

Perceived Stress And Academic Performance Among Medical Students – A Cross Sectional Study

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Abstract: Background & Objectives: There is general agreement that adolescence is a challenging period of life, during which significant physical, psychological and social changes take place. The adolescents are in a chronic state of threatened homeostasis and their adaptive responses are crucial for a successful adulthood. Dysregulation in adolescence, could be the reason behind the emergence of a number of disorders.¹ The present study was intended to know is the effect of severity of perceived stress on the academic performance. Further a comparison of performance in male & female students was also studied.

Method: The present cross sectional study was conducted among 150 first year medical students during their preliminary examination. Ethical clearance was obtained before initiation of the study. Self-evaluation questionnaire was given to the students to assess stress severity. The performance in examination was compared in these 3 groups of perceived stress groups. **Results:** The study revealed that there is decreasing performance in the theory, practical and viva-voce examination from low stress group to high stress group of students, however the decrease in performance was not statistically significant ($p > 0.05$).

Interpretation & Conclusion: Performance of examination reduces along with the severity of stress. Examination performance among female students did not get affected along the severity stress level. Females showed better performance with increase in stress levels compared to males.

Key Words: Examination Stress, Perceived Stress scale.

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Introduction: Stress is defined as “a physical or psychological stimulus that can produce mental or physiological reactions that may lead to illness”. Mild stress may be beneficial in cognitive tasks and performance while persistently high stress may lead to anxiety and depression, which are definable neuropsychiatric disease entities. Stress response is characterized by an increase in corticosteroid release. There are considerable individual differences in this response.² The term ‘stress’ was first employed in the 1930’s by the endocrinologist -Hans Selye.³ Stress is caused by an existing stress-causing factor or “stressor.” All are aware of fearfulness of examinations and especially about practical examination in a medical college.

University students might experience high stress due to academic commitments, financial pressures and lack of time management skills. When stress is perceived negatively or becomes excessive, it can affect both health and academic performance and can have an adverse effect on students.^{4,5} Several studies have documented that medical training causes high incidences of psychological distress among students and academic examination has been considered as one of the most acute stressors as performance in examinations generally has future consequences on student’s career⁶.

As such, stress is a normal, desirable, and beneficial part of our lives that can help one learn and grow. Most people are more active, invigorated, creative, and productive because of stress. Conversely, stress can cause significant problems.⁷ Therefore the present study was conducted to understand the influence of severity of stress on the academic performance among male & female students.

Material and Method: Present study was conducted in the Department of Physiology, on 150 medical students studying in first academic year during 2011-2012. All healthy 1st year medical students who were mentally and physically fit, studying in the first term were included in the study. Students with any illness, fever or on drug treatment were excluded in the study. Using a random number table, 150 students (54 boys and 96 girls) were selected. They underwent evaluation one week before the preliminary examination. Approval was obtained from the institutional ethics committee before the commencement of the study. Preliminary examination was considered as it was the major examination faced by students just before the university examination.

Perceived stress scale-10 (PSS-10) self-evaluation questionnaire⁸ was used to measure the level of stress. It consists of 10 self evaluation

questionnaires. The items were easy to understand and the response alternatives are simple to grasp. Items of PSS-10 were designed to tap how unpredictable, uncontrollable and overloaded respondents find their lives. The questions in PSS tend to know about the feelings and thoughts of individuals. Students generally require four to six minutes to complete questionnaire.

The students were subdivided into three groups based on PSS-10 scores; a) with those scoring between 0-13 considered as mild stress group, b) those with scoring between 14-26 were considered as moderate stress group and c) scoring between 27-40 considered in severe stress group.

Statistical Analysis: Statistical analysis was done by using Two-way ANOVA. Statistical results were considered significant at $p < 0.05$. Data are expressed as mean \pm SD.

Results: All 150 students recruited [54 male (36%) and 96 females (64%)] completed the study.

Table1. Comparison of % of marks obtained in theory examination by the students classified in 3 groups based on PSS-10

PSS-10	Male	Female	Total
Mild	61.4 \pm 11.56	56.1 \pm 10.79	59.5 \pm 11.36
Moderate	51.2 \pm 17.14	54 \pm 11.95	53.2 \pm 13.68
Severe	43.5 \pm 13.19	57.1 \pm 13.35	50.5 \pm 14.72

There was decreased performance in the theory examination from mild, moderate and severe stress group in all students, which was statistically significant ($p < 0.05$). The same finding was observed in male students but female students did not show much difference as the severity of stress increased. The performance in female students was better than male students in moderate & severe stress group. The performance of female students compared to male students was statistically significant in severe stress group.(Table1).

There was decreased performance in the practical examination in severe stress group compared to mild stress group observed in all students. Male students showed slightly better

performance in severe stress group compared to students in moderate stress group.

Table2. Comparisons of % of marks obtained in practical examination by the students classified in three groups based on PSS-10.

PSS-10	Male	Female	Total
Mild	63.5 \pm 14.18	57.8 \pm 14.17	61.5 \pm 14.16
Moderate	53.6 \pm 17.04	58.8 \pm 11.56	57.2 \pm 13.56
Severe	57.2 \pm 6.91	57.4 \pm 12.93	57.4 \pm 10.27

Practical examination from mild stress group to severe stress group among male students but female students did not show much difference as the severity of stress increased. The decrease in performance in male students was not statistically significant ($P > 0.05$). The performance in female students was better than male students in moderate & severe stress group. (Table 2).

Table3. Comparison of % of marks obtained in viva-voce examination by the students classified in three groups based on PSS-10.

PSS-10	Male	Female	Total
Mild	68.7 \pm 12.25	66.6 \pm 7.07	67.9 \pm 10.55
Moderate	59.9 \pm 21.86	64.4 \pm 10.86	55.2 \pm 12.05
Severe	58.9 \pm 7.86	66.3 \pm 11.30	62.8 \pm 10.31

There was decreased performance in the viva-voce examination in severe stress group compared to mild stress group observed in all students. Viva-voce performance among male students from mild, moderate and severe stress group decreased but female students did not show much difference as the severity of stress increased. The performance in female students was better than male students in moderate & severe stress group. (Table 3).

Discussion: In the present study the perceived stress scale was evaluated among medical students & effect of severity of stress on academic performance was compared. Life of a medical student or a health care professional can be very stressful. Mild, moderate, and high levels of stress and even burnout have been reported amongst medical students and health care professionals from other countries.⁹⁻¹³

The present study revealed that the severity of stress decreases the performance among male

students. Among female students the performance did not get affected much as the severity of stress increased. Further it was also observed that performance of female students was better compared to male students in moderate & severe stress groups. The earlier study on university graduates and undergraduates reported similar to the present study finding that academic achievement and stress level affect significantly.¹⁴

In contrast with the past review on gender differences and confidence which indicates that despite performing equally to their male peers, female medical students consistently report decreased self-confidence, particularly over issues related to their competence, the present study indicates female student's performance in viva-voce did not get affected much with increase in stress. Further in the past review it was reported that female medical students appeared significantly less confident than male medical students in a patient interaction examination situation.¹⁵ Another study in the past reported that women suffer more stress than men and their coping style is more emotion-focused than that of men.¹⁶

Better performance of female students with increased level of stress could be attributed to a beneficial effect of oestrogen on stress response, although mechanism of actions is not clearly understood.¹⁷

There are very few researches which have studied the gender differences with the different levels of stress. Since the mechanism of stress response among male & female gender is not clearly established, in future more studies need to be conducted in this subject.

The amount and severity of stress experienced by medical students may vary according the settings of the medical school, the curriculum, evaluation (examination) system etc. Previous studies from medical schools in different countries have reported varying levels of stress.^{18,19} A study from Agha Khan University, Pakistan has reported that more than 90% of its students experienced stressed at one time or the other during their course.²⁰ A similar study from India reported that 73% of the students had perceived stress at some point or the other during their medical schooling.²¹ The advantage of PSS is that

it can be applied to a wide range of settings, to different subject types and includes items measuring reactions to stressful situations as well as measures of stress.⁸

Conclusion: Academic performance of medical students reduces along with the severity of stress. Examination performance among female students did not get affected with the severity of stress level. Females showed better performance with increase in stress levels compared to males. There is a need to introduce the measures which will make the students capable of tackling the stress. Counseling of the students on need basis has to be considered during their academic course.

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