

Research Report

EFFECT OF A STRESS REDUCTION PROGRAMME ON ACADEMIC STRESS AND COPING SKILLS OF FIRST YEAR MEDICAL STUDENTS

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ABSTRACT

Background: Medical students, especially in the first year of their college life, are under stress.

Materials and Methods: Study was conducted on 100 first year medical students. The students were given a semi-structured questionnaire to collect sociodemographic data; they were subsequently administered the Academic Stress Scale and the Adjustment Style Inventory. Then a Structured Stress management session was conducted for them, and they were made to practice many stress coping skills for three weeks, following which the questionnaires were re-administered and data collected. The data were analysed with the chi-square test, independent-sample t-test, paired t-test and Pearson's correlation.

Results: The academic stress and coping scores showed no difference among both sexes. The academic stress score showed a negative correlation with coping scale ($p=0.019$). There was a significant reduction in the academic stress score post-intervention ($p<0.001$). The scores of adjustment styles also showed a significant improvement, and there was a significant improvement in the total adjustment style score and negative coping score post-intervention ($p<0.001$). The positive coping score, however, did not show a significant change.

Conclusion: Stress management programmes are effective in reducing academic stress and adjustment styles. The students tend to reduce negative coping skills and better manage stress, post-intervention.

Keywords: Academic stress, adjustment style, stress management, positive coping, negative coping.

INTRODUCTION

The first-year medical students are at a crossroad in their lives. The change in the academic and social environment, the

difficulties in peer interaction, the pressure to excel and the ever-increasing competition puts them at stress. Several studies have

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documented that medical students experience a high incidence of psychological distress during different stages of their undergraduate course.¹⁻⁴ Stress is a major factor contributing to academic performance.^{5,6} The American College of Health Association found that stress was the leading obstacle to academic performance. Examinations, grade competition, large amounts of content to learn in a short time frame, and excessive homework or unclear assignments are all common sources of academic stress reported by students.^{4,5}

Stress among students also differs in terms of the coping strategies they employ. A study also shows that adjustment (coping) strategies employed to confront stressful situations, independently of situational factors.³ Another study shows students having positive coping styles have less stress than those with negative coping styles.³ The studies also differ in the year-wise distribution of its participants, and most studies have studied medical students across their 5-year span.¹⁻⁴

Stress management session given to students in their first clinical year reported improvements in work functioning compared with the waiting list controls. Results showed that stress management provides long-term protective effects as well as short-term benefits.⁶ A review on stress management in medical schools found that only 24 studies reported intervention programs, and only six of those used rigorous scientific method. Despite these promising results, the studies had many limitations.⁷

The lack of proper scientific literature on stress management in medical schools, the lack of studies from an Indian perspective, and the dearth of data on the effects of stress management in the first year of medical school

all necessitate further studies on stress management. To date, no study has focused exclusively on the role of stress management on academic stress improvement, making this study unique in this respect. This study aims to assess the effect of a structured programme on improving the academic stress levels and adjustment styles of medical students.

MATERIALS AND METHODS

The study was designed to assess the effect of a stress reduction training programme on the academic stress levels and the coping skills of first year medical students. The study tries to assess the improvement of stress levels post structured intervention, the improvement of adjustment styles post-intervention, and to study the association of stress and adjustment styles with each other and other sociodemographic variables. Based on an earlier study, the effect size for mean stress reduction (d) was taken as 1.37 with a standard deviation (SD) of 1.9 and keeping power at 80%. The Z_{β} for 80% power being 0.84 and $Z_{\alpha/2}$ being 1.96 the sample size using the formula $2(SD)^2 * (Z_{\alpha/2} + Z_{\beta})^2 / (d)^2$ was 30.⁸ The study was conducted on more than three times the required sample with 100 first year medical students, both boys and girls, at a rural medical college. The study was initiated after obtaining an institutional ethical committee approval. The students included had completed six months of their first-year course. Written informed consent was taken from each participant. They were then given a sociodemographic questionnaire. The students then completed the academic stress scale, a validated scale consisting of 40 questions to enumerate the level of stress. The scale is a five-point scale from 1 to 5 with 1 denoting no stress, 2 implying some stress,

three as moderate stress, four as high stress and five as extreme stress. A score of 80 and above shows moderate stress.⁹ The students then completed the Adjustment Styles Inventory, a validated tool to assess positive and negative coping styles.¹⁰ The academic stress scale is a validated scale consisting of 40 questions to enumerate the level of stress was given next. Adjustment styles inventory is a validated tool to assess positive and negative coping scale consisting of 40 questions was subsequently completed.^{9, 10} False numbers were put in the questionnaire to ensure confidentiality.

A structured session on stress management programme with modules for coping skills, time management and relaxation were conducted for the students on the subsequent days. The stress management session highlighted the methods to cope with stress, especially academic stress.

The programme was conducted by two psychiatrists and a psychologist in a workshop mode with 20 students in 4 batches. Each workshop was of 12 hours duration spread over two days. The students were given handouts mentioning the daily coping skills they had to practice and were asked to mark the coping skills they practiced, on a day to day basis, for three weeks. The monitoring was done by the staff of the department of anatomy and mentors of the students.

The academic stress scale and adjustment style scales were re-administered after three weeks of the session. The data collected were analysed using the chi-square test, independent sample t-test, paired sample t-test, Pearson's correlation and analysis of variance (ANOVA). The statistical package for social services version 17 (SPSS 17) for windows was used to analyse the data.¹³

RESULTS

Of the total of 100 students in the first year, only 76 completed the study. Four students didn't give consent for the study, five students were not present on the first session of study, eight students didn't complete the stress scale, and a further eight students didn't complete the assessment adjustment styles. Of the sample, 86.8% were females and 13.2 % of males. 50% of the students are from rural area, and 50 % of students are from the urban area. 93.4% of students are from middle socioeconomic class 6.6% of students are from high socioeconomic class. Mean age of the students was 19.39yrs (SD=0.67). The average mark of the sample in their plus two examinations was 90.39% (SD=6.7). There was no significant difference among males and females in terms of plus two percentage (F: M= 90.31%: 90.88%; t= -2.48, p=0.85).

79% of the students experienced stress, of which 48.7% experienced moderate stress while 30.3% had severe stress. There was no gender difference in terms of academic stress (F:M= 107.5: 97.1; t=1.19, p=0.23), adjustment styles (F:M=134.8:134.9;t=-0.02,p=0.98), positive coping (F:M=54.86:53.50; t=0.398, p=0.692), negative coping (F:M=79.93:81.4; t=0.376; p=0.708). There was no significant difference among boys and girls in terms of the socio-demographic variables like age (t= 0.635, p= 0.716), residence ($\chi^2= 3.45$, p= 0.34), place of stay ($\chi^2= 3.124$, p= 0.52), and parental pressure to take medical course ($\chi^2= 2.942$, p= 0.836). The sexes also did not show any difference in academic stress score and adjustment style score. (Table 1)

Table 1: Gender, Stress and Adjustment Style

	Gender	Mean	Statistic
Academic Stress	Female	107.52	t= 1.198
	Male	97.10	p=0.235
Adjustment Style	Female	134.80	t= -0.022
	Male	134.90	p=0.982
Negative Coping	Female	79.94	t= -0.376
	Male	81.40	p=0.708
Positive Coping	Female	54.86	t= 0.398
	Male	53.50	p=0.672

There was a significant negative correlation between the academic stress score and adjustment style score ($\rho = -0.268$, $p = 0.019$). The correlation was seen significantly between academic stress and negative coping than with positive coping. And negative coping styles were associated with more academic stress. (Table 2)

Table 2: Academic Stress and Adjustment Styles

	Academic Stress
Adjustment Style	$\rho = -0.268$ $p = 0.019$
Positive coping	$\rho = 0.111$ $p = 0.341$
Negative coping	$\rho = -0.395$ $p < 0.001$

Academic stress significantly reduced post-intervention. The scores of adjustment styles also showed a significant improvement, and there was a significant improvement in the total adjustment style score and negative coping score post-intervention. The positive coping score, however, did not show a significant change. (Table 3)

Table 3: Post-Intervention Change in Stress and Adjustment Style

Variable	Mean	
Academic Stress	Pre-Intervention= 106.14	t=5.03
	Post-Intervention=93.00	p<0.001
Adjustment Style	Pre-Intervention= 134.81	t= -5.38
	Post-Intervention=142.71	p<0.001
Positive Coping	Pre-Intervention= 54.68	t= -0.77
	Post-Intervention=56.01	p=0.443
Negative Coping	Pre-Intervention= 80.13	t= -3.86
	Post-Intervention=86.13	p<0.001

DISCUSSION

Even though education is universally given a high priority, the academic institutions today do not show a motivating atmosphere.¹ Students are often subjected to various stress related tests, examinations, assignments, peer group, teachers' attitude etc. The major challenges of students are poor retention and recall, personal anxieties, fear of teachers, exam phobia, perpetual insecurity, conflicting expectations from the parents and the society, the growing competition, fear of failure or success and parental attitudes.¹ However, optimum stress is productive, and it facilitates the increasing performance of the individuals.

Academic stress plays an important role in the student's life, and it accounts for variation in performance, achievement or success.

Stress, along with social, emotional, physical factors, influences the learning ability and academic performance. This study shows a high prevalence of academic anxiety in medical students (79%), which was marginally higher than earlier studies (54-73%).^{2, 3} Previous studies have shown that academic factors were the greater perceived cause of stress higher than emotional, physical and social stress.^{2, 4} However this is the first study to measure academic stress as opposed to stress in general, so further studies are needed to ascertain whether a higher proportion of students' experience academic stress than general stress. The current study did not demonstrate any difference in stress level based on gender as opposed to an earlier study which showed that boys have higher stress levels.⁴ Though the exact reason for this finding needs further study, the larger representation of females in the current study may have influenced the current result. The study mentioned above mentioned, however, measured social stress and attributed excess social stress in boys to over-involvement in social circles and lack of support from seniors.⁴ However, these are not pertinent when considering academic stress. The policy of guiding (mentoring programme) students in academic matters and pertinent social matters, with each group assigned to a staff member may be a reason why there was no difference in stress as far as boys and girls are concerned. The study found that negative coping styles were associated with more stress, and positive coping did not influence stress. It shows that after the intervention, it may be easier for the

students to give up negative coping methods (e.g. overeating to relieve stress, using addictive substances, total inactivity, avoiding help seeking, getting angry, swearing etc.). There was no evidence that after the intervention, students were using more positive coping styles (e.g. taking an objective view of problems, trying to find meaning in situations, employing different problem solving strategies etc.). It contradicts the study, which showed that students having positive coping styles have less stress than those with negative coping styles.¹² Negative coping strategies, therefore, probably offset the protective role of positive coping repertoire and make a person vulnerable to stress. Therefore, strategies aimed at reducing negative coping may play a greater role in stress reduction than increasing the positive coping repertoire.¹³

There was a significant reduction in stress post-intervention, and earlier studies echo this.^{7, 14, 15} A review of stress management programmes revealed that medical trainees participating in stress-management programs demonstrated (1) improved immunologic functioning, (2) decreases in depression and anxiety, (3) increased spirituality and empathy, (4) enhanced knowledge of alternative therapies for future referrals, (5) improved knowledge of the effects of stress, (6) greater use of positive coping skills, and (7) the ability to resolve role conflicts.⁴ The complex interaction of mind and body and its destabilization by stress is elucidated from this. Therefore, a structured intervention aimed at reduction in academic stress secondarily results in an improvement of mental, physical and spiritual health.

The strong association between a reduction in negative coping and decrease of stress is a finding that has not been reported frequently in literature. The only study which comes close was on the psychological health and coping of nursing students. That study observed that stressful factors, negative coping style and social support all have main effects on mental symptoms, and positive coping style has no main effect on psychiatric symptoms. To improve the psychological condition of students, aside from reducing the stress incidents, avoiding negative coping, is very important.¹² Therefore it is the reduction in negative coping mechanisms that translates to stress reduction than an increase in the positive coping repertoire.

The study lacked a control arm, so the effectiveness of intervention could not be compared. There was no exclusion of subjects with pre-existing mental health disorders, which may have skewed the results. The aspects of personality, a variable that determines stress, also was not studied. The study, however, had an adequate sample, used validated tools, and had a hands-on training and assessment programme. The study also was the first to measure academic stress and correlate it with coping styles. The study also showed a unique association between the reduction of negative coping and academic stress reduction.

The current study highlights the need for interventions in medical education. Our study also emphasizes that regular stress management workshops and relaxation techniques at the entry of medical career and along the course would be helpful for the students to improve their well-being.

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Conflicts of interest

There are no conflicts of interest.

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