

PERCEIVED STRESS AMONG THE 1ST YEAR MBBS STUDENTS AND IT'S EFFECT ON HEART RATE AND BLOOD PRESSURE

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ABSTRACT

Background: The environment in medical colleges being quite stressful, it definitely exerts a negative effect on the academic performance, physical health, and psychological wellbeing of the students who are supposedly going to be the pillars of the future healthcare system. Stress in young adults acting for several years might affect the cardiovascular and autonomic nervous system and result in high blood pressure, sympatho-vagal imbalance, sudden cardiac death etc. Therefore, early detection and intervention to stress may prevent and minimize the ill effects of stress on the cardiovascular health of such students. The current study was conducted among 127 no of students from phase 1 MBBS (2024-25) of Jorhat Medical College & Hospital, Jorhat, Assam to evaluate the prevalence, levels of stress and to find out how stress affects their heart rate and blood pressure.

INTRODUCTION

Medical profession is one of the most sought after professional courses in the present time being highly valued by our society. Entering the medical college is possible only after clearing the competitive NEET examination which is very tough and after getting into a medical college, the life gets tougher as the course itself is very strenuous which demands lot of effort.

The environment in medical colleges being quite stressful, it definitely exerts a negative effect on the academic performance, physical health, and psychological wellbeing of the students who are supposedly going to be the pillars of the future healthcare system.

Several studies from India and many other countries spanning different continents have reported high levels of stress among medical students from varied sociocultural and economic backgrounds.^[1-9] Various studies have even reported a high level of depressive and anxiety symptoms among medical students.^[10-11] Stress in young adults acting for several years might affect the cardiovascular and autonomic nervous system and result in high blood pressure, sympatho-vagal imbalance, sudden cardiac death etc.

Although cardiac arrest was more prevalent among the older population, it has found its way among apparently healthy young adults. Rising incidences

of sudden cardiac death among the healthy, physically fit young adults raise alarm regarding the science behind it. The global incidence of sudden cardiac death among young active population is 1-2 deaths per 1,00,000 persons years.^[12]

Therefore, early detection and intervention to stress may prevent and minimize the ill effects of stress on the cardiovascular health of such students. Also, as of now, such type of studies being rare in North-east India, we decided to carry out this study.

The current study has been conceptualized to evaluate the prevalence, levels of stress causing stress among 1st year MBBS students of Government medical college of Assam.

Aim and Objectives: This study has been undertaken with the following objectives:

1. To determine the Perceived Stress Score of the 1st year MBBS students of Jorhat Medical College & Hospital
2. To determine the prevalence of stress among them
3. To evaluate the extent and levels of severity of stress
4. To evaluate it's relation with heart rate and the blood pressure

MATERIALS AND METHODS

Ethical clearance: Obtained from IEC, JMCH

Institute: Department of Physiology, Jorhat Medical College & Hospital, Assam

Study Design: A cross sectional survey

Sample Size: 127

Inclusion Criteria

1. Males and females
2. Medical students studying in 1st year of MBBS

Exclusion Criteria: Those who refused to be a part of our study (for any reason)

Description of the questionnaire: According to Sheldon Cohen's original theory of perceived stress, the stressor is not omnipresent life event that occurs to individual, but rather cognitively mediated emotional response to the target event. Accordingly S. Cohen in 1983 developed the Perceived Stress Scale for measuring the perception of stress which have 10 questionnaire, each with total 5 different responses:^[13]

0=never

1=almost never

2=sometimes

3=fairly often

4=very often

Summated total score is used for grading:

0-13= low stress

14-26=moderate stress

27-40=high stress

Data Collection: Students were briefed about the purpose of study and the questionnaire. Informed written consent was obtained from all participating students. The questionnaire was circulated among the students in an offline format. They were instructed to fill up the responses. Respondents were asked to rate each event in themselves during the recent weeks by choosing from five responses: '_causing no stress at all', '_causing mild stress', '_causing moderate stress', '_causing high stress' and '_causing severe stress'. The items were scored by assigning a value of zero to four for each of the respective responses.

RESULTS

“p” value <0.05 is taken as significant for showing any relationship.

For showing correlationship Pearson's correlation coefficient is taken between the parameters (“r” value between -1 to +1)

Table 1: Showing Gender distribution of the medical students

Overall prevalence gender wise	%
Male	63
Female	37

Table 2: Showing the prevalence of stress by PSS score

PSS score	No	Percentage of prevalence
Low (0-13)	3	2.36 %
Moderate (14-26)	94	74.01%
High (27-40)	30	23.62%

Table 3: Showing the relation of PSS score with Mean Heart rate

PSS score	HR	P value
0-13	91	0.05*
14-26	78	
27-40	78	

*Significant

Table 4: Showing the relation of PSS with Mean Systolic blood pressure

PSS score	SBP	P value
0-13	115	0.0001*
14-26	114	
27-40	121	

*Highly significant

Table 5: Showing the relation of PSS with Mean Diastolic blood pressure

PSS score	DBP	P value
0-13	73	0.45*
14-26	75	
27-40	77	

*Not Significant

Table 6: Showing correlation of PSS with Mean HR

PSS	HR	Pearson's correlation
0-40	82.3	-0.15*

*Very weak negative correlation

Table 7: Showing correlation of PSS with MeanSBP

PSS	SBP	Pearson's correlation
0-40	116.6	0.26*

*Weak positive correlation

Table 8: Showing correlation of PSS with DBP

PSS	Mean DBP	Pearson's correlation
0-40	75	0.12*

*Very weak positive correlation

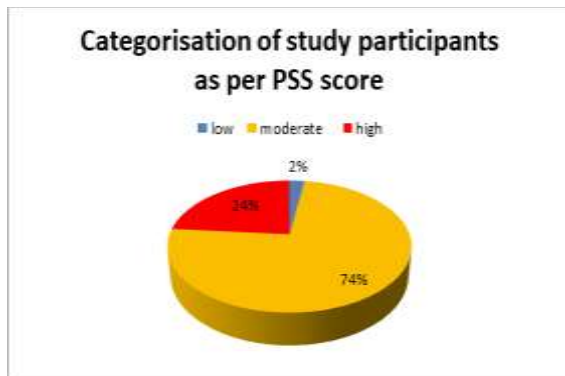


Figure 1: Showing percentage of prevalence of stress among the study population as per grading of PSS score

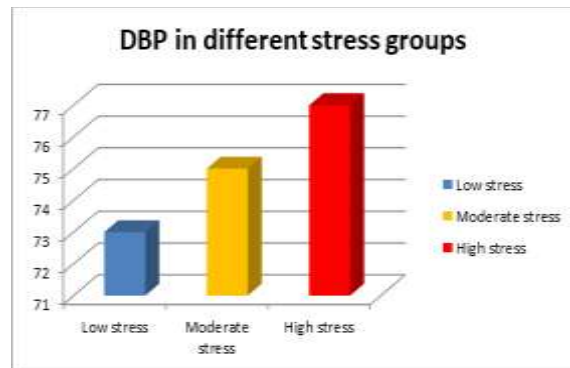


Figure 4: Showing difference in the mean DBP among different stress levels

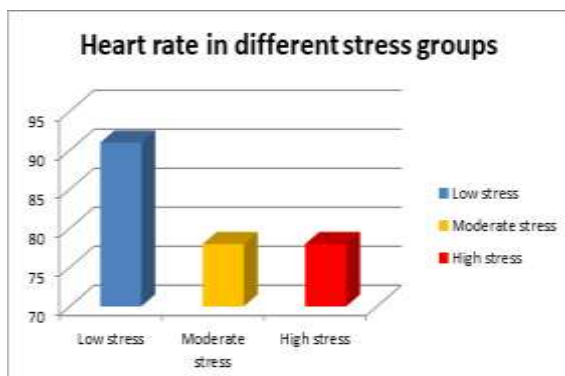


Figure 2: Showing difference in the mean HR among different stress levels

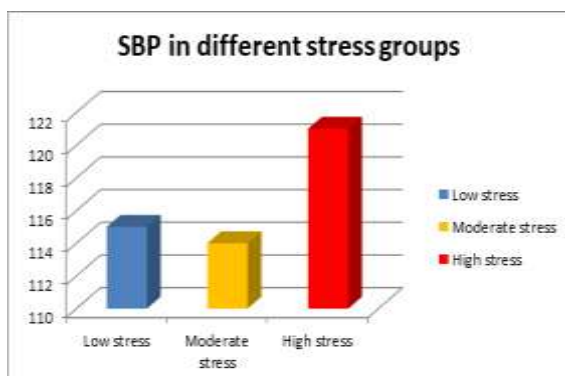


Figure 3: Showing difference in the mean SBP among different stress levels

DISCUSSION

From our study it has been seen that the male and female distribution are 63% and 37% respectively. Regarding the grading of stress the prevalence of low level stress is 2.36%, moderate level of stress is 74.01% and high level of stress is 23.62%.

On evaluating the relationship between stress and heart rate it was seen that there is a significant change in the heart rate with the stress level, whereas the change in systolic blood pressure with respect to the stress is highly significant. But the change in diastolic blood pressure with stress level is non-significant ($p > .05$)

On analyzing the correlation between stress level and systolic blood pressure a weak positive correlation was found while between stress level and diastolic blood pressure there is a very weak positive correlation. Whereas a very weak negative correlation existed between stress level and heart rate.

CONCLUSION

Our study revealed that the stress level obviously has some impact on the heart rate and blood pressure of the phase 1 MBBS students which may affect their mental and physical health in the long run. But further studies will be needed to evaluate the affect of stress in other phases of entire MBBS course and how they prepare for higher studies after

they pass out. Similar studies can also be conducted among the students of allied health sciences.

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Conflict of Interest: Our study doesn't have any conflict of interest

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