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Original Research Article

Is yoga an effective modality of stress reduction within medical population; a qualitative study within MBBS students of BRD medical college, Gorakhpur

Vikash K. Tiwari[1], Vinay Singh[1]*, Devesh Kumar[1], Mahim Mittal[2], A. B. Asthana[1]

[1]Department of Physiology, [2]Department of Medicine, BRD Medical College, Gorakhpur, Uttar Pradesh, India

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***Correspondence:**
Dr. Vinay Singh,
E-mail: vinaysinghdr12@gmail.com

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ABSTRACT

Background: Stress is very common in medical professionals. Stress begins in the first year of medical school and increases with subsequent years of medical life. Stress decreases overall performance and had a multitude of health-related adverse effect. Yoga has been tried as a stress reduction technique in different populations. In present study yoga was performed in the 1st year MBBS students and impact on stress reduction was studied using PSS-10 stress scale.
Methods: Study groups, yoga and control contained 26 and 27 subjects respectively. The yoga group practiced selected yogic asana, pranayama, and yoga nidra 1hour daily 6days a week for 3months. Control group kept in touch and allowed their usual activity as before. The PSS-10 scale used to measure the level of stress in both groups pre and post study.
Results: There was a highly significant reduction in the PSS-10 Score (stress level) in the yoga group (P Value <0.0001) but there was no significant change in the PSS-10 Score of control group (P Value = 0.2930).
Conclusions: Yoga is an effective modality of stress reduction technique in 1st year medical students. Therefore, yoga should be introduced as a part of the curricula in the first year of medical school. This may be taken as the 1st step in implantation of healthy lifestyle in future health care providers.

Keywords: Medical students, PSS-10, Stress, Yoga

INTRODUCTION

Stress is a mental status when individual perceives that environmental demands exceed his or her adaptive capacity. Chronic stress exposure is more likely to result in long-term or permanent changes in the emotional, physiological, and behavioral responses.[1] Exposure to intense and chronic stressors has long-lasting neurobiological effects and puts one at increased risk of anxiety and mood disorders, aggressive problems, hypo-immune dysfunction, medical morbidity, structural changes in the CNS, and early death.[2]

There appear to be high rates of mental health problems in young doctors. A wealth of researches conducted worldwide suggests that doctors have high rates of mental health problems, including depression, anxiety, addiction to alcohol or drugs, misuse of prescription drugs, and emotional exhaustion. Suicide levels are also high for doctors, particularly female doctors. Recent findings from studies of young doctors suggest that their own health care is poor and that doctors with addiction problems in later life tend to manifest vulnerabilities at medical school.[3] In the current scenario the prevalence of perceived stress is very high among medical students,

which directly affects not only their academic performances but all aspects of health too. This stress can lead to depression, daytime sleepiness, sleep deprivation and overweight. Study at Medical school is indeed a time of significant psychological distress for the budding physicians. Stress increases as MBBS student go in first to second and then third year of study. So, the first year of medical education is the beginning point of the stressful medical carrier and it increases with time.[4] Factors contributing to high levels of stresses in medical colleges could be highly competitive curriculum, intense academic competition, and excessive demands on coping abilities in physical, intellectual, emotional, financial and social terms.[5] Thus stress and anxiety along with substance abuse develop early in medical training and may increase with time. Until and unless our students themselves practice health promotional measures, they are very less likely to guide and motivate their patients and the community to do so.[6]

There are several well-known effects of yoga practice such as an enhanced sense of wellbeing, better physical endurance, as well as definite changes suggestive of stress reduction.[7] Practicing yoga and meditation as a means to manage and relieve both acute and chronic stress helps individuals overcome stress and leads to increased quality of life. Yoga is able to increase relaxation and induce a balanced mental state and improves sleep quality and insomnia. Furthermore, participation in yoga classes improved self-reported quality-of-life as well as measures of physical function among an elderly population.[8]

It is very clear from the above discussion that yoga can be useful to reduce the stress among medical students. Thus, this study aims to pave a path towards stress reduction techniques for future health care providers, what even now remains the minimally touched issue.

METHODS

This study was conducted in Yoga lab of Physiology Department, BRD Medical College, Gorakhpur for period of 3 months between March and June 2016.

Inclusion criterion

- Willing to participate and continue the yoga practice,
- Physically able to do yoga practice,
- Normal health status.

Exclusion criterion

- Practicing yoga in past,
- Presence of stroke, seizure, vertigo, hypertension, coronary artery disease, congenital heart diseases, history of status asthamaticus, peptic ulcer disease, spondylitis, joint pain, disc prolapse, CSOM, hernia, physical inability to practice yoga, any other disease condition,
- Any addiction (excluding nicotine).

First year medical students were counseled and motivated for taking part in the study. All first-year medical students showing interest in Yoga were assessed using PSS-10 scale and students showing a score of the high stress group were included in the study. They were informed about study. Informed consent was taken on paper. Each participant was interviewed for health history and demographic details before start of the study. The participants (N=60, including male and female) were randomized in two group (Yoga group and Control group) by computer generated list of random numbers. There were 30 (20 Male and 10 Female) participants in Yoga group and 30 (19 Male and 11 Female) in control group. Yoga instructor taught yoga group a specific yoga module 1hours/day, 6day a week for 3months. Subjects in control group received no specific intervention but kept in touch for final evaluation. All participating medical students were assessed again at end of 3months using PSS-10 scale. There were 4 drop out in yoga and 3 in control group.

Yoga module included asana for 35 minutes (preliminary preparation, surya namaskar, pawan muktasana, shankasana, supt vajrasana, setu bandhasana, chakrasana, sarvangasana, halasana), pranayama for 15minutes (bhastrika, kapalbhati, bahya pranayama, anuloma viloma, bhramari, udgeeth), and yognidra for 10minutes.[9-14]

The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. The items are easy to understand, and the response alternatives are simple to understand. Furthermore, the questions are of general in nature, and hence, are relatively free of content specific to any subpopulation group. The questions in the PSS-10 scale ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way in a series of 10 questions regarding their recent personal stress perceptions, using a four-point frequency scale viz. Never (0), Almost never (1), Sometimes (2), Fairly often (3) Very often (4). Minimum score is 0 and maximum is 40. Higher the degree and longer the duration of self-perceived stress, indicated by a higher score. Scores around 13 are considered average. High stress groups usually have a stress score of around 20 points. Scores of 20 or higher are considered high stress.

Data was obtained as mean ±SD of PSS-10 scale. Data was compared before and after yogic practices and analyzed using SPSS V-20. Data related to yoga and control groups were compared using t-test and p value <0.05 was considered statistically significant. Figures were prepared using GraphPad Prism 6 and tables by Microsoft office 2010.

RESULTS

Table 1, 2, 3 and Figure 1 summarizes findings of the present study. Higher PSS-10 score is associated with high stress level. Pre and post study PSS-10 score in the yoga group was 24.19±3.74 and 17.30±7.31 respectively (P Value <0.0001). There were 20 (77%) participants in yoga group in whom score decreased from 24.65±3.57 to 14.60±5.64 and in 6 (23%) participants increased from 22.66±4.22 to 26.33±4.41. Pre and post study PSS-10 score in the control group was 23.48±2.65 and 22.25±6.66 respectively (P Value = 0.2930). There were 12 (44%) participants in control group in whom score decreased from 23.16±3.09 to 16.33±5.14 and in 15 (56%) participants increased from 23.73±2.31 to 27.00±2.72.

Table 1: Distribution of PSS-10 score in yoga group (N=26).

Yoga group	Pre-study (mean ± SD)	Post-study (mean ±SD)	Percentage change in PSS-10 score
Total sample (n=26)	24.19 ± 3.74	17.30 ± 7.31	28.48% decrease
Decreasing pattern (n=20)	24.65 ± 3.57	14.60 ± 5.64	40.77% decrease
Increasing pattern (n=6)	22.66 ± 4.22	26.33 ± 4.41	16.20 % increase

Table 2: Distribution of PSS-10 score in control group (N=27).

Control group	Pre-study (mean ±SD)	Post-study (mean ±SD)	Percentage change in PSS-10 score
Total sample (n=27)	23.48 ± 2.65	22.25 ± 6.66	5.24% decrease
Decreasing pattern (n=12)	23.16 ± 3.09	16.33 ± 5.14	29.49% decrease
Increasing pattern (n=15)	23.73 ± 2.31	27.00 ± 2.72	13.78% increase

Table 3: Relative change in PSS-10 score in yoga and control groups.

	Yoga group	Control group
Sample size	26 participants	27 participants
Decreasing pattern	77% participants (n=20)	44% participants (n=12)
Increasing pattern	23% participants (n=6)	56% participants (n=15)
Overall change in pss-10 score	28.48% decrease (p value < 0.0001)	5.24% decrease (p value = 0.2930)

DISCUSSION

We can see that there were 77% participants in yoga group where PSS-10 score decreased hence stress, while increased in only 23% participants. Overall there was decrease in PSS-10 score in yoga group, which was statistically significant (P Value <0.0001). In control group there were 56% participants where PSS-10 score increased and in 44% participants decreased. Overall observed difference in control group was not statistically significant (P Value = 0.2930).

A study conducted by Lin SL et al concluded that mental health professionals experienced a reduction in work-related stress and an increase in autonomic nerve activity in a weekly yoga program for 12 weeks.[15] In 2015 Oron G, et al found in their one study that yoga program decreases stress in women waiting for IVF.[16] Mindfulness-based stress reduction (MBSR) reduced anxiety in veterans in a study conducted by Serpa JG, et al.[17] Gard T, et al also concluded in their one study that yoga-based intervention decreases the perceived stress in young adults.[18] Messripour M, et al concluded in their one study involving young Iranian women that yoga decrease the PSS-10 score.[19] Sudarshan Kriya Yogic breathing alleviated everyday stress, post-traumatic stress, and stress-related medical illnesses in a study conducted by Brown RP, et al.[20]

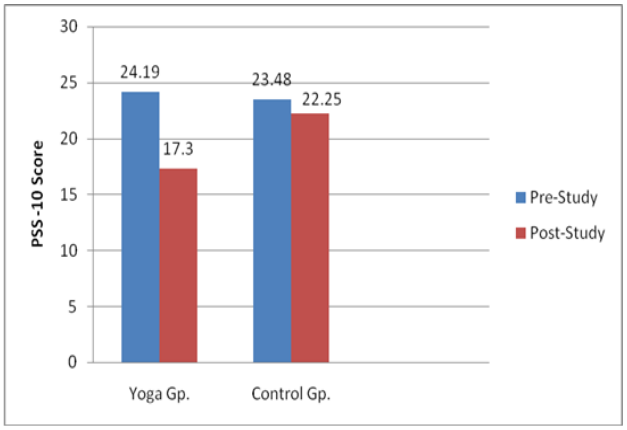

Figure 1: Change in PSS-10 score in yoga and control group.

He described the mechanisms contributing to a state of calm alertness include increased parasympathetic drive, calming of stress response systems, neuroendocrine release of hormones, and thalamic generators. So, it very clear that many studies conducted earlier in different population shows reduction in stress and cortisol level. Similar result came in this study in medical students.

Strength-All subjects (male and female) included in study were staying within hostel of college. They all were 1st year MBBS students with age ranging from 18 to 22 years. Subject with any confounding factor were excluded from study. Study was started almost after 6 months of their entry in medical college, thereby in equilibrium with medical college life. Thus, all subjects were almost similar and were facing similar social and academic stress within college premises.

Limitations of the study was the sample size and duration of study was small. PSS-10 was introduced only at start and end of study, so trend of change during study can't be predicte.

CONCLUSION

This study concludes that yoga is an effective modality of stress reduction techniques in 1st year MBBS students. Introducing yogic stress reduction techniques early in Medical Schools may lead to production of minimally stressed future healthcare providers thus more effectively contributing in healthcare infrastructure of society.

Recommendations

This study should be conducted with bigger sample size and at multiple medical institutions. Study should be carried forward in subsequent years of medical training. Biochemical parameters should be measured in detail making study more quantitative.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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