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Evaluation of Stress and its Correlation with Risk Factors of Hypertension among Medical Students of FH Medical College

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ABSTRACT

Background: Obesity is a worldwide health problem. It is associated with excessive fat accumulation in the body to the extent that health and well being are adversely affected. With changing food habits and sedentary lifestyles, the prevalence of obesity has increased.[3] In the 21stcentury, stress is a well known factor affecting health of an individual. Stress is one factor which may influence behaviors and health especially when an individual faces challenges that surpass his or her coping skills.[4] Aims and Objects: To find out prevalence of hypertension and environmental risk factor for hypertension in population under study. **Methods:** The present study was done on 300 medical students. All anthropometric parameters were taken and hypertensive risk factors were measured. **Results:** BMI, WHR were deranged in 29.66%, 21.33%, subjects respectively. Obesity was significantly higher in 29.66% students. Students with the low levels and medium levels of stress were 56% and 38.6% respectively. **Conclusion:** High fat intake and sedentary life style were positively associated with high blood pressure among non professional students.

Keywords: Anthropometric, Hypertension, Stress.

INTRODUCTION

Anthropometric has been an important tool for identify risk of many diseases. It has gained more importance due to high rise in life style related disorders. Various anthropometric indices like BMI, WHR, WHtR have been found to be predictors for many diseases like hypertension (HTN), diabetes, coronary artery diseases (CAD) in various populations.[2] Urbanization and technological advances have led to dramatic changes in the life style of many Indians who are embracing a modern and often mare sedentary daily life. Technological advances have shrunken employment opportunities particularly among young Indians adding stress caused by strong competition for employment.[3] A number of environmental and genetic factors are associated with hypertension such as age, sex, body size, obesity, change in dietary habits and family history of hypertension, physical activity, and increased stress.[4]

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Hypertension is emerging as a major health problem. The prevalence of hypertension has increased in urban communities as well as in rural people.[5] The prevalence of hypertension in India is reported as ranging from 10 to 30.9%.[6] Adult hypertension prevalence has risen dramatically over the past three decades from 5 per cent to between 20-40 per cent in urban areas and 12-17 per cent in rural areas.[7] Waist circumference has also been recommended as a simple and practical measure for identifying overweight and obesity and Waist/ hip ratio is preferred measure of obesity for predicting cardiovascular disease.[8]

The relationships between the BMI and morbidity and mortality risks may also be modified by behavioral patterns, such as smoking, alcohol consumption, and engagement in physical activity or exercise. Regular physical exercise has lower risks of hypertension, cardiovascular disease and overall mortality, while smokers face higher risks for these outcomes.[9] Stress in numerous contexts may affect the risk for obesity through biobehavioral processes. Acute stress associated with diet and physical activity.[10]

Stress reactions vary from person to person. Many of life's demands such as work, relationships, financial problems, health problems could cause stress. Stress can affect how one feels, thinks,

behaves. Psychological stress may show up as headache, muscular ache, sleeping difficulties, and eating disorders, loss of appetite, lack of concentration, memory impairment, fatigue, restlessness, agitation or depression.[11]

Aims and objects

To find out the correlation between risk factor of hypertension and evaluation of stress in medical students.

MATERIALS AND METHODS

The present study was done on 300 medical students of age group 18-25 years belonging to rural and urban areas pursuing medical course at FH medical college. Students aged below 18 years and above 25 years and those who have already diagnosed heart disease, chronic diseases of major organ and endocrine disorder were excluded. History pertaining to stress was taken according questionnaire.[14]

The anthropometric measurements of the subjects were taken with the standard instruments with standard techniques. After taking all parameters body mass index (BMI),[15,16] Waist Hip Ratio (WHR),[16] Waist- Height Ratio (WHtR) were calculated.[12] The measurements were statistically analyzed (arithmetic mean and standard deviation were calculated) and tabulated. The systolic and diastolic blood pressure and environmental risk factor for hypertension were plotted against body mass index (BMI), Waist Hip Ratio (WHR), Waist-Height Ratio (WHtR) and Waist circumference (WC) to find out correlation and significance.

RESULTS

Results of the present study are presented in tabulated forms and figures in the following pages.

Table 1: Correlation between Stress level and BMI

(Total N=300)	BMI Mean ± SD	SEM	p Value
Good Control (56%)	22.787±3.96	0.306	0.001
Mild (38.67%)	23.599±3.65	0.338	0.001
Moderate (05.33%)	24.599±3.75	0.937	0.001

[Table 1] predicts the correlations between stress level and BMI. In present study we found that those who have mild and moderate stress they become over weight. Hence the BMI is directly proportional to the stress levels.

Table 2: Correlation between Stress level and Diastolic Blood Pressure

(Total N=300)	DBP Mean±SD	SEM	p Value
Good Control (56%)	80.5±8.09	0.625	0.001
Mild (38.67%)	82.22±7.17	0.666	0.001
Moderate (05.33%)	81.38±9.05	2.263	0.001

[Table 2 & 3] predicts the correlations between stress level and Blood pressure. In present study we found 38.67 % subjects have mild stress level and they come in pre hypertensive range.

Table 3: Correlation between Stress level and Systolic Blood Pressure

(Total N=300)	SBP Mean±SD	SEM	p Value
Good Control (56%)	122.87±10.93	0.843	0.001
Mild (38.67%)	124.90±9.35	0.868	0.001
Moderate (05.33%)	123.13±9.05	2.26	0.001

In the present study 56% students were found under good control level of stress and more levels of stress were seen in 5.33% When compared BMI and pre hypertensive students according to stress levels, the difference was not found to be statistically significant.

Table 4: Correlation coefficient of anthropometric variables with blood pressure in study population.

	SBP (r value)	DBP (r value)
BMI	0.3468**	0.2886**
WC	0.3565**	0.2926**
WHR	0.2773**	0.2472**
WHtR	0.3435**	0.2858**

Table 5: Correlation of deranged anthropometric indices in the study population

Variables	N	%	Mean	SD	p Value
≥ 25 BMI (kg/m²)	89	29.66	27.71	2.43	0.0001*
< 25 BMI (kg/m²)	211	70.33	21.08	2.32	
WHR (≥ 0.89)	64	21.33	0.93	0.03	0.0001*
WHR (< 0.89)	236	78.66	0.84	0.03	

DISCUSSION

Cardiovascular diseases (CVD) continue to be the major cause of mortality representing about 30 per cent of all deaths worldwide. Lifestyle diseases like hypertension, diabetes mellitus and overweight/obesity are the major risk factors for development of CVD. With rapid economic development and increasing westernization of lifestyle in the past few decades prevalence of these diseases has reached alarming proportions among Indians in recent years.[13]

Average SBP of the present study was significantly ($p < 0.001$) higher than the SBP of study done by Mahmood et al,[6] Deshmukh et al,[12] and AI-Ajlan.[1] On the other hand in the present study, average SBP was significantly lower than the study done by Mahmood et al on rural population.[5] The difference may be due to that study done by Mahmood et al was on labour population,[6] which belongs to low socioeconomic strata. On comparing DBP, it was significantly higher than the previous studies.[1,6,5,12]

Stress was prevalent in 5.33% of study population in the present study. More number (56%) of students had low level of stress although medium

levels of stress were found in 38.67%. However the difference was not significant. Medium level of stress has been reported among university of Jordan,[17] while a study from Pakistan has reported 71.6% medical students having moderate stress. The high prevalence of stress among Pakistani students is due to the fact that stress level has been measured just one month before examinations. While in the present study students were asked to fill stress questionnaire in the beginning of their academic year or during vacation.[18]

Body mass index was found most effected parameter. High waist hip ratio (21.33%) and obesity (29.66%) was more prevalent in students.

CONCLUSION

- ✓ The prevalence of mile stress was 38.67% and moderate stress was 5.33%.
- ✓ Obesity was found to be significantly higher in 29.66% students.
- ✓ High fat intake and sedentary life style were positively associated with high blood pressure among non professional students.
- ✓ High salt intake was strongly associated with blood pressure in professional students.
- ✓ Therefore, it is suggested that counseling session for students regarding healthy diet, good physical activity, harmful effects of smoking and stress management should be carried out routinely in college campus. Anthropometric indices and pre-hypertension should be taken as indicators for the imparting hypertension.

Summary

Hypertension is an important worldwide public health challenge because of its high frequency and concomitant risks of cardiovascular. Various anthropometric indices like BMI, WHR, and WHtR have been found to be predictors for many diseases like hypertension (HTN), diabetes, coronary artery diseases (CAD) in various populations. Technological advances have shrunken employment opportunities particularly among young Indians adding stress caused by strong competition for employment.

The present study was done on 300 medical students of age group 18-25 years belonging to rural and urban areas pursuing professional courses in FH Medical College. The measurements adopted according to anthropometric standards were height, weight, waist circumference, hip circumference, blood pressure and used to calculate indices like body mass index, waist hip ratio and waist height ratio. Subjects were classified as according to indices and blood pressure as per latest guideline.

BMI, WHR were deranged in 29.66%, 21.33%, subjects respectively. Obesity was significantly higher in 29.66% students. Students with the low levels and medium levels of stress were 56% and 38.6% respectively. Strong association of faulty dietary history, sedentary life style and genetic history was seen with blood pressure. High BMI was found to be stronger predictor of pre hypertension. High fat intake, high salt intake and sedentary life style were positively associated with high blood pressure. Whereas history of smoking, genetic association and stress levels were higher in all the students with high blood pressure.

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