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Comparative Study Between effects of Stress Experienced During Regular Period & Examination Period among First Prof MBBS Students at Government Medical College

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ABSTRACT:

Background: Examination Stress is a common condition faced by student prior to exams and is quite predominant among medical students. Many studies have been conducted to assess the impact of stress on students prior to examinations. This Study however aims to determine the effects of stress experienced during Regular period and Examination period among First Prof MBBS students at Government Medical College.

Methods: General Surveys having questionnaires were conducted through Google Forms to review the Behavioural, Psychological, Physiological, Cognitive and Social effects of stress that occurred in Medical Students, during regular period and examination period. Duration of study was 1 month from July to August 2021. The survey was conducted into two phases, Phases A : Effects of stress experienced during Regular period and Phases B : Effects of stress experienced during Examination period. Both the surveys were split into two parts, First part containing information about the age, pursuing year, gender and the Second part containing the main questionnaire.

Results: The data for this study was collected from 150 students of First Prof MBBS, Shri Bhausaheb Hire Government Medical College Dhule on specially designed questionnaires. Among the 150 students 50 % were male and 50 % were female with mean age 20± 2 years. The result showed changes in activity levels and performances (68.7 %)in the students during examination period followed by withdrawing or isolating from people (60 %), disturbance in sleep cycle (56.7 %), anxiety and fear (52.7 %), irritability or anger (52 %), headache (52 %), confusion (48.7 %), memory problems / forgetfulness (44.7 %), difficulty in sharing knowledge or ideas (36.7 %).

Conclusion: Majority included in our research experienced stress prior to exams but the signs and symptoms varied greatly. Irritability, increased intake of caffeine/ energy drinks/ sugars and disturbed sleep cycle seemed to dominate physiological and behavioural changes in the examination period.

KEYWORDS: Stress, First Prof MBBS Students, Examination period

I. INTRODUCTION

The study of Medicine is extensive, time-consuming and very stressful. In every five- years study period students are subjected to endless working hours, and exams add an extra stress quotient. In order to maintain a good score, students often have to work beyond their mental threshold and physical strength.

Stress refers to conditions that arouse anxiety or fear. The transient rise in systolic blood pressure during stress is a common observation. Physiological studies have shown that stress from any source can influence on the endocrine, haemopoietic and immune systems.[1] Cytokines and cortisol seem to play an important role in the communication between these systems.[2]The well documented changes that occur are increase in erythrocytes, neutrophils and platelets, whereas lymphocytes, eosinophils and monocytes decrease in number. Lymphocytes and monocytes express receptors for several stress hormones, including norepinephrine and epinephrine,[3]thus stressful events could alter immune function. It has also been observed that female students respond to examination situation with stronger anxiety and more intense stress related behavioural, metabolic and psychological changes. Menstrual cycles of females also seem to get affected during the examination period owing to hormonal changes as observed in previous studies.[4]

Studies conducted locally so far on the similar topics such as exam related stress and anxiety are few in number. Hence the aim of this study was to compare the behavioural, psychological, physiological, cognitive and social

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changes in First Prof MBBS students during Regular period and Examination period.

II. SUBJECTS AND METHODS

This study was conducted from July – August, 2021 on First Prof MBBS Students. The duration of study was of 1 month. For the study, surveys through Google Forms were conducted in two phases: Phase A and Phase B. Phase A was conducted during the Regular period while Phase B was conducted 3 days prior to commencement of II[nd] Term End Examination.

The survey was conducted among 150 students of First Prof MBBS at Shri Bhausaheb Hire Government Medical College Dhule. Among the 150 students, 50 % were male and 50 % were female with mean age of 20± 2 years.

Both the surveys were split into two parts, First part containing information about the age, pursuing year, gender and the Second part containing the main questionnaire assessing behavioural, psychological, physiological, cognitive and social effects of stress.

The questionnaire included 7 questions. The subjects were asked to respond in relation to current state. The data from the questionnaire was then collected and assessed

III. RESULTS

Bar Graph 1a and 1b shows behavioural effects of stress noticed during Regular period and Examination period respectively.

The number of students experiencing change in activity levels and performance, difficulty in communicating is increased. The occurrence of irritability, outburst of anger, arguments has shown ascending pattern from Regular period to Examination period. There is increase in changes associated with eating habits, disturbance in sleep cycle, consumption of sugar/ caffeine/ energy drinks, exercise during Examination period. During the Examination period, a considerable decrease have been found in span of sleep, periods of crying (May be due to stress which may lead to utilization of time for gaining more knowledge rather than crying.), initiation of prayer.

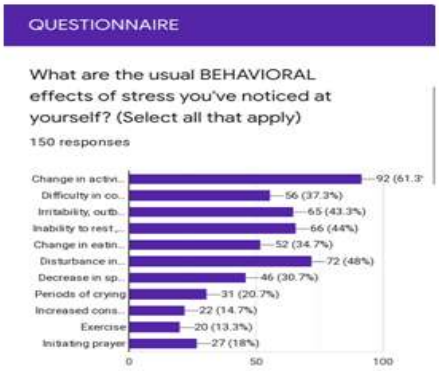

Fig: 1a

Bar Graph 2a and 2b shows psychological/ emotional effects of stress noticed during Regular period and Examination period respectively. A surge in the levels of anxiety, fear, irritability or anger, restlessness, depression, vivid or distressing dreams is evident during examination period from the data. During Examination period a decline is evident in the number of students experiencing helplessness or hopelessness, feeling lost,experiencing mood swings.

Bar Graph 3a and 3b shows physiological effects of stress noticed during Regular period and Examination period respectively. The occurrence of palpitation, disturbed metabolism (Nausea, isolated diarrhoea, diarrhoea and constipation, isolated constipation), tremors or muscle twitching, muffled hearing, sore or aching muscles, fatigue that does

Fig: 1b

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not improve with sleep, decreased resistance to colds, flu infections, aggravated skin disorders have shown ascending pattern from Regular period to Examination period. Lowering of, number of students experiencing increased respiratory rate, disturbed metabolism (increased / decreased appetite which may be accompanied by weight loss or weight gain), sweating or chills, feeling uncoordinated, headache, disturbed menstrual cycle, flare up of allergies, asthama or arthritis and hair loss is evident from the data during the Examination period.

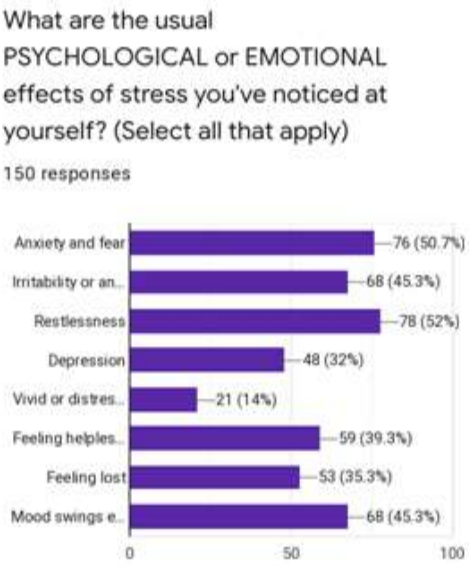

Fig: 2a

Bar Graph 4a and 4b shows cognitive effects of stress noticed during Regular period and Examination period respectively. Reduction in the number of students experiencing slowness in thinking, analysing or comprehending, difficulty in making decision, decrease in concentration span and inability to stop thinking about the incident or disaster is perceptible from the data throughout the Examination period. During the Examination period rise in the number of students experiencing memory problems/ forgetfulness, confusion, increase in concentration span is evident from the obtained data.

Bar Graph 5a and 5b shows social effects of stress noticed during Regular period and Examination period respectively. Decline is clearly visible in the number of students experiencing withdrawal or isolating selves from people, difficulty in listening, difficulty in sharing knowledge or ideas, during the Examination period. Rised level of difficulty in giving or accepting support, is evident from the data. The same level of effect of stress on being impatient with or disrespectful to others have been found in both phases A and B.

Bar Graph 6a and 6b shows personal methods to relieve stress. A surge in the percentage of personal methods of students to relieve stress like eating, drinking, drugs, sports/ exercise, shopping, virtual games, social media and meditation is evident during the Examination period. Decline in the percentage of personal methods of students to relieve stress like sleeping, talking to someone, prayer is clear from the data.

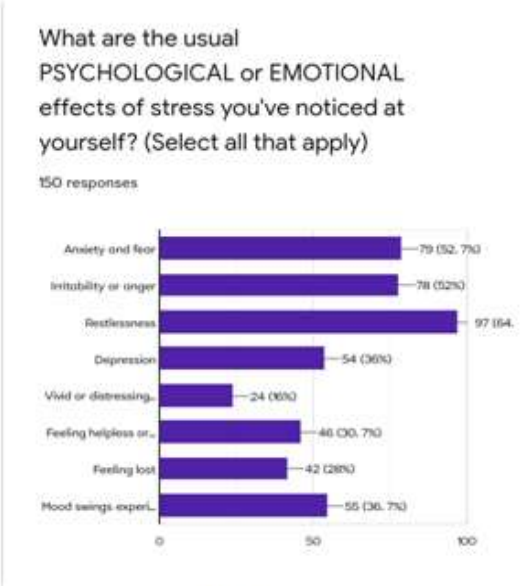

Fig: 2b

Pie Chart a and b shows ability to handle stress when experiencing it. Percentage of students selecting 4 on the scale is increased by 1.4 % during the Examination period. Percentage of students selecting 5 on the scale is increased by 2 % during the Examination period. A decline by 6.7 % in the percentage of number of students selecting 6 on the scale is observed during the Examination period. In the course of Regular period 18 % of the students have marked 7 on the scale as their ability to handle stress whereas during the Examination period 19.3 % of the students have marked 7 on the scale as their ability to handle stress. It is even observed that 16.7 % students have selected 8 on the scale whereas 14.7 % students have selected 8 on the scale during the Regular period and the Examination period respectively. Percentage of students selecting 10 on the scale is increased, that is 11.3 % and 14 %

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during the Regular period and the Examination period respectively.

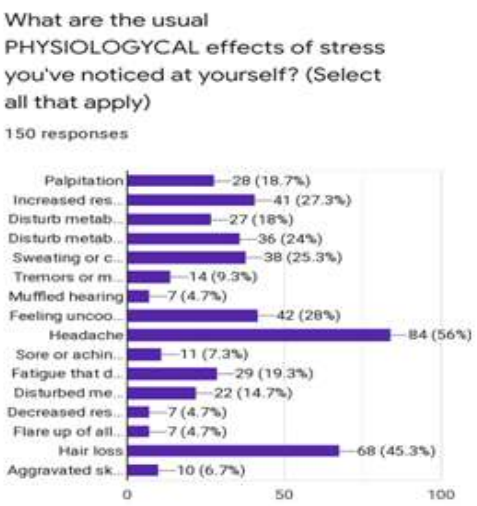

Fig: 3a

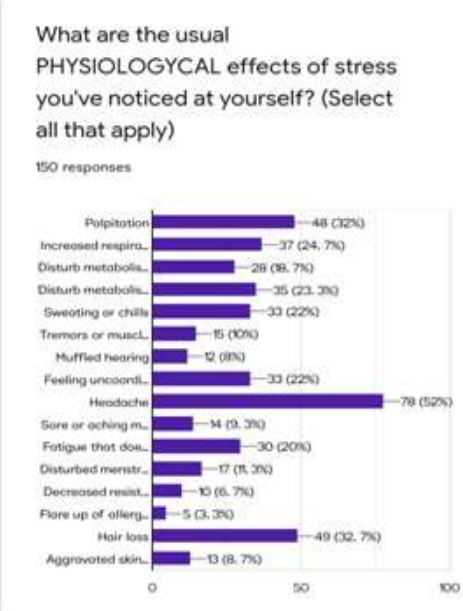

Fig: 3b

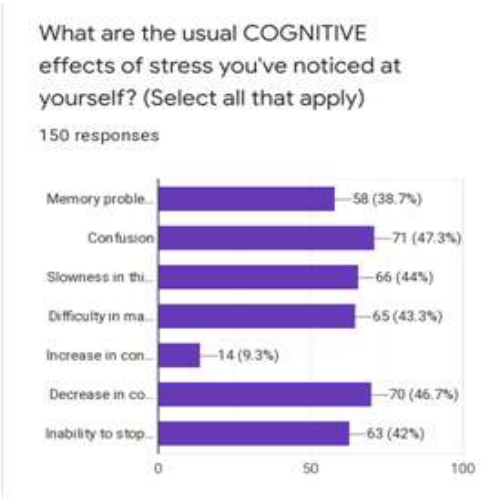

Fig: 4a

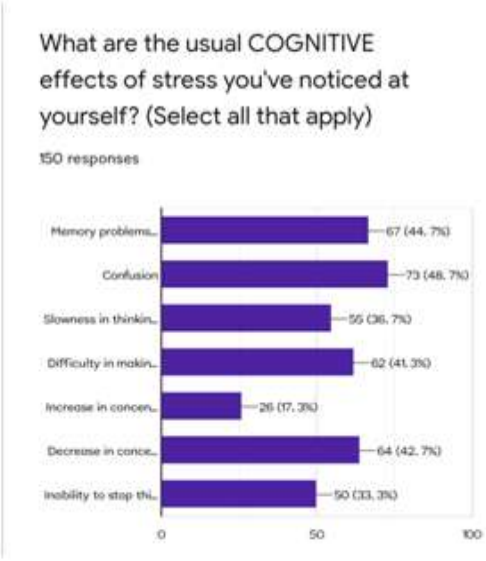

Fig: 4b

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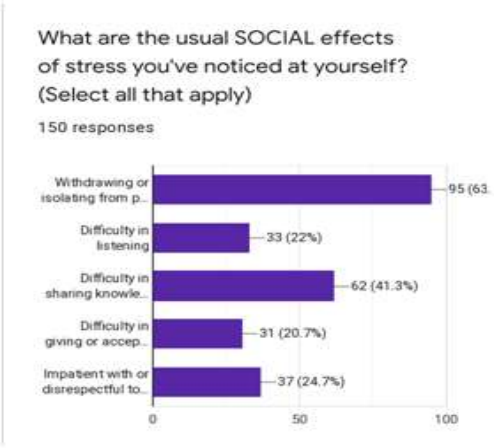

Fig: 5a

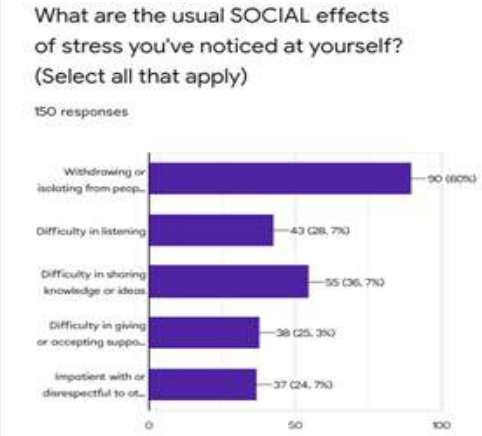

Fig: 5b

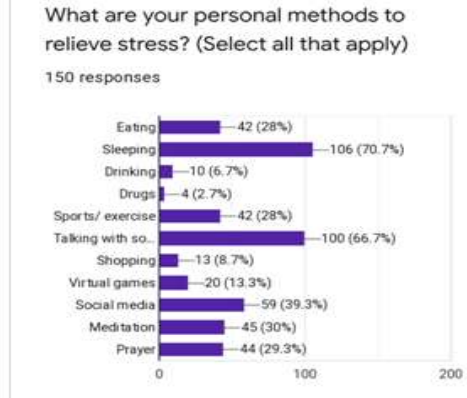

Fig: 6a

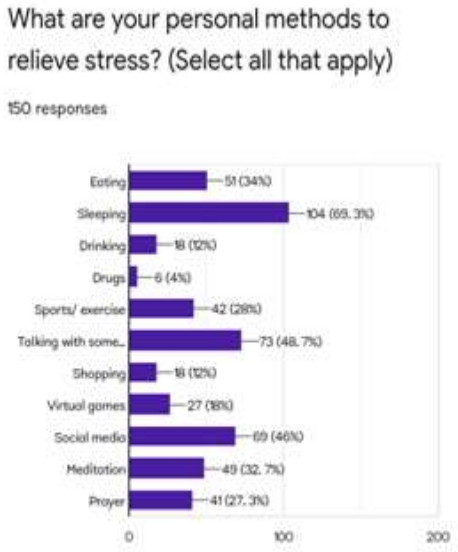

Fig: 6b

Fig: a

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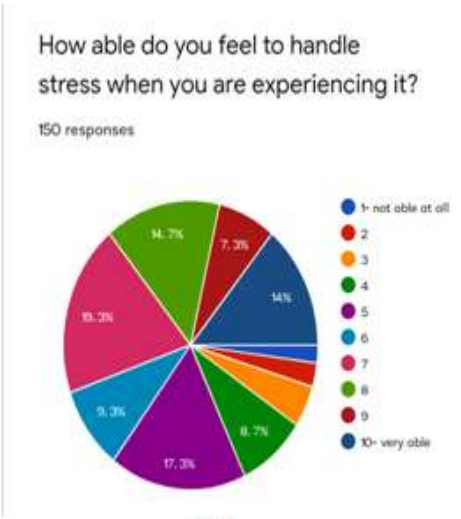

Fig: b

IV. DISCUSSION

Stress is a condition that puts mind in a state of fear or anxiety and is most commonly observed prior to and during examinations. Examination stress is one of the most widely suffered problems in the medical students throughout the world. However, stress is only healthy as a short – lived response. Excessive or prolonged stress can lead to illness, physical and emotional exhaustion. There are several changes that we go through in the time period that is followed by exams. These changes may be behavioural, psychological, physiological , cognitive and social. The extent to which these changes take place in different students can depend upon gender, physical activity, spiritual strength etc.

In the survey that I conducted it was observed that the intake of sugar, caffeine, energy drinks most commonly affected metabolism, immunity, moods and sleeping patterns which is in accordance with the studies previously published.[4,5]

The semester system introduced in the medical college has changed the examination pattern according to which students appear twice for Semester Professional Exams. The extensive course of Anatomy, Physiology, Biochemistry and Community Medicine in the First Prof MBBS along with increasing competition to achieve good score induces a lot of anxiety and stress among the medical students. Due to this they tend to study beyond their threshold levels ending up mentally saturated, food and sleep deprived which is in concert with previous studies that link psychological factors and inappropriate time scheduling with examination stress.[6,7]

In my study the trends show more than half the students suffered headache due to long working hours and tension of completing piled up course. Female students are seen to have higher anxiety levels as compared to their male counterparts, as demonstrated by a published study.[8] The stress often causes increased levels of *cortisol, epinephrine* and *norepinephrine* (also called Stress hormones), *leptin,NPY, nitrite, nitrate, ACTH* and *adrenomedullin* in blood. Increased cortisol level in turn leads to health consequences ranging from weight gain and moodiness to decreased immunity, high blood pressure and diabetes as documented in previous studies.[8-10]

During my study 17.3 % of students reported an increased concentration span during studies prior to exams. This is in agreement with positive effects of moderate stress in coping with challenging situations, however metabolic disorders, disturbed sleep and menstrual cycles all have been related to excessive release of stress hormones in researches conducted earlier.[4, 11-13]

According to my study the students consume increased amounts of sugar, energy drinks, caffeine in the form of coffee, tea because they think it helps lift their mood and improves alertness. However increased caffeine increases the levels of *adenosine, adrenaline, cortisol* and *dopamine* in blood. Elevated level of these hormones is responsible for the temporary boost one may experience but leads to fatigue, depression, mood swings, weight problems, heart disease, diabetes, skin disorders and decreased immune responses in the long run in addition to heart burn, stomach ulcers. Caffeine inhibits the absorption of some nutrients and increases the urinary excretion of calcium, magnesium, iron and some trace minerals. It increases the acidity of human Gastrointestinal tract, which leads to heart burn, as depicted in a study,[14] it also decreases blood flow to the brain by as much as 30 %. Caffeine also causes blood sugar swings by stimulating a temporary surge in blood sugar followed by increases insulin secretion that then leads to a blood sugar crash within a few hours, according to previously published studies.[5, 6, 15, 16]

The increased incidence of experiencing skin disorders in some students prior to examinations may be linked to increased levels of adrenal *corticosteroids – glucocorticoids,* released as part of natural response to stress.[9, 10] These play a role in deterioration of skin barrier function. It thus decreases cell growth and inhibits differentiation into skin cells. This can also worsen skin disorders such as psoriasis and eczema.

Imbalances in levels of the hormones *oestrogen* and *progesterone*may lead to disturbed menstrual cycles in some female students. This materialises when the level of oestrogen increases with simultaneous decrease in progesterone levels two weeks prior to one's menstrual cycle. Psychological stress is thought to trigger these changes in accordance with researches published earlier.[4, 11, 17]

It was noted in the previous researches that the students who exercised experienced less severe symptoms of exam related stress. Daily physical activity helps improve the digestive system, improves immune responses and enhances cognitive functioning. It was also seen in the previous researches that students who prayed regularly showed a calmer state of mind and coped well in stressful exam times. According to previous researches and in my findings I may associate this to mediatiation when one clears his/ her mind of all stress embarkers and focuses on spirituality. Significant increases in Brain Integration Scale scores (preparatory brain responses, broad band frontal coherence) have been showed in past researches. Therefore these support our findings and prove the significance of meditation.

This study has been carried out on a broader platform which has lead to more extensive outcome allowing the results to be more comparing and drawing a more accurate conclusion.

V. CONCLUSION

This study highlights the fact that the changes in activity levels and performance (68.7 %) are most marked in students during Examination period followed by withdrawing or isolating from people (60 %), disturbance in sleep cycle (56.7%), anxiety and fear (52.7 %), irritability or anger (52%), headache (52 %), confusion (48.7 %), memory problems/ forgetfulness (44.7 %), difficulty in sharing knowledge or ideas (36.7%).

In light of the statistics obtain through this research, I recommend that students should inculcate physical activity/ exercise and regular meditation in their lives to combat stress effectively.

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REFERENCES

[1]. Dorshkind K, Horseman NS. Anterior pituitary hormones,stress, and immune system homeostasis. Bioessays 2001;23:288–94.

[2]. Gurrero JM, Reiter RJ. A Brief Survey of Pineal Gland-Immune System Interrelationships. Endocr Res1992;18(2):91–113

[3]. Marshall GD Jr, Aqarwall SK. Stress, immune regulation,and immunity: applications for asthma. Allergy Asthma Proc 2000;21(4):241–6.

[4]. Loucks AB, Redman LM. The effect of stress on menstrual function. Trends Endocrinol Metab 2004;15(10):466–71

[5]. Farag NH, Vincent AS, McKey BS, Al'Absi M, Whitsett TL, Lovallo WR. Sex differences in the hemodynamic responses to mental stress: Effect of caffeine consumption.Psychophysiology 2006;43:337–43.

[6]. Papadelis C, Kourtidou-Papadeli C, Vlachogiannis E,Skepastianos P, Bamidis P, Maglaveras N, *et al*. Effects of mental workload and caffeine on catecholamines and blood pressure compared to performance variations. Brain Cogn 2003;51(1):143-54.

[7]. Sansgiry SS, Sail K. Effect of students' perception of course load on test anxiety. Am J Pharm Educ 2006;70:26.

[8]. Lovallo WR, Farag NH, Vincent AS, Thomas TL, Wilson MF. Cortisol responses to mental stress, exercise, and meals following caffeine intake in men and women. Pharmacol Biochem Behav 2006;83:441–7.

[9]. Ahs F., Furmark T., Michelgard A., Langstrom B, Appel L,Wolf OT, *et al.* Hypothalamic blood flow correlates positively with stress-induced cortisol levels in subjects with social anxiety disorder. Psychosom Med 2006;68:859–62.

[10]. Liu J, Garza JC, Truong HV, Henschel J, Zhang W, Lu XY.The melanocortinergic pathway is rapidly recruited by emotional stress and contributes to stress-induced anorexia and anxiety-like behavior. Endocrinology 2007;148:5531–40.

[11]. Wang L, Wang X, Wang W, Chen C, Ronnennberg AG,Guang W, et al. Stress and

dysmenorrhea: a population based prospective study. Occup Environ Med 2004;61:1021–6.

[12]. Monnikes H, Tebbe JJ, Hildebrandt M, Arck P, Osmanoglou E, Rose M, *et al*. Role of stress in functional gastrointestinal disorders. Evidence for stress-induced alterations in gastrointestinal motility and sensitivity. Dig Dis 2001;19(3):201–11.

[13]. Bhatia V, Tandon RK. Stress and the gastrointestinal tract. J Gastroenterol Hepatol 2005;20:332–9.

[14]. Naliboff BD, Maye MR, Fass R, Fitzgerald LZ, Chang L,Bolus R, *et al*. The effect of life stress on symptoms of heartburn. Psychosom Med 2004;66:426–34.

[15]. Patz MD, Day HE, Burow A, Campeau S. Modulation of the hypothalamo-pituitary-adrenocortical axis by caffeine.Psychoneuroendocrinology 2006;31:493–500.

[16]. Kadison R. Getting an edge—use of stimulants and anti depressants in College. N Engl Med J 2005;353:1089–91.

[17]. Fenster L, Waller K, Chen J, Hubbard AE, Windham GC, Elkin E, *et al*. Psychological stress in the workplace and menstrual function. Am J Epidemiol 1999;149(2):127–34. (Erratum in Am J Epidemol 1999;149(7):686.)

[18]. Travis F, Haaga DA., Hagelin J, Tanner M, Nidich S,Gaylord-King C, *et al*. Effects of Transcendental Meditation practice on brain functioning and stress reactivity in college students. Int J Psychophysiol 2009;71(2):170–6.