In the present work an attempt has been made to study the relationship between BMI, blood pressure and personality. Body Mass Index, blood pressure and 16PF were measured for 200 participants. Mean age of the sample was 28.75 years. The obtained scores were analyzed by applying Pearson Product moment method of correlation by IBM SPSS Statistics version 21. Results of the study showed that there were positive as well as negative correlations between the somatic constitution and personality, systolic and diastolic blood pressure also had positive and significant correlations.

1. INTRODUCTION

Obesity is a global issue of epidemic proportion. The World Health Organization [WHO] (2011) reports in 2008, 500 million adults were obese and by 2015 this number is anticipated to reach 700 million. Obesity is defined as a body mass index over 30 or “excessive fat accumulation” (WHO, 2011). Obesity reduces an individual’s life expectancy between 5 to 20 years (Olshansky et al., 2005) and is as deleterious as heavy smoking (Neovis, Sundstron, & Rasmussen, 2009). Moreover, it significantly increases a person’s risk of developing coronary heart disease, stroke, type 2 diabetes mellitus, and cancer (Center for Disease Control, 2008). Obesity is attributable to over 110,000 deaths...
annually in the United States (Flegal, Graubard, Williamson, & Gail, 2005). Today the obesity threatens the health of more than half the citizens of the richest nation, in the world. The idea that personality is co-related with body build was introduced in the 1920’s and further refined in 1940’s. Three body types were described; endomorph (pyknic), mesomorph (athletic) and ectomorph (aesthetic) (Sheldon, Stevens and Tucker, 1941). The term endomorph denoted around, soft body frequently associated with an affectionate. The athletic mesomorph was one of the average sizes with the muscular built who preferred physical activity, courage ruthless and indifferences in pain. Finally ectomorph was a tall, thin fragile person etc. This system of body “summarize individuals- correlating personality and body build- is not universally accepted. The component of a person’s body structure determines expectations about the person’s abilities and greatly influences what the person can do.

A person’s physical dimension affects emotions, intellectual functioning, social experience and even spirituality. Physical fitness is associated with an improved self-image positive attitude, self-confidence, a decreased number of periods of depression, greater ability to relate to other people, increased assertiveness and an increased number of spiritual experiences (Beck, Rawalins and Williams, 1984).

Several indexes of overweight and obesity are based on weight and height. A person’s relative weight is determined by their actual weight by their ideal weight would have a relative weight of 1.0. A person with a relative weight of 1.17 would be 17% overweight. A person with a relative weight of 0.90 would be 10% below ideal weight for height (Bray 1984). Research has clearly demonstrated that obesity is associated with high cholesterol level and the development of hypertension, coronary heart diseases, diabetes and cancer (AHA, 2000, Calle et al 1999, Chan et al 1994, Ford, 1999, Jeffery, 1991-92 Must et al 1999).

Being obese presents disadvantages to the person’s health and social relationship in childhood (Bray, 1984). Excessive under or overweight is hazardous to health, equally hazardous is weight cycling, a pattern of repeated weight gain and loss. An ongoing study of Harvard alumni has reported that men who maintained a stabled weight had significantly lower death rates from all causes (including cardio vascular diseases) then did alumni who had either gained as a significant amount of weight over the years (Lee Hsichs and Paffebarger, 1995).

Various ratios of weight to height have also been studied. The most commonly used ratio is the body mass index (BMI), also known as the quetulet index. BMI is derived from a mathematical formula based on equals weight in kilograms divided by height in meters squared (BMI= Kg./M2). BMI lower than 18.5 is considered underweight, where 18.5-24.9 as normal from 25.0-29.9 as overweight 30.0 and above obese (Kaplan, Sallis and Patterson, 1993). High BMI leads to many physiological and psychological problems such as body pain, high blood pressure, laziness, anxiety, distress etc. High blood pressure is very much linked with high BMI. (Pronk, Tand and Connor, 1999) reported that high
body mass index (BMI), low physical fitness and great willingness to communicate were directly and significantly associated with higher health care costs. Research on personality and obesity reveals a complex relationship. Obese individuals tend to be more impulsive, addictive, anxious, and novelty seeking than healthy weight counterparts even after controlling for treatment seeking behavior and binge eating disorder (Davis et al., 2008; Sullivan, Cloninger, Przybeck, & Klein, 2007). Treatment seeking behavior is associated with increased cooperativeness and reward dependence, while non-treatment seeking individuals tend to score lower on measures of persistence and self-directedness (Sullivan et al., 2007). Novelty seeking is key in intervention outcome and is negatively associated with successful weight loss after 22 weeks of treatment (Sullivan et al., 2007). A period of two years of successful weight loss is associated with changes in personality traits with significant reductions in measures of anxiety (Ryden et al., 2004). Although numerous statistically significant personality differences have been identified between obese and non-obese populations, effects sizes are small to moderate and do not suggest an obese personality profile (Ryden et al., 2003). Rather, individual personality traits are related to a dynamic combination of weight status, treatment seeking behavior, co morbidities, and intervention success (Ryden et al., 2003; Ryden, et al., 2004),(Valenti,etal 2011) .Personality characteristics are assumed to underlie health behaviors and thus a variety of health outcomes (Larsen Geenen etal, 2004). (Kakizaki, Kuriyama, Satoetal, 2008) found that in men and women extroversion and psychoticism had an inverse association. Lie had an inverse association with overweight in men. In men and women, only extraversion had an inverse association with underweight and neuroticism had a quality association with underweight. Systolic as well as diastolic blood pressure also influenced by personality. high blood pressure (BP) is lead to a psycho physiological disorder i.e. hypertension and the main problem linked with it is its risk potential. Since in most cases no symptoms are noticeable over long periods, the disease often is well established before treatment is initiated. It therefore, is also known as the silent killer as people may go on for years without knowing its presence organically. Irvine, Garner, Logan (1989) found that personality factors are not a fundamental characteristic of hypertension but reflect the influence of exposure to medical attention or knowledge of hypertension. Personality characteristics such as anxiety and anger have long been associated with essential hypertension. (Waal-Manning, Knight, Speras and Jaulin,1986) found that blood pressure was moderately correlated with age and Quetelet Index, a measure of obesity. (Kohler,Speier U and Richter, R.,1994) reported that emotionality traits showed any correlation with blood pressure value score of the whole sample. In the light of above indications body mass index seems to be much associated with personality. Having inconsistent findings, the present study is an attempt to study the effect of somatic constitution on personality. It is hypothesized that deviant BMI would be associated with personality. Deviance would also affect the perceived weight status and its management.
2. METHODOLOGY

2.1 Sample: The sample comprised of 200 educated adults who were selected mainly from Rohtak and Mahindergarh districts of Haryana on the basis of non-random purposive and volunteered sampling procedure. Mean age of the sample was 28.75 years.

2.2 Tools: The following tools were used:-

- **Body mass index:** A measure of physique: Height and weight of the subject was taken for the purpose of the BMI calculation standard metric scale and weighing machine was used. The index was scaled as popularly and accepted notion (Levinthal, 1990)
  
  \[
  \text{BMI} = \frac{\text{Weight (Kg.)}}{\text{Height}^2}
  \]

- **16 personality factor:** - The sixteen- personality factor questionnaire (16 PE) is an objective score able test advised by basic research in psychology to give the most complete coverage of personality possible in a brief time. The 16 PF questionnaires was developed by Cattell, Eber and Talsuka (1970) and published by Institution for Personality and Ability Testing (TPAT). This test was designed for use with individuals aged sixteen and above. This test measures 16 personality factors. It consists of 187 items. This test requires 45-60 minutes for administration. In Indian conditions S.D. Kapoor (1982) had adopted the test.

2.3 Procedure: First of all BMI of the subjects was calculated and noted down. The whole sample was divided into three groups on the basis of BMI. 28 participants fell in overweight group, 120 participants in an obese group, and 52 participants in over obese group. 16 PF was given to each of the participant one by one. Scoring was done according to the rules given in manual. Raw scores and sten scores were calculated. Sten scores were converted into the second order factors and these were treated as final scores. Finally, four second ordered standard (Sten) scores were obtained: (i) introverted vs. extroverted, (ii) Low anxiety Vs. High anxiety, (iii) tender minded emotionally Vs. Tough poise, and (iv) Subduedness Vs. Independence.

<table>
<thead>
<tr>
<th>Variables</th>
<th>BMI</th>
<th>Introverted/ Extroverted</th>
<th>Low Anxiety/ High Anxiety</th>
<th>Tender Minded Emotionality/ Tough Poise</th>
<th>Subdudeness/ Independence</th>
<th>Systolic B.P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introverted/ Extroverted</td>
<td>-.05</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Low anxiety /high anxiety</td>
<td>.25**</td>
<td>.19**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tender minded emotionality / tough poise</td>
<td>.10</td>
<td>.30**</td>
<td>-.28**</td>
<td></td>
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</tr>
</tbody>
</table>

TABLE-1: Calculation Of BMI
3. RESULT AND DISCUSSION

To fulfill the main objective of the study Pearson product moment correlation method was employed between BMI and second order factors of personality i.e. Extroversion, Anxiety, Tough poise and Independence and between blood pressure i.e. systolic and diastolic. It was found that there were significant correlation between BMI, personality and blood pressure at .01 level of significance and .05 level of significance showing in table no. 1. BMI is correlated with low/high anxiety and systolic blood pressure at .01 level of significance. Extroverted/introverted personality score was positively and significantly correlated with other personality variables but also negatively significant with blood pressure at .01 level of significance. Low /high anxiety subjects were negatively and significantly correlated with emotionality and blood pressure at .01 level of significance. Tender/tough poise personality subjects were significantly correlated with systolic blood pressure at .05 level of significance. Subdudeness/independent personality subjects score were not found to be correlated with any variables of the study at any level of significance. Systolic blood pressure scores were found significant at .01 level of significance with diastolic blood pressure. Jaifor, Chaturvedi and Pepps 2006 documented that weight gained in adulthood is itself a risk factor of the development of hypertension. It was also found that there were significant groups on anxiety at .05 level of significance. Hillman, Dam and Huang (2010) support the present, they found that trait anxiety and depressive symptoms were positively associated with BMI and percentage body fat Petry, Pietrzak and Wagner (2008) reported that BMI was significantly associated with most mood, anxiety and personality disorder Zhao, Ford Dhingra etc at (2009) found that women who were either overweight obese were significantly more likely than women with abnormal BMI to have depression and anxiety.

Mebrahtu and Usman, etal (2006) reported that BMI did not have a significant effect on BP in lean people (BMI<19) and in those with high BMI, but positively correlated to SBP in those with normal BMI. BMI and age appear to play a synergistic role increasing a strong association with BP. Dua and Bhker, etal(2014) found that there was a significant positive correlation between BMI, fat percentage and blood pressure both SBP as well as DBP. Odds ratio showed that overweight/obese subjects were more likely to have hypertension than those with normal BMI.

In the end, it is concluded that somatic constitution (bodyweight) does or does not imply psychological and physiological ill effects.

4. REFERENCES
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