Covariates of Stress and BMI in males of Uttarakhand, India

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Abstract: Stress and Body Mass Index (BMI) have grave psychophysiological impacts, some of which are reported to be either more or specifically in males, like, hypertension, male infertility, etc. Hence, it is necessary to explore the influence of variables on stress and BMI in males. The present study was conducted with the objective of assessing the effect of identified variables on stress and BMI status in males of Uttarakhand. A sample of 57 males was randomly taken from five areas of Uttarakhand. Tools employed were PSSI-sss and self made questionnaire. Anthropometric details were also collected. Influence of the socio-demographic variables was revealed in the results. Further studies in this arena having large sample size are required.

Keywords: Socio-demographic variable, males, BMI, stress & Uttarakhand

INTRODUCTION

The awareness regarding the adverse impacts of both chronic and acute stress states, like, changes in the serum level of many hormones, which can be to the extent of altering the clinical status preexisting endocrine disorders [1] and high body mass indices (BMI), like, vulnerability for hypertension [2] have been an immense contributor in the conduction of research investigations on various aspects of this arena.

Gender has been one conspicuous issue of stress related researches. Sources of stress [3, 4] have been explored in both males and females. Studies have highlighted the gender differences in the perception of the levels of stress and psychophysiological reactions towards it [5,6]. Stress has been revealed to be one of the important factors associated with male reproductive health [7, 8]. In a study on medical students it was found that more males reported stress than females and also sleep quality was better in females than males [9]. Males reported more stress than females [10] and rates of hypertension were more in males than females but the difference was not significant [11].

Specifically, focusing on individuals belonging to Uttarakhand state of India, it was found that chronic energy deficient (CED) were more in *Bhotia* males than in females [12].This study focused on the BMI of only one tribal group of Uttarakhand. Considering the stress and health problems of males, there seems a paucity of studies in Uttarakhand which unveil the variables influencing their stress and BMI. Hence, the present study was conducted with the objective of assessing the effect of identified variables on stress and BMI status in males of Uttarakhand.

METHODOLOGY

The present study is an exploratory research. The study employs the following methodology:

Sampling design:

A sample of 57 men were randomly taken from age range 22 to 55 years from Dehradun, Haldwani, Kashipur, Pithoragarh and Pauri Garhwal areas of Uttarakhand state of India. Men suffering from any form of physical disability and incomplete questionnaires were excluded from sample. This reduced the likelihood of obtaining variations in the causes of stress enabling an adequate interpretation of the data.

Tools administered
1) **Personal Stress Source Inventory (PSSI-sss)**: It is developed by Singh et al. [13]. It consists of 35 items and each item had three possible answer options, namely, seldom, sometimes and frequently. The scores describing level of stress are, namely, mild (0-30), moderate (31- 79) and high (80 and above). The test-retest reliability of the tool is 0.79 and 0.68 is the concurrent validity.
2) **Nutritional status**: A self made questionnaire in which information related to variables under study and anthropometric details viz. height,

weight were collected for the individuals of Uttarakhand and BMI was calculated as weight (kg)/ height (m2). The classification was done according to Subramanian and Kawachi [14].

Statistical Design

Mean $\pm$ SD were employed to describe the data. t-test was applied to assess significant difference.

RESULTS AND DISCUSSIONS

The effect of four socio-demographic variables viz. age, marital status, working status and family size on BMI and stress were studied. The results are presented in Table 1.

Table1. Covariates of BMI and stress in males of Uttarakhand

	N	BMI (kg/m^2)	Stress
Age			
22-40	45	23.58 $\pm$3.16	45.87$\pm$ 13.04
41-55	12	25.45$\pm$ 3.47	40.58$\pm$ 18.12
		NS	NS
Marital status			
Unmarried	28	23.43$\pm$2.7	44.11$\pm$13.45
Married	29	24.49$\pm$3.72	45.38$\pm$15.18
		NS	NS
Working status			
Unemployed	16	23.13$\pm$ 3.12	40.19$\pm$ 9.93
Employed	41	24.30$\pm$3.33	46.54$\pm$ 15.34
		NS	NS
Family size			
$\leq$ 4	40	24$\pm$ 3.12	42.65$\pm$ 13.73
$\geq$ 5	17	23.91$\pm$3.75	49.71$\pm$ 14.6
		NS	NS

NS: Non Significant

Age as covariate of BMI and stress

On the basis of age the total sample was divided into two categories young adults (22-40 years) and older adults (41-55 years). The younger adults showed lower BMI and higher stress whereas older adults showed high BMI and less stress. The older adults were overweight (25.45kg/m^2) compared to younger adults who had normal BMI (23.58kg/m^2). BMI is positively associated with age in males, probably due to increase in body weight with increase in age [15, 16]. Both the age groups were moderately stressed. Similar results were observed in CRPF personnel, where the stress was not affected significantly by age and the lower age group had slightly higher amount of stress than their elder counterparts [17].

Marital status as covariate of BMI and stress

Marital status was defined as presently married and never married. Equal distribution of married and unmarried males was seen. Unmarried males displayed lower stress (44.11) and lower BMI (23.43kg/m^2) than married males, who had stress score of 45.38 and BMI of 24.49 kg/m^2, though the difference was not statistically significant. Similar finding was reported in Nigerian university lecturers and Indian employees,

where stress was experienced equally, irrespective of marital status [18,19]. Married males had higher BMI than unmarried males indicating risk of being overweight. Marriage is associated with higher BMI than single state [15, 20].

Working status as covariate of BMI and stress

Working status was categorized as employed and unemployed. 41 males were employed, that is, they had a fix monthly earning and 16 males were unemployed. The employed males exhibited higher stress (46.54) and BMI (24.3kg/m^2) compared to unemployed males who had lower stress (40.19) and BMI (23.13 kg/m^2), though the difference was not significant. A non significant difference in BMI was seen in males between employed and unemployed group [21].

Family size as covariate of BMI and stress

The sample was segregated into two classes, on the basis of family size- those who had four or less family members as small family and those who had 5 or more family members as large family. The males with large family size experienced greater stress and had lesser BMI than the males with small family size.

CONCLUSION:

Nutritional and psychological health is affected by wide spectrum of causative and conducive factors. Socio-demographic covariate like age, marital status, working status and family size may influence the physiological and psychological health. Based on the findings of present study, it was observed that younger, married, unemployed males with larger family size had lower BMI whereas older, married, employed males were at higher risk of being overweight. Notable stress was perceived by younger, married, employed males with larger family size. However, the authors feel that a larger sample size may be required to show the significant association of sociodemographic covariates with BMI and stress in males.

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