and hypertensive patients for 3 months. Our study group divided into four groups

1. Diabetic control (DMC)
2. Diabetic exercise (DME)
3. Hypertensive control (HTNC)
4. Hypertensive exercise (HTNE))

**INCLUSION CRITERIA FOR DIABETIC AND HYPERTENSIVE INDIVIDUALS:**

In all the groups, subjects aged from 35 years to 65 years were included. Diabetic patients who did not perform breathing exercise, Patients suffering from Diabetes mellitus on the basis of ADA classification of blood sugar level and fasting blood sugar level (F) above 110 and post prandial (PP) above 140 mg/dl. Diabetic exercise groups were considered as those performed breathing exercise and blood sugar level as above. Hypertensive Patients who did not perform exercise and had high normal, mild and moderate essential hypertension cases without any complication and blood pressure under high normal range systolic above 129 mm Hg and diastolic above 84 mm Hg. Hypertensive Patients carried out exercise.[3],[4],[5]

**EXCLUSION CRITERIA FOR DIABETIC AND HYPERTENSIVE INDIVIDUALS:**

In all the groups, individuals aged below 35 years and above 65 years were excluded. Diabetic Control group: Patients suffering from any secondary diseases, diabetes mellitus with complication like diabetic nephropathy, retinopathy, neuropathy etc and diabetic exercise group who had unable to perform exercise. Mild / moderate hypertension cases with complications such as cerebro-vascular diseases, coronary artery diseases, renal diseases, cardiac heart failure, cardiomyopathy, and any degree of heart blocks, pre-clampsia /eclampsia. Secondary hypertension like Cardiac, renal or hormonal i.e. pheochromocytoma etc.

**OBSERVATIONS AND RESULT:**

Table number 1: Incidence of Gender as per group

<table>
<thead>
<tr>
<th>SEX</th>
<th>Group</th>
<th>HTNC</th>
<th>HTNE</th>
<th>DMC</th>
<th>DME</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td>21</td>
<td>34</td>
<td>16</td>
<td>28</td>
<td>99</td>
<td>59.3</td>
</tr>
</tbody>
</table>
The present work comprised a study of 167 cases. Out of these, 83 were diabetic (44 males, 39 females) and 84 patients (55 male, 29 females) were hypertensive. This distribution can be seen from Table no. 1.

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Sex</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table no 2: Number of cases as per Prakriti

Present study evidenced that, the individuals of VP Prakriti in HTNC and DMC group demonstrated increase in BMI which is statistically highly significant and HTNE group showed decrease in BMI which was highly significant (p<0.01) A statistically significant (p<0.05) increase was observed in VK Prakriti individuals in HTNC group. Statistically significant (p<0.05) decrease was observed in VK individuals in HTNE group individuals. (Table No. 3)

DISCUSSION

Aim of our study is to control the BMI by life style modification through walking and if the BMI is 30-35 reduces
life anticipation by two to four years. While severe obesity BMI >40 reduces life expectancy by 10 year. So, it is prime desire of an individual to control BMI in present era. Increase in BMI is also risk factor for many other diseases like hypertension, heart disease, diabetes and obesity. There is a strong correlation between changing lifestyle factors and increase in hypertension and diabetes in India. Male hypertensive and male diabetic having VP Prakritis were more in our study this might be due Vata prakriti is worst Prakriti as per disease concern among all three Prakriti and having low compliance for medication follow-up. Maximum number diseases are characterised by Vata dosha in our classic text books. Pitta Prakriti individuals are very much prone to metabolic disorder and it might be due to increased metabolism as Pitta is secondary Dosha. Vata–Pitta Prakriti having predominance of raja guna which initiates the individual for action and more patients visited to O.P.D. Male hypertensive were more in our study. Some previous studies has suggested that method of action responsible for the gender differences in blood pressure control are not very clear, there is significant evidence that androgens, such as testosterone, Play an important role in gender-associated differences in blood pressure regulation. Other previous studies have described that higher plasma rennin activities in postmenopausal women than in premenopausal women but that Plasma rennin activity is still higher in men than in women of similar age.6,7,8 This study is very much consistent with our study because the male hypertensive is more in our study. Hypertensive and Diabetic individuals were belonged to Vata Pitta Prakriti. This trend may be indicating that the Vata is main Dosha responsible for Hypertension and Pitta dosha is mainly responsible for hormonal disorder and some previous study has proved the same.9 VP individual hypertensive patients have been shown decreased BMI after exercise. Connection investigates between BMI and Blood Pressure showed important positive correlations between them. While the mean systolic and diastolic blood pressures among different BMI categories were assessed, it was found that mean systolic and diastolic blood pressure increased with increasing BMI from lowest BMI to the highest BMI category. Both systolic and diastolic BP increased with increase in BMI level. Some prior studies have conducted among Punjabi girls of Delhi, a significant correlation of BMI with blood pressure was also found.10 Positive relations between BMI and BP have also been reported in other Indian populations.11,12 The present study showed BMI as strong analyst of blood pressure and diabetes mellitus. Kumanyika et al. have shown body mass index to be even more strongly related than race to blood pressure and that its effect is similar across surveys in the United State and within sex and racial groups.13 A number of investigators have concluded that among many relevant factors, body mass index is one of the most important predictors of blood pressure. Although customs and genetics have long been known to persuade the distribution of blood pressure levels within a population, these factors seem to have not as much of bearing on the difference in blood pressure levels between populations.14 Maximum number of patients belonged to male in diabetic group. This study was not consistent with other because the maximum numbers of studies have shown high prevalence of female diabetic worldwide and having high BMI.15,16

CONCLUSIONS
Significant decrease was observed in BMI in hypertensive individuals having *VP prakriti* after walking. So, anthropometric parameter has shown the strong correlations with the *prakriti* and exercise. *VP* prakriti individuals are very prone for various diseases. Decrease in BMI was observed but not found statistically significant in Diabetic individuals after walking. Lastly, we can conclude that our study is very effective in BMI management through exercise which is very important risk factor for Diabetic and obese individuals. So, we have to adopt walking in our regular routine to control many life threaten diseases and for health wellbeing. Exercise is very effective in hypertensive individuals to control BMI.

REFERENCES


12. K. Tandon, Obesity, its distribution pattern and health implications among Khatri population, Ph.D. thesis, De-


CORRESPONDING AUTHOR

Dr. Sushma Tiwari
Department of Kriya Sharir,
State Ayurvedic College & Hospital,
Handia, Allahabad, Uttar Pradesh, India

Email: sushmatiwari5@gmail.com

Source of support: Nil
Conflict of interest: None Declared