

Stress in Medical Education and its Management

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Abstract: *Stress in medical education is common and process-oriented. This review reports the causes and period of stress, gender issues, stress response, coping strategies, stress management and suggestions for its management. Since stress is reported world over, it should be dealt as a global issue, with its prevention, identification and management made an integral part of medical curriculum. Stress in medical education often exerts negative effect on their academic performance, physical health, and psychological well being. Research related to this stress especially among medical students is essential, considering their learning, role and responsibilities as a future physician and health intervention program. The most common sources of stress were related to academic and psychosocial concerns. Meditation, emotional support, diet, sleeping for long hours and exercise are some of the stress relieving factors adopted by the medical students. In order to make a good physician, stress in medical under-graduation should be acknowledged during the formative years of the medical education. Review of academics, exam schedules and patterns, better interaction with the faculty and proper guidance, intervention programs and counselling could certainly help a lot to reduce stress in medical students.*

Keywords: Medical students, stress, stress factors, coping strategies, stress management.

1. Introduction

The pursuit of higher education is expected to be stressful. Researcher mean with stress 'is a bio-psychosocial model that refers to the consequences of failure of an organism to respond adequately to mental, emotional or physical demands, whether actual or imagined' [1]. Stress is a mental and physical condition which results from pressure or demands that strain or exceed your capacity or perceived capacity to cope. The sources of such pressure or demands are called stressors.

Stress in its positive form-Eustress (Constructive/adaptive stress) is necessary, healthy and enjoyable; but however the negative form-Distress (Destructive stress) can be damaging if left unmanaged. In this review an attempt is made to look into the relationship of stress and medical education. Today's human life is full of hassles, deadlines, frustrations and never ending demands. Dynamic social factors and changing needs of life styles have made individual more stress prone. Stress in medical school can have both positive and negative consequences if not well managed.

Medical education is perceived as being stressful as it is characterized by many psychological changes in students [2]. Studies have proved that compared to the general population, medical students are the most distressed students [3]. Although some stress is necessary for personal growth to occur, the amount of stress is overwhelming; the student ability to cope is affected [4]. In one study it was found that medical students were not untowardly stressed but the transition of basic to clinical training was associated with stress [5]. Stress in medical education often exerts negative effect on the academic performance, physical health and psychological well being of the students [6]. Academic, social, physical and emotional factors are greater perceived causes of stress in medical students [7]. The students should be taught different stress management techniques to improve their ability to cope with a demanding professional course.

2. Causes of Stress in Medical Education

Academic reasons and emotional factors are greater during the first year while reasons related to patient care and physical factors are more important in subsequent years. Long working hours, lack of peer support, competitive environment, living conditions in hostel, vastness of academic curriculum, frequency of exams, no time for revision, fear of failure in exam, high family expectations, insecurity regarding professional future, home sickness, lack of recreational activities, financial problems, mismatch between capability and expectation are some reasons of stress [7, 8].

The majority of stressful incidents in medical education are related to medical training rather than to personal problems. In a 5 year prospective study, students were evaluated in the first year and then in the 4th and 5th year. It was established that those students that were distressed in the beginning were likely to remain so throughout the training period [9].

Stress is transitory, more during examinations and the students generally affected are those with a fault in their learning methods. Since the curriculum lays a greater emphasis on memory, some students find this difficult and may develop an attitude of self criticism or perfectionism. Those then with perceived mistreatment or personality deficit might be the ones unable to survive the stressful period [8, 10].

3. Gender Differences in Stress

The studies indicate that female medical students perceive more stress [2, 11, 12]. Stress is more common in females as they are more competitive, tend to be more concerned about working hard to secure higher marks in exams, are more concerned about their performance, exaggerate their sadness and tend to engage in less exercise. More research is clearly needed before these suggestions can be confirmed or denied.

In one study boys had slightly higher prevalence of stress as compared to girls [13]. However, other reports have found no sexual differences in stress perception [14].

4. Identifying the Stressful Period

Although each year of medical education is characterized having unique stress, it was reported by many researcher that students of first year are more prone for stressful situations. The reasons include academic pressure, unfamiliarity in a new environment and unrealistic expectations [6, 15]. Other reports have however suggested that the 2nd and 3rd year [7] or even the penultimate year is stressful [14]. Also, perceived social support was found to be more during the 2nd year compared to the 1st year and surprisingly the psychological morbidity of the first year and fourth year has been found to be similar [7, 9].

Contrary to all these studies there are reports to suggest that stress is not related to any particular year [3].

5. The Stress Response

The normal way the body reacts to challenging events, which energizes the human system to meet the challenge is known as stress response. Chronic stress has been determined to be a cause of essential hypertension [16] associated with elevated cortisol and increased sympathetic nerve firing.

The stress response is complex, varies from individual to individual, and is situation specific. Once activated in humans and mammals, it is characterized by parasympathetic (vagal) withdrawal and activation of the sympathetic nervous system [17]. At the same time, the hypothalamic-pituitary axis is activated. Corticotrophin releasing factor (CRF) and vasopressin are released from the hypothalamus and the posterior pituitary, respectively. CRF stimulates the release of adrenocorticotrophic hormone (ACTH), which is released into the peripheral circulation and stimulates the release of cortisol and aldosterone from the adrenal gland. Sympathetic activation initiates the release of renin from the kidney, which triggers the activation of angiotensinogen to angiotensin I and conversion of angiotensin I to angiotensin II in the liver by angiotensin converting enzyme (ACE). Angiotensin II stimulates aldosterone secretion, fluid retention, and vasoconstriction [18]. It also triggers the release of epinephrine and norepinephrine from the adrenal medulla. Both glucocorticoids and angiotensin II appear to be involved in the feedback and feed forward elements of the stress response [19].

6. Stress Among Medical Students Across the World

Reports from different parts of the globe have shown medical education to be stressful. An Indian study reported high neurotic traits in female medical students who had symptoms relating to depression and anxiety [20]. The Columbia experience states that on average, 10-15% students seek consultation and one-third need therapy to deal

with conflicts in their personal life [21]. A study in Thailand showed stress in 61.4% students, mostly in the third year, with examinations being the most important cause [22].

Similar studies related to stress in medical education have also been carried out in Saudi Arabia, Egypt, Pakistan and Nepal [2, 23-25].

Students studying in a foreign country have problems related to adjustment in the country. These include a new cultural environment, accommodation, finance, communication, disruption of social support and along with all this, adjustment with the medical school environment [10].

7. Consequences of Stress

It has been observed that medical school environments in India are extremely stressful and has lead to suicide and suicidal attempts by the students.

The early warning signs of stress in students are anxiety, phobia, depression, suicide and suicidal tendencies, mood alterations, addiction, irritability, sense of loneliness and isolation, overeating or under eating, acidity, indigestion, tiredness, headache, sleep disturbances, menstrual problems, family disharmony, adjustment problems, deterioration in studies, and problems like memory, concentration, and decision making.

The lifestyle changes reviewed showed a decrease in sleep, leisure and recreational activities [8]. The incidence of alcohol and drug consumption increases [26]. The personality of an individual can change and a decrease in human feelings, aloofness with a shift to a hedonistic personality results [8]. The students have increased irritability, frustration, become cynical, disappointed and develop conflict with faculty and intimate relationships [27].

In one American study it was reported suicidal ideation was seen in 11.2% students and it had a strong relationship with personal distress or burnout reported in 49.6% of students [28].

8. Coping Strategies

The coping style of a medical student may vary. Emotional based coping involves accepting responsibility and self blame. This type of coping is seen more in the first year of medical school while in later years the trend is in favour of cognitive, confrontive and planful problem solving. More years in medical college perhaps gives confidence to students [10].

Coping strategies are defined as the person's constantly changing cognitive and behavioral efforts employed to manage, reduce or control stress [6]. It was reported in the literature that students with an active coping strategy have lower psychological distress [29]. Various coping strategies have been studied for medical students to deal with stress and anxiety like meditation, interaction with classmates and friends, personal hobbies, use of internet, mobile phones, watching movies, etc.

Effective and appropriate coping strategy may minimize the impact of stressful situation on one's well being. 'Active coping' means taking action or exerting efforts to remove or circumvent the stressor, while 'Acceptance' means accepting the stressful event, 'Planning' consists of thinking about how to confront the stressor, 'Positive' reframing means making best of the situation by growing from it and 'Denial' is an attempt to reject the reality of stressful event and 'behavioural disengagement' means giving up or withdrawing efforts to attain goal [25].

Stress is more in students who use dominant coping strategies such as positive reappraisal and planned problem solving. It is less in those who accept responsibility and least in those who escape from difficult situations. It is also found that students with engagement strategy of coping have less symptoms of depression [7-8]. Favourable results are thus available by encouraging use of engagement strategies and modifying the disengagement strategies [6].

Family support can be an effective tool for helping medical students coping up with the stressors in their life.

9. Stress Management

Healthy life style changes will help the students to relieve the stress. Students who received more social support tend to have less stress; such social support can come from teachers, parents or other students.

Stress management deals with the techniques to equip a person with effective coping mechanisms for psychological stress. We need stress management systems at a number of levels, rather than focusing on any one level. **Level 1: Primary (Promotion and Prevention):** These are strategies aimed to promote wellbeing and prevent or minimize the occurrence of stress. **Level 2: Secondary (Management):** Secondary interventions involve recognizing stress at an early stage and acting appropriately to prevent it getting worse. **Level 3: Tertiary (Minimization):** This means to manage, rehabilitate or treat symptoms of existing stress-related problems. The only way to improve the overall health of students is to reduce stress at primary and secondary levels.

10. Suggestions for Corrective Measures

Better coping skills are associated with decreased anxiety levels and decreased risk for academic failure. Literature also suggests that stress is a common theme among college students, and when stressful experiences are greater than the coping resources, multiple problems often arise. Hence, programs which assist in the identification of stressors, and to focus on prevention of burnout, and counseling regarding coping strategies should enhance student success. Good teaching practice cannot be overestimated as a key to prevent and minimize distress among students [4].

10.1 At the level of institution:

Creating a mentoring cell at the level of institution that provides support to the students. Entertainment facility should be established in college like regular debating club,

movie club, sports club, Music and art gallery. Stress management and time management techniques along with first and second year curriculum may assist students in dealing with stress.

Each institute should have its own orientation programme and counselling services [27]. These include measures such as psycho educational lectures, seminars on stress management and counselling [31]. At G.S. Seth Medical College, Mumbai, India, 'SHIDORI' system of stress management has been described. It deals with topics like group dynamics, communications, coping skills, time management and assertive behaviours [30].

10.2 At the level of faculty members

Medical faculties should introduce 'Foundation Courses' for new students which provide an overview of what to expect in the medical school, as well as lectures on study techniques, stress and time management [13].

To set up a 'Student Mentorship Program' which offer consultation to the stressful. A group of ten students may be allocated to one academic staff throughout their stay in the institute, who can be approached for any problem. ANUBANDH is one such mentorship Programme implemented at NKPSIMS and RC, Nagpur [12].

Small group teaching is a useful method to reduce the stress as there is more interpersonal interaction. There should be a good communication between students and faculty members. There should be a Parent/guardian faculty member meet on regular basis in order to know the progress of student [30].

10.3 At the Level of Students

Students should be encouraged to participate in sports and extracurricular activity and to enrich their hobby. Seniors should be counselled against ragging. They should be encouraged to flourish healthy interactions with colleagues [30].

10.4 Developing support group:

Talking to friends is the most common stress relieving factor. Some students reported participation in social activities and interaction with family members were the stress busters. In students it was reported that sharing their problems with classmates, friends and family members was the best way to deal with stress [29]. A good relationship with seniors and faculty members, support from friends (buddy programmes), family and perhaps religious groups can help [23]. Teach medical students to monitor their own health by improving eating habit, sleep hygiene, stress regulation and mood regulation etc [32].

10.5 Other Coping Strategies

Healthy life style such as eating balanced diet, regular exercise, practising meditation like yoga, prayer and listening to soft music will help to relieve the stress [30].

10.6 At the level of parents:

There should be functional parent counselling cell wherein the parents should be counselled in order to avoid their over expectations about their children.

11. Summary and a thought for the future

Stress in a medical school is a global phenomenon. It may be useful for all medical schools to carry out screening and management programmes as part of the curriculum. It is time to make medical education interesting, restore enthusiasm in the students and to project a more realistic, humane image of the profession. This would decrease the amount of stress and its consequences.

It is concluded that in order to make a good physician, stress in medical under graduation should be acknowledged during the formative years of the medical student. If methods to overcome it will be implemented at the beginning of the medical education, the future physician will develop the skills of managing stress in a more effective ways early in their medical career which will avoid the further psychological calamities.

12. Conflict of Interest

The authors declare no conflict of interest regarding the publication of this paper.

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