

Original Article

Assessment of pulse rate and blood pressure in medical students before examination

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ABSTRACT:

Background: Medical students are usually under stress due to a variety of reasons like vast curriculum, academic competition, examinations etc. The present study was conducted to assess cardiovascular status of medical students during examination. **Materials & Methods:** 180 medical students of both genders were assessed for pulse rate, systolic blood pressure and diastolic blood pressure before examination. The blood pressure was recorded by Auscultatory method using mercury sphygmomanometer in sitting position. Pulse rate was assessed with radial artery. **Results:** Out of 180 subjects, males were 70 and females were 110. The mean pulse rate 1 month before examination was 76.1 beats/min and one week before examination was 76.8 beats/min. The mean SBP 1 month before examination was 102.4 mm Hg and 1 month before examination was 126.8 mm Hg. The mean DBP 1 month before examination was 72.8 mm Hg and 1 week before examination was 86.2 mm Hg. The difference was significant ($P < 0.05$). **Conclusion:** There was rise in pulse rate and blood pressure before examination.

Key words: Blood pressure, Medical, Pulse rate

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INTRODUCTION

The term stress was first used in a biological context by the endocrinologist Hans Selye. He defined stress in 1936 as “the non-specific response of the body to any demand for change”. It is a condition that puts mind in a state of fear or anxiety. It is a sum of physical, mental, and emotional tensions on a person.¹ Education and training in medical colleges has always been regarded as highly stressful. Medical students are usually under stress due to a variety of reasons like vast curriculum, academic competition, examinations etc. Many physiological studies have shown that stress from any source can influence on the endocrine, haemopoietic and immune systems.²

As stress acts directly or indirectly upon brain stem, a great sympathetic discharge is induced at the level of spinal cord and terminal endings of the sympathetic nervous system.³ The release of norepinephrine is the cause of arteriolar vasoconstriction raising peripheral resistance and that increases diastolic blood pressure. The stressful life of the medical profession begins at the student level and it is crucial to monitor the stress

level of students so as to recognize the transition of a person from the state of positive stress to negative stress.⁴ It is an imperative factor in students having poor adaptability and high reactivity to stress as they are prone to potentially serious outcomes. The monitoring of stress levels of students is critically vital around their examinations, in order to recognize students having an abnormally increased level of stress who are susceptible to complications of negative stress.⁵ The present study was conducted to assess cardiovascular status of medical students during examination.

MATERIALS & METHODS

The study was conducted among 180 medical students of both genders All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Parameters such as height, weight, pulse rate, systolic blood pressure and diastolic blood pressure were recorded before, during and after the examination as per WHO standards. The blood pressure was recorded

by Auscultatory method using mercury sphygmomanometer in sitting position. Pulse rate was assessed with radial artery. Results of the study were

subjected to statistically analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 180		
Gender	Males	Females
Number	70	110

Table I shows that out of 180 subjects, males were 70 and females were 110.

Table II Assessment of pulse rate

Parameters	One month before exam	One week before exam	P value
Pulse rate	76.1	76.8	0.01

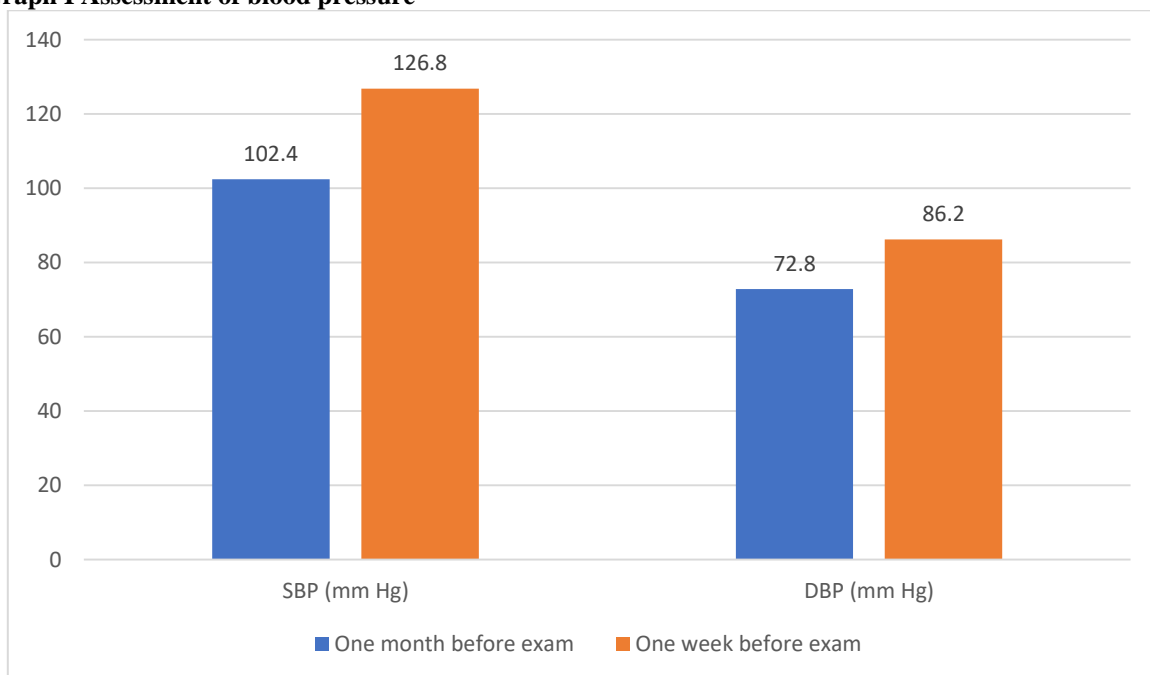
Table II shows that mean pulse rate 1 month before examination was 76.1 beats/min and one week before examination was 76.8 beats/min. The difference was significant (P< 0.05).

Table III Assessment of blood pressure

Parameters	One month before exam	One week before exam	P value
SBP (mm Hg)	102.4	126.8	0.05
DBP (mm Hg)	72.8	86.2	0.01

Table II, graph I shows that mean SBP 1 month before examination was 102.4 mm Hg and 1 month before examination was 126.8 mm Hg. The mean DBP 1 month before examination was 72.8 mm Hg and 1 week before examination was 86.2 mm Hg. The difference was significant (P< 0.05).

Graph I Assessment of blood pressure



DISCUSSION

Pre-examination stress is one of the most widely suffered problems in medical students throughout the world.⁶ It is a feeling of pressure tension that many medical students feel before and coming up to academic examination time.⁷ Stress of any form is known to produce definable mental and physiological reactions in the body like alterations in different biological functions especially the heart rate and blood pressure.⁸ Stress, may it be emotional, physical or biological, evokes an integrated response of

sympathoadrenal medullary system and hypothalamic– pituitary–adrenal cortex axis. To some extent stress in itself is helpful in coping with situations but too much of it can reduce the performance.⁹The present study was conducted to assess cardiovascular status of medical students during examination.

In present study, out of 180 subjects, males were 70 and females were 110. Pratima et al¹⁰evaluated the effect of pre-examination stress on autonomic functions like pulse rate and blood pressure in the first

M.B.B.S. students. The study group consisted of 100 medical students studying 1st M.B.B.S. Among them, 45 students were males, 55 students were females. Their arterial blood pressure and pulse rate were measured one month prior to examination and again one week before examination. In the present study, the results were consistent with early clinical studies reporting that there is increase in pulse rate, systolic blood pressure, diastolic blood pressure, one week before examination compared to values of one month before examination. Majority of the students were under stress prior to examination. Stress produced a significant increase in the pulse rate, systolic blood pressure and diastolic blood pressure among the students. Relaxation techniques like meditation, yoga, breathing exercises, appropriate diet and physical exercises can be recommended to students.

We found that mean pulse rate 1 month before examination was 76.1 beats/min and one week before examination was 76.8 beats/min. The mean SBP 1 month before examination was 102.4 mm Hg and 1 month before examination was 126.8 mm Hg. The mean DBP 1 month before examination was 72.8 mm Hg and 1 week before examination was 86.2 mm Hg. Ross et al¹¹ found that the median total outstanding debt was pound 7300 (interquartile range 2000-14762.50). Students from lower socioeconomic backgrounds and postgraduate students had higher debts. There was no direct correlation between debt, class ranking or General Health Questionnaire (GHQ) score; however, a subgroup of 125 students (37.7%), who said that worrying about money affected their studies, did have higher debt and were ranked lower in their classes. Some of these students were also cases on the GHQ-12. Overall, however, cases on the GHQ had lower levels of debt and lower class ranking, suggesting that financial worries are only 1 cause of mental health difficulties.

CONCLUSION

Authors found that there was rise in pulse rate and blood pressure before examination.

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