

Original article

Comparative analysis of stress among first M.B.B.S students of SBHGMC Dhule in consecutive three years and analyzing effect of yoga on stress

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Abstract

Background: To study and compare the prevalence of psychological stress in I MBBS students of SBHGMC Dhule in consecutive three years and to study effect of yoga on stress

Materials and methods: I MBBS students of batch 2011-12(I) & 2013-14(II) and 2015-2016(III) in SBHGMC, Dhule were included in study. This study was conducted after obtaining ethical clearance and consent. The study group of 60 students (18 – 25 years) from each year was asked to complete a pre-designed & pre-tested questionnaire was distributed randomly selected in each batch. Batch 2015-2016 students underwent yoga training of 21 days for one hour every day. A yoga module consisting of yoga asana, pranayama, meditation, and a value orientation program was administered.

Results and Conclusion: To meet the modern lifestyle full of challenges, stress and tensions an all round personality development has become mandatory for the student. The aspect of relaxation and detachment is lacking in our education process and yoga is this new dimension that needs to be added to the curriculum. It may be concluded from the finding of the study that with the intervention of yoga, academic performance improves by optimizing the stress levels. So it is suggested that yoga module should become a regular feature in the schools.

Key words: Stress, first M.B.B.S students, yoga

Introduction

I M.B B.S.is first level of exposure to professional college and vast curriculum, students experience hostel life and challenges of living alone also for first time. Students come out the comfortable environment of home, support of parents and house to deal with various problems related to academic and lifestyle for first time. Studies have shown that medical students experience a high level of stress during their undergraduate course^(1,2). High level of stress may have a negative effect on cognitive functioning and learning of students in the medical school⁽³⁾. Results of studies suggest that mental health worsens after students begin medical school and remain poor

throughout the training⁽¹⁾. The majority of studies on stress in medical education focus on the documentation of stress and information on the correlates of stress^(4,5). In many medical colleges, the environment itself is an all prevailing pressure situation, providing an authoritarian and rigid system, one that encourages competition rather than cooperation between learners⁽²⁾ It is not just the undergraduate study period which brings stress but it may continue during the internship, postgraduate study period, and later into physician's practical life^(6,7).The stress may also reach burnout levels⁽⁸⁾. So it is of importance to find out prevalence of stress, various stressors, effect of stress on mental, physical

& academic life of students, various coping techniques used by the pre-clinical medical students. Medical education is perceived as being stressful with negative effects on student's mental health & eventually physical health also. The science of yoga is a powerful stream of knowledge, which enables the practitioners to achieve radiant physical health, serene mind, continues spiritual uplift, and creates the ability for harmonious social living. Yoga through its techniques of meditation, asanas, and pranayama yields a positive effect in the management of stress in adolescents ⁽⁹⁾. The present study was, therefore, carried out to determine the prevalence of self-perceived stress among medical students and to observe any possible effect of yoga on stress.

Aims and objectives:

To study and compare the prevalence of psychological stress in I MBBS students of SBHGMC Dhule in consecutive three years and aims to study effect of yoga on stress

Materials and methods:

I MBBS students of batch 2011-12(I) & 2013-14(II) and 2015-2016(III) in SBHGMC, Dhule were included in study. This study was conducted after obtaining ethical clearance and consent. The study group of 60 students (18 – 25 years) from each year was asked to complete a pre-designed & pre-tested questionnaire was distributed randomly selected in each batch. Batch 2015-2016 students underwent yoga training of 21 days for one hour every day. A yoga module consisting of yoga asana, pranayama,

meditation, and a value orientation program was administered. The yoga group underwent the following program for 1 hour, namely

- a) Prayer ---1 min
- b) Suryanamaskar ---5 mins
- c) Ananas dwipad uttanpad asana, naukasana, pawanmuktasana, bhujangasana, shalabhasana, shashak-sana, kapotasana, vajravakrasana, akpadhastasana, veera sana, akpadvrukshasana-25 mins
- d) Anulomvilom, Ujjayi, Bhramari ---5 mins
- e) Yoganidra with visualisation ---20 mins
- f) Meditation on Onkar & Tratak ---5 mins
- g) Prayer & Stithapragnyasan ---2 mins

Questionnaire was analysed for most stressful factor and then CHI square test applied to find out association between stress factors & grades of stress (mild, moderate, severe). Questionnaire had sub-headings as follows

- 1) Stress of home life
 - 2) stress at school performances
 - 3) stress of school attendance
 - 4) stress of romantic Relationships
 - 5) stress of peer pressure
 - 6) stress of teacher interaction
 - 7) stress of future uncertainly
 - 8) stress of school leisure conflict
 - 9) stress of financial pressure
 - 10) stress of emerging adult responsibility
- Each stress Causative factor evaluated by different sub-questions and participant had to answer them in 5 options.
- 2) For example Stress of teacher interaction

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Impact factor 0.34 by P& P (2014)

	Name of the event	Not at all stressful	A little stressful	Moderately stressful	Quite stressful	Very stressful
1	Lack of respect from teacher					
2	Not being is listened to by teachers					
3	Getting along with your teachers					
4	Disagreement you and your teachers					
5	Teachers hassling you about the way you look					
6	Abiding by petty rule sat school					
7	Not getting enough timely feedback on school					

Students who marked against any stress grade at least once, then that causative factor considered to contribute stress. Each causative factor was then analyzed in following way

1. Twice marked against very/quite stressful = severe grade stress
2. Marked once against very /quite + twice against moderately = severe grade stress
3. Marked twice against moderately + at-least once against little = moderate grade stress
4. All other marking excluding above three= mild grade stress

All these parameters mentioned in questionnaire helped in evaluating most stressful factor, common symptoms of stress, change in stress condition in

consecutive three years . Effect of yoga on stress was obtained by same questionnaire including questions regarding effect of yoga and stress factors.

Statistical analysis: Data was entered and analysed with statistical method using chi square value and level of significance was obtained. Various Categories of stress that were studied are home life, school performance, school attendance, peer pressure teacher interaction, school conflict, financial pressure etc. were found out by percentage out of total students of that particular batch in individual for all three batches. CHI square test applied to find out association between most stressful factors & grades of stress (mild, moderate, severe).

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IC Value 91.48 (2014 -15)

Observations & results:

TABLE I: Effect of different stress factors IN 2013-14 BATCH NO.I : Questionnaire analysis

Stress factor	For all students(n=60)	
	YES	NO
stress of home life	78.57%	21.43%
Stress of school performance	90%	10%
Stress of school attendance	75%	25.71%
Stress of romantic relationships	67.24%	32.85%
Stress of peer pressure	73%	33%
Stress of teacher interaction	74.20%	25.71%
Stress of future uncertainty	86.85%	13.14%
Stress of school/ leisure conflict	85.67%	14.33%
Stress of financial pressure	80.34%	19.66%
Stress of emerging adult responsibility	75%	25%
Stress of other factors	90.67%	9.33%

From the above table, it can be seen that, all of the above stress factors are responsible for causing stress in the students. However we considered only those stress factors which were reported by more than 85% of all students for further analysis. These factors are stress of school performance, stress of future uncertainty, stress of school/leisure conflict & stress of other factors.

Table II: Symptoms reported by all students (n=60) while suffering from stress

Symptom	% of all students suffering from the symptom
Poor concentration	80%
Mood changes	78%
Restlessness	70%
Gastrointestinal like decrease in appetite & altered motions	60%
Excess perspiration & overheating	20%
Palpitations	25%

Table IV:Grades of stress

Grades of stress	Stress of school performance (n=60)	Stress of future uncertainty (n=65)	Stress of school / leisure conflict (n= 44)	Stress of other factors (n=63)
Mild	15	18	7	11
Moderate	20	17	13	17
Severe	15	30	24	35

Table IV: Chi square table

Grade of Stress	Stress of school performance		Stress of future uncertainty		Stress of school/ leisure conflict		Stress of other factors		Total
	O	E	O	E	O	E	O	E	
Mild	15	13	18	14	7	10	11	14	51
Moderate	20	17	17	19	13	12	17	18	67
Sever	15	27	30	29	24	19	35	28	104
	60		65		44		63		232

O----- OBSERVED VALUES E-----EXPECTED VALUES

Degree of freedom=6 χ^2 value=12.60 which is less than 0.02. it is significant

Table V:EFFECT OF DIFFERENT STRESS FACTORS IN 2014-15 BATCH NO.II

Questionnaire

analysis

Stress factor	For all students(n=60)	
	YES	NO
stress of home life	81.67%	18.33%
Stress of school performance	98.34%	1.66%
Stress of school attendance	81.67%	18.33%
Stress of romantic relationships	63.34%	36.66%
Stress of peer pressure	81.67%	18.33%
Stress of teacher interaction	76.67%	23.33%
Stress of future uncertainty	85%	15%
Stress of school/ leisure conflict	86.67%	13.33%
Stress of financial pressure	78.34%	21.66%
Stress of emerging adult responsibility	65%	35%
Stress of other factors	96.67%	3.33%

TableVI : Symptoms reported by all students (n=60) while suffering from stress

Symptom	% of all students suffering from the symptom
Poor concentration	86%
Mood changes	80%
Restlessness	79
Gastrointestinal like decrease in appetite & altered motions	57%
Excess perspiration & overheating	17%
Palpitations	8%

Table VII: Grades of Stress (For All Students)

Grades of stress	Stress of school performance (n=59)	Stress of future uncertainty (n=51)	Stress of school / leisure conflict (n= 52)	Stress of other factors (n=58)
Mild	14	16	17	5
Moderate	21	16	12	17
Severe	14	19	23	36

Table VIII: Chi square table

Grade of Stress	Stress of school performance		Stress of future uncertainty		Stress of school/ leisure conflict		Stress of other factors		Total
	O	E	O	E	O	E	O	E	
Mild	14	14	16	12	17	12	5	14	52 (23.63%)
Moderate	21	18	16	15	12	16	17	17	66 (30%)
Severe	14	27	19	24	23	24	36	27	102 (46.36%)
	59		51		52		58		220

Degree of freedom=6 χ^2 value=15.76, which is less than 0.02. it is significant

TABLE IX: EFFECT OF YOGA ON DIFFERENT STRESS FACTORS IN 2015-16 BATCH NO.III

Questionnaire analysis

Stress factor	For all students(n=60)	
	YES	NO
stress of home life	60%	40%
Stress of school performance	66%	34%
Stress of school attendance	77.66%	22.34%
Stress of romantic relationships	60.34%	39.66%
Stress of peer pressure	61.67%	38.33%
Stress of teacher interaction	56.67%	43.33%
Stress of future uncertainty	55%	45%
Stress of school/ leisure conflict	76.67%	23.33%
Stress of financial pressure	68.34%	31.66%
Stress of emerging adult responsibility	55%	45%
Stress of other factors	66.67%	33.33%

Table X: Symptoms reported by all students (n=60) while suffering from stress after completion of yoga.

Symptom	% of all students suffering from the symptom
Poor concentration	76%
Mood changes	60%
Restlessness	69 %
Gastrointestinal like decrease in appetite & altered motions	37%

Excess perspiration & overheating	7%
Palpitations	8%

Table XI: Grades of Stress (For All Students) after yoga session

Grades of stress	Stress of school performance (n=38)	Stress of future uncertainty (n=31)	Stress of school / leisure conflict (n= 45)	Stress of other factors (n=40)
Mild	19	20	22	18
Moderate	12	7	10	12
Severe	7	4	13	10

Table XII: Chi square table

Grade of Stress	Stress of school performance		Stress of future uncertainty		Stress of school/ leisure conflict		Stress of other factors		Total
	O	E	O	E	O	E	O	E	
Mild	19	19.49	20	15.90	22	23.08	18	20.51	79
Moderate	12	10.11	07	8.25	10	11.98	12	10.64	41
Sever	07	8.38	04	6.84	13	9.93	10	8.83	34
	38		31		45		40		154

Chi square value for degree of freedom 6 is 4.9, corresponding to P value of less than 0.5 **it is not significant**

Discussion

Medical school training is intended to prepare graduates for a personally rewarding and socially meaningful career. However, reports have shown that this is a time of great personal distress for physicians-in-training ^[10] It has long been recognized as involving numerous stressors that can affect the wellbeing of the students ^[11]. Student distress may influence professional development and adversely impact academic performance contributing to academic dishonesty and substance abuse, and may play a role in attrition from medical school ^[10]. Other studies on medical school graduates also suggest that distress may negatively affect quality of patient care, patient safety^[12] and professionalism^[13] Stress is prevalent among medical professionals, and that is also true for the medical students who have very busy and demanding schedule^[14].The stress of

medical training stems from academic pressure , perfectionist standards and demanding nature of medical practice which requires involvement with the most personal or emotionally draining aspects of life(human suffering ,death, sexuality and fear) ^(15,16) This study not only explores the different perceptions of ‘stress’ amongst the medical students community but also looks into the coping strategies adopted to deal with the problem. These students face social, emotional and physical and family problems which may affect their learning ability and academic performance ^(17,18) .Some of them find it hard to cope with the stress and lag behind, while others see the pressure as challenge to work harder. Medical students particularly perceive themselves more likely to become ill than others ⁽¹⁹⁾ .Stress can lead to disruptions in both physical and mental health. Stress reduction and adopting a healthier life style have

been major concerns of the students⁽²⁰⁾ The young student population has always been vulnerable to stressful life conditions especially in pursuit of higher professional education in a highly competitive environment⁽²¹⁾.

In our study we found that, in batch I AND II more than 85% of students reported school performance, future uncertainty, school/leisure conflict & other factors like-public speaking, public image, raging, change in environment, poor food quality, lack of family support, relationship insecurity, parental unemployment as the major factors responsible for stress. Stress of home life, stress of school attendance and stress of peer pressure was perceived by 70% to 80% of all students. Stress of financial pressure was reported by 78.34 % to 80% of all students. Stress of teacher interaction was reported by 74 % to 76.67% of all students. 65% to 75% of students noted the stress of emerging adult responsibility & stress of romantic relationship was reported by 63% to 67% of all students.(table no I,V) .These finding are reduced in batch no .III shown in table no.IX While under stress, students of BATCH I and II experienced more symptoms of poor concentration,mood changes, restlessness, gastrointestinal symptoms like decrease in appetite & altered motions, excess perspiration & palpitations compared to batch III(Table no II,VI,X) . Chi square value for degree of freedom 6 is corresponding to P value of less than 0.02 in batch no. I and II. So we can infer that: We also found that

1. grades of stress of future uncertainty & stress of school/leisure conflict is responsible for moderate to severe stress in students of batch I and II
2. Stress of school performance & stress of future uncertainty is responsible for moderate to severe grades of stress in batch I and II

3. Stress of other factors is responsible for moderate to severe in batch I and II

Chi square value for degree of freedom 6 is 4.9 corresponding to P value of less than 0.5 in batch no. III a So we can infer that: We also found that of stress of future uncertainty & stress of school/leisure conflict , Stress of school performance & stress of future uncertainty , Stress of other factors are not contributing in stressful condition because of YOGA training.

Stress is known to modulate the activity of autonomic nervous system and central nervous system in a way so as to cope up with the stress to get adapted to it.In stressful states with preponderance of sympathetic activity, yogic as an asanas and pranayama can lead to a state of reduced sympathetic activity shifting the autonomic balance towards relative parasympathetic dominance^(22,23,24)

In one study, it is found that a 4-week program of yogasanas and meditation lowers the aggressive behavior of students⁽²⁵⁾ Another study has reported that meditation (a) reduced problems related to maladaptive behaviors, (b) increased emotional and physical health and psychological well-being, (c) reduced the frequency of thought, (d) reduced substance abuse, and (e) generally improved the quality of life⁽²⁶⁾ The present study revealed a definite reduction in the stress factors and symptoms of stress following yoga. A high positive feedback score of yoga group with regard to the parameters such as sense of wellbeing, feeling of relaxation, improved concentration, self confidence, improved efficiency, good interpersonal relationship, increased attentiveness, lowered irritability levels, and an optimistic outlook in life are some of the beneficial effects enjoyed by the yoga group. Similar results have been shown by Schell et al⁽²⁷⁾.

These are useful traits for success in any profession. Use of different de-stressing techniques like regular practice of Yoga & pranayam⁽²⁸⁾, listening to music, deep breathing & meditation, self instruction & biofeedback should be promoted in students. Since it was the first time yoga was introduced in the college we also determined whether the students enjoyed the yoga sessions. 95% thoroughly enjoyed the sessions while 5% enjoyed it to some extent.

Limitations

This cross-sectional study was based on self-reported information provided by students. Therefore, there is some potential for reporting bias which may have occurred because of the respondents' interpretation of the questions or desire to report their emotions in a certain way or simply because of inaccuracies of responses.

Conclusion:

To meet the modern lifestyle full of challenges, stress and tensions an all round personality development has become mandatory for the student. The aspect of relaxation and detachment is lacking in our education

process and yoga is this new dimension that needs to be added to the curriculum. It may be concluded from the finding of the study that with the intervention of yoga, academic performance improves by optimizing the stress levels. So it is suggested that yoga module should become a regular feature in the schools.

Scope of study regarding yoga:

- a) Should be a continuous on-going activity
- b) Yoga should be included as a part of the curriculum in theory
- c) Should be started from the time of admission into professional colleges so as to benefit one in the long run and study can be conducted whether Yoga is effective in physical, emotional, mental, personality development and holistic understanding offers to cope with stressful states in long term.
- d) Screening of students should be done at regular intervals to find out the students suffering from psychological illnesses so that proper counseling may be done.

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