Mindful awareness for female dental students through yoga, motivational video, and a combination of two on stress reduction

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ABSTRACT

Objective: Assessment of the potential effect of yoga, motivational videos, and a combination of two on stress reduction in female dental students.

Methods: The current study design is a nonrandomized trial carried out among female dental students (n = 120). The selected subjects were allocated into three groups, namely, group A: yoga group assigned under a professional yoga instructor, group B: motivational video group, and group C: a combination of two (A and B) involving yoga sessions and motivational videos; following which formative examinations were carried out at 6 weeks which were referred to as stressor 1 and those carried out at 12 weeks were referred to as stressor 2. Using Spielberger’s State-Trait Anxiety Inventory for Adults (STAI-A) recordings were measured at baseline, stressor 1, and stressor 2.

Results: There was a significant decrease in trait anxiety scores at both stressors in all the groups with a significant reduction in depression score from stressor 1 to 2 in group 1 and group 3 subjects. The significant decrease occurred in STAI-A scores in group 1 and group 3 subjects at both stressors (P < 0.001) with no change observed in group 2 subjects.

Conclusion: The present study is one of a kind and positively correlates yoga and motivational videos with stress reduction. Both of these interventions proved to be beneficiary for physical as well as mental health of study subjects.

Keywords: Motivational video, state anxiety, yoga

Introduction

Stress is a growing public health concern, affecting many individuals both physically and psychologically. Stress often puts a strain on personal and professional relationships, leading to decreased self-satisfaction and poor psychological adjustment. Over the past 70 years, an increasing amount of research has evaluated stress and its adverse effects on psychological and physical health. In this context, yoga has proven to be an effective way of tackling stress-related physical and mental issues. The element of perception indicates that human stress responses reflect differences in personality, physical strength as well as general health. Medical education is well-known to be highly competitive in nature and previous studies have already documented that perceived stress scores are higher in medical students compared to other age controlled students which accentuate during the examination. The level is higher in female students compared to male students. In
addition, exercise and yoga are known to play an important role in reducing stress.

Yoga, an ancient discipline known to be originated in India, is primarily designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of an individual. Yoga is often depicted metaphorically as a tree and comprises eight aspects or “limbs”, namely, yama (universal ethics), niyama (individual ethics), asana (physical postures), pranayama (breath control), pratyahara (control of the senses), dharana (concentration), dhyana (meditation), and samadhi (bliss). A growing body of research evidence supports the belief that certain yoga techniques through down-regulation of the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS) may improve physical and mental health.

The HPA axis and SNS are triggered as a response to a physical or psychologic demand (stressor), leading to a cascade of physiologic, behavioral, and psychologic effects, primarily as a result of the release of cortisol and catecholamine (epinephrine and norepinephrine). This response leads to the mobilization of energy needed to combat the stressor through the classic “fight or flight” syndrome. Over time, the constant state of hypervigilance resulting from the repeated firing of the HPA axis and SNS can lead to dysregulation of the system and ultimately result in disorders such as obesity, diabetes, autoimmune disorders, depression, substance abuse, and cardiovascular disease. Numerous studies have shown that yoga has an immediate downregulating effect on both the SNS and HPA axis response to stress. Studies show that yoga decreases levels of salivary cortisol, blood glucose, as well as plasma renin levels, and in the 24-hour urine norepinephrine and epinephrine levels.

Moreover, yoga significantly decreases heart rate and systolic and diastolic blood pressure. Studies suggest that yoga reverses the negative impact of stress on the immune system by increasing levels of immunoglobulin A as well as natural killer cells. Yoga has been found to decrease markers of inflammation such as high sensitivity C-reactive protein as well as inflammatory cytokines such as interleukin-6 and lymphocyte-1B.

In general, by practicing yoga, an individual reaches a state of mental tranquility and calmness, where behavior to favorable or unfavorable external events are well-controlled by the individual, subsequently, responses are moderate in intensity. 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.

Symptoms are perceived indicators of a change in healthy functioning as experienced by patients. They are multidimensional, having subjective, perceptive, and experiential characteristics. These characteristics include both the physiologic sensations that signal patients that some internal condition is different and the interpretive processes that motivate patients to construct meanings for the symptoms and decide how to respond to them. This can significantly impact patient outcomes in terms of quality of life, functional and emotional status, compliance to treatment, self-care and management, mortality, and morbidity.

Studies conducted across the world have shown that examinations and grades are the most highly ranked sources of stress. Other causes may be classwork overload, clinical training difficulties, and self-efficacy beliefs, the atmosphere created by clinical faculties, financial responsibilities, and insecurities about the professional future.

Asian students have been reported to be mainly concerned about completing the graduation requirements.

This study is particularly important for the students choosing dentistry as a future profession and their parents who are the general public. Students are under extreme pressure to perform, be it dentistry or any other profession, so the need for the hour is relaxing them through yoga or extracurricular and outdoor activities. Specific sources of stress mainly include factors related to the practice of clinical dentistry, patient management; they need to meet academic and clinical requirements and interactions with clinical instructors, support staff as well as family members.

Methodology

Study design

The present study is a nonrandomized control trial. Prior permission was taken from the institutional ethics committee. One female yoga instructor taught yoga to the female dentists living in girls hostel of the institute hence, only female subjects in the age group of 18–22 years were selected for the present study. After meeting the inclusion and exclusion criteria of the study, consecutive, 120 first and second year BDS female student volunteers were selected and enrolled in the study after obtaining written informed consent. Based on their preference for yoga training, students were divided into three groups as follows:

| Groups                     | Subjects                                      |
|----------------------------|-----------------------------------------------|
| Group A (n=40):            | Subjects who underwent yoga training.         |
| Group B (n=40):            | Subjects who were shown motivational videos.  |
| Group C (n=40):            | Subjects who underwent yoga training as well as shown motivational videos. |

Inclusion criteria

- Healthy female subjects in the age group of 18–22 years.
- Only dental students were included.

Exclusion criteria

- Subjects who have practiced any other form of yoga exercise including meditation or biofeedback relaxation techniques in the past 1 year.
Intervention for yoga group and motivational video groups (i.e. yoga exercises for group A subjects and motivational video for group B subjects) was given for 40 min daily, six times per week for the duration of 4 weeks. All the subjects were then assessed thrice during the study as follows:

1. Baseline recordings when no examination stress was given (No stress)
2. 2 weeks later one examination was conducted and recordings were taken 1 day before the examination (Stressor 1)
3. 4 weeks later, another examination was conducted and recordings were taken just before the examination (Stressor 2)

### Yoga training

To ensure regularity and uniformity, yoga training was given by a qualified yoga instructor from Arogyam Yoga Centre. Before the beginning of yoga training, the yoga trainer familiarized group A subjects with different theoretical aspects of yoga practices and the technique of meditation was taught in a series of 5 lectures. For the first 30 mins different types of asanas of yoga were accomplished and for the remaining 10 min, Om chanting meditation was performed.

### Motivational video

Group B subjects were shown 4 motivational videos (1 video of 40 min/week).

### Yoga and Motivational Video Group

Group C subjects were shown 4 motivational videos (1 video of 40 min/week) and simultaneously they performed yoga under the guidance of the yoga instructor.

The comparison from baseline to 2 weeks and 4 weeks were done using:

1. Spielberger’s State Anxiety Inventory Scale for adults (STAI-A): State anxiety is a “transitory” emotional state that is characterized by subjective, consciously perceived feelings of tension and stress. This scale has twenty questions with a range of four possible responses to each
2. Inventories developed by Defence Institute for Physiology and Applied Sciences, India (DIPAS) were used to measure traits of anxiety, depression, and well-being as they are valid for the Indian population
   - Trait anxiety: State anxiety may fluctuate over time and can vary in intensity. In contrast, trait anxiety denotes “relatively stable individual differences in anxiety proneness” and refers to a general tendency to respond with anxiety to perceived threats in the environment and various situations. This questionnaire consists of 40 items and the total score ranges from 0 to 120. The ideal score is <40
   - Depression: This scale consists of 10 items that take into consideration variables such as depressed mood, guilt, difficulty in sleeping, decision making, work, and interests. The optimal score is <3
   - Sense of well-being: It refers to that positive attribute, which enables the person to reach enhanced levels of mental health, even if the person does not have any diagnosed mental health condition. This questionnaire consists of 50 questions and assesses individuals on various aspects of subjective well-being including the ability to develop persons’ potential; work productivity and creativity; build strong and positive relationships with others, and contribute to the community. The optimal score is <40.

### Statistical analyses

The data were analyzed using SPSS version 18. Analysis of variance (ANOVA) was used to analyze the reduction in STAI-A, trait anxiety, depression, and sense of well-being score in the three groups. ANOVA [Table 1] was carried out to assess the intra and intergroup variations for STAI-A, trait anxiety, depression, and sense of well-being. There was no difference in the baseline value in STAI-A, trait anxiety, depression, and sense of well-being $P > 0.05$. There was a statistically significant decrease in the STAI-A, trait anxiety, depression, sense of well-being in group A and group C at 1 week and 2 weeks ($P < 0.05$) [Table 2]. The difference was there in group B from baseline to 1 and 2 weeks but it was not statistically significant.

There was a progressive decrease in the STAI-A, trait anxiety, depression, and sense of well-being score at a 5% level of significance. A combination of yoga and motivational video group showed a maximum decrease followed by a yoga group and then motivational video group.

Data shows that the combination of yoga and motivational video results in a maximum decrease in STAI-A, trait anxiety, depression, and a sense of well-being but is statistically equivalent to the yoga group.

### Discussion

In the present study, group 1 and group 3 subjects were having significantly higher anxiety and lesser feeling of well-being

### Table 1: Comparison of three groups at baseline (Mean±SD)

| Parameters         | Group A | Group B | Group C |
|--------------------|---------|---------|---------|
| STAI-A             | 43.34±6.0 | 40.5±9.5 | 46.8±8.0 |
| Trait anxiety      | 45.7±8.2 | 49.30±5.7 | 48.23±7.05 |
| Depression          | 12.8±7.2 | 12.5±3.0 | 15.23±7.3 |
| Sense of well-being | 64.2±12.7 | 54.8±7.5 | 61.7±17.9 |
as compared to group 2 subjects at the baseline. Although it cannot be explained by the study, it probably shows that more anxiety-prone individuals with lesser well-being feeling chose integrated yoga over motivational video.

According to the present study, there was no difference in the baseline value in STAI-A, sense of well-being $P \leq 0.05$. There was a significant fall in the STAI-A scores in group A and group C subjects both at stressor 1 and 2. This significant reduction in STAI-A scores also continued from stressor 1 to 2. This shows that yoga practice alone or when it combines with motivational videos significantly decrease “state anxiety” in group 1 and group C subjects. There was a significant fall in the STAI-A scores in group B subjects both at stressor 1 and 2. This significant reduction in STAI-A scores also continued from stressor 1 to 2. This shows watching motivational videos also helps reducing state anxiety as well as the sense of well-being.

In a study by Sharma et al., there was a significant fall in the STAI-A scores in group A subjects both at stressor 1 and 2 as compared to baseline. This significant reduction in STAI-A scores also continued from stressor 1 to 2. This shows that yoga practice significantly decreased “state anxiety” in group A subjects. Since state anxiety is a transitory emotional state which increases with a stressor, our study shows that yoga enabled group A subjects to remain calm and less anxious in the event of examination stress. There was no change in STAI-A scores in group B subjects at both stressors as compared to baseline (no stressor) which shows that physical exercises can prevent the rise of anxiety state with stressor but not reduce it. There was a significant reduction in trait anxiety in all the groups at both stressors ($P \leq 0.001$) compared to their baseline scores.

**Conclusion**

To conclude, our study demonstrates that all the three forms of intervention i.e. yoga training, motivational videos, and the synergistic effect of yoga and motivational videos are beneficial for the subjects in reducing the effect of examination stress on tested parameters but the effect of yoga practice starts immediately and is more pronounced on most of the tested parameters. Through the intervention of yoga, academic performance improves thereby optimizing the stress levels.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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