

# Prevalence of Stress and its Association with Body Weight among the Medical Students of Jorhat Medical College and Hospital, Jorhat

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## Abstract

**Introduction:** Medical students undergo tremendous stress during various stages of the medical education. Psychosocial stress has been implicated as a risk factor for high blood pressure, cardiovascular disease, and even cancerous conditions. Stress may lead to changes in dietary habit that may lead to weight change.

**Aim and Objectives:** This study was carried out to determine the prevalence of perceived stress among medical students and to observe any possible association between the levels of stress and (a) gender, (b) body mass index (BMI).

**Methods:** The questionnaire consisted of 10 questions were used to measure the stress (perceived stress scale). The completed form was analyzed to obtain perceived stress score. Higher the score index, higher will be the level of stress. Weight and height were measured by standard techniques.

**Result:** The prevalence of highly stressed students in our study is 36.2% and that of very highly stressed students is 39.1%. For simplicity, if we combine highly and very highly stressed level as stressed and average and low level as nonstressed students, then overall prevalence of stress will be 75.3% in the study. In this study, we have not found any significant difference in prevalence of stress among male and female. The prevalence rate of obese (03.6%) and overweight (15.9%) is not very high. But found a strong correlation between psychological stress and body weight.

**Conclusion:** We can conclude that prevalence rate of stress is very high among the medical students of Jorhat medical college but without any significant difference between male and female. The prevalence rate of obese and overweight is not very high but there is a strong correlation between stress and BMI, greater the psychosocial stress more is the body weight.

**Key words:** Body mass index, Medical students, Obese, Overweight, Psychosocial stress, Stress

## INTRODUCTION

It is usually observed that medical students undergo tremendous stress during various stages of the medical education. It characterized many psychological changes in students.<sup>1</sup> High levels of stress may have a negative effect on physical and mental health of the medical students. This can lead to mental distress and has a negative effect

on attentive functioning and learning<sup>2</sup> psychosocial stress has been implicated as a risk factor for high blood pressure, cardiovascular disease, and cancer.<sup>1-7</sup> The association between stress and weight gain is less clear. Stress may lead to changes in dietary habit that lead to weight change with various effects related to sex,<sup>8-10</sup> body mass index (BMI)<sup>11</sup> in response to stress.<sup>12,13</sup> These factors may cause some people to gain more weight under stressful circumstances while others may gain less weight or even lose weight when stressed.

Study of Firth in three British universities in 1986 showed that the prevalence of stress was 31.2%.<sup>3</sup> Study of Sherina *et al.*<sup>4</sup> and Saipanish<sup>5</sup> showed that the prevalence of stress was 41.9% and 61.4% in a Malaysian and Thai medical school, respectively. Study of Assadi *et al.* showed that the

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**Month of Submission :** 12-2016  
**Month of Peer Review :** 01-2017  
**Month of Acceptance :** 01-2017  
**Month of Publishing :** 02-2017

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prevalence of psychiatric disorders among Iranian medical students was 44%. Medical school stress probably may later lead to mental health problems but students rarely ask for help for their problems. Dahlin *et al.* showed that the prevalence of depressive symptoms among Swedish students was 12.9% and a total of 2.7% of students had made suicidal attempts.<sup>2</sup> It is important for medical educators to pay attention and know the prevalence and causes of students' distress, which not only affects their health but also their academic achievement and future career. However, such studies are less done in Jorhat, Assam. Hence, this study was carried out to determine the prevalence of perceived stress among medical students and to observe its association with gender, obesity.

### Aim and Objectives

This study was carried out to determine the prevalence of perceived stress among medical students and to observe any possible association between the levels of stress and (a) gender, (b) BMI.

## MATERIALS AND METHODS

This study was conducted in the Department of Physiology of Jorhat Medical College, Jorhat, Assam.

The participants were interviewed and information regarding age, sex, exercise profile, and sleeping hours were collected using questionnaire.

A written informed consent was obtained from all the participants who responded to the questionnaire survey. The study protocol was approved by the institutional ethics committee before the start of the study.

A total of 138 medical students of first to final year MBBS were selected randomly for this study. The students who are already diagnosed as having some psychological ailments and under medication were excluded from this study.

The questionnaire consisted of 10 questions were used to measure the stress (perceived stress scale). The completed form was analyzed to obtain perceived stress score. Higher the score index, higher will be the level of stress.<sup>6</sup>

Weight and height were measured by standard techniques. Weight was measured using normal weighing scale with no shoes. Height was recorded using a measuring tape with the individual standing straight next to the wall with the heels, buttocks, shoulders, and occiput touching the wall without shoes. BMI was calculated using the formula weight (kg)/height<sup>2</sup> (m<sup>2</sup>) BMI <18.5 was considered as underweight, <25 was considered normal, 25-29.9 was overweight and 30 or above obese.<sup>7</sup>

Statistical analysis-SPSS Version 16 was used for all data processing and analysis. Independent sample *t*-test was done for comparison of two variables and correlation coefficient was calculated to see the presence of significant correlation.

## RESULTS AND OBSERVATIONS

Total 138 medical students were examined. Out of these 74 (54.3%) were female and 62 (45.7%) were male. The prevalence of high and very highly stressed students are 50 (36.2%) and 54 (39.1%) respectively. Out of these highly stressed students, 26 (52%) were female and 24 (48%) were male. Again out of the highly stressed students 28 (51.9%) were female and 26 (48.1%) were male. This is shown in Table 1. However, independent sample *t*-test has shown that there is no significant difference of stress level in male and female. This is shown in Table 2.

Table 3 shows that in our study only 03.6% (5) students were obese and only 15.9% (22) students were overweight. Most of the students (71.7%) were of normal body weight. We have tried to correlate stress and BMI and found that there is a strong correlation between stress and BMI, which is shown in Table 4.

## DISCUSSION

The prevalence of highly stressed students in our study is 36.2% and that of very highly stressed students is 39.1%. For simplicity, if we combine highly and very highly stressed level as stressed and average and low level as nonstressed students, then overall prevalence of stress will be 75.3% in the study, which is higher than a Thai study (61.4%),<sup>5</sup> a study in Egypt (43.7%),<sup>8</sup> or a Malaysian study (41.9%)<sup>4</sup> and a British study (31.2%).<sup>3</sup> This could be either due to the different instruments used in other studies or it could be a real difference.

In this study, we have not found any significant difference in prevalence of stress among male and female. Other studies have also shown that the gender differences in

**Table 1: Distribution of students according to sex and also in different categories of stress level**

Parameters	Sex		Total
	Female	Male	
Stress			
Average	19	11	30 (21.7)
High	26 (52)	24 (48)	50 (36.2)
Low	2	2	4 (2.9)
Very high	28 (51.9)	26 (48.1)	54 (39.1)
Total	75 (54.3)	63 (45.7)	138

**Table 2: Independent sample t-test**

Parameters	Levene's test for equality of variances		t-test for equality of means						
	Frequency	Significant	t	df	Significant (two-tailed)	Mean difference	Standard error difference	95% confidence interval of the difference	
								Lower	Upper
Stress									
Equal variances assumed	0.042	0.839	-0.468	136	0.640	-0.394	0.842	-2.059	1.270
Equal variances not assumed			-0.468	131.448	0.641	-0.394	0.842	-2.061	1.272

**Table 3: Distribution of students according to sex and also in different levels of BMI**

Parameters	Sex		Total
	Female	Male	
BMI			
Normal	53	46	99 (71.7)
Obese	5	0	5 (03.6)
Over WT	9	13	22 (15.9)
Under WT	8	4	12 (08.9)
Total	75	63	138

BMI: Body mass index

**Table 4: The correlation between stress and BMI**

Correlations	BMI 2	Stress 2
BMI 2		
Pearson correlation	1	0.007
Significant (two-tailed)		0.939
n	139	138
Stress 2		
Pearson correlation	0.007	1
Significant (two-tailed)	0.939	
n	138	138

BMI: Body mass index

specific stress symptoms and overall prevalence or mean scores of stress were scarce and did not turn out to be a significant factor in reporting of stress.<sup>9,10</sup>

Several studies have demonstrated heterogeneity in eating behaviors in response to stress; some people eat more when stressed while others eat less.<sup>11-13</sup> In our study, the prevalence rate of obese (03.6%) and overweight (15.9%) is not very high and may be due to health consciousness of the students or due to use of the well-equipped gym of the college. However, we have found a strong correlation between psychological stress and body weight, greater the psychosocial stress more is the body weight.

## CONCLUSION

We can conclude that prevalence rate of stress is very high among the medical students of Jorhat medical college but without any significant difference between male and female. The prevalence rate of obese and overweight is not very high but there is a strong correlation between stress and BMI.

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**How to cite this article:** Goswami B. Prevalence of Stress and its Association with Body Weight Among the Medical Students of Jorhat Medical College and Hospital, Jorhat. *Int J Sci Stud* 2017;4(11):1-3.

**Source of Support:** Nil, **Conflict of Interest:** None declared.