Effect of suryanamaskar on anxiey & mental stress in medical students

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ABSTRACT

Suryanamaskar is a yoga practise that is popular in India. There is a need to research the psychological impacts of physiology in addition to the existing studies. The purpose of this study is to see how suryanamaskar affects relaxation dispositions (R-dispositions) amongst medical students in (Harayana), India. The current study employed a randomised control group design and was done in a collegiate environment. The ABC relaxation theory was used to measure stress symptoms in a group of 419 medical college students (ages 17 to 22). A total of 124 medical students were randomly allocated to an experimental and control group out of 419 medical students who were classified as having a high level of stress. Both groups included 40 participants who finished the programme and were evaluated on R-dispositions and stress dispositions before and after the suryanamaskar programme. When compared to the control group, the experimental group scored higher on the R-dispositions of physical relaxation, reduced anxiety & sleeplessness, at ease/peace, rested and refreshed, strength and awareness, and joy, and scored lower on sleepiness and stress dispositions such as somatic stress, worry, and negative emotion. Suryanamaskar was found to be helpful in promoting R-Dispositions such as physical relaxation, mental calm, at ease/peace, rested and rejuvenated, strength and alertness, and joy, as well as reducing drowsiness, somatic tension, worry, and negative mood.

Keywords: Suryanamaskar, Medical Student, College, yoga, anxiey.

INTRODUCTION

Sun salutation (Surya Namaskar) is an ancient Indian practise of giving morning prayers to the rising Sun, as well as a sequence of physical postures and controlled breathing, with the goal of achieving a variety of physical, mental, and spiritual benefits. In the early morning, facing east, one stands with a calm mind and does Surya namaskar as a prayer to Lord Sun (Surya in sanskrit). Surya namaskar has distinct spiritual meanings in addition to physical postures. Surya namaskar is a beautiful twelve-position sequence that includes controlled breathing and relaxation. Surya namaskar, when done correctly, does not strain or cause damage, according to the scriptures. It reduces stiffness, revitalises the body, refreshes the mind, and cleanses subtle energy pathways when done in the morning. Stress and coping methods among medical college students have been studied extensively in India and elsewhere. In a research

finding, the stresses were discussed. [1] Researchers have documented the impacts of exercise behaviour and other treatments, as well as their relationship to numerous psychological factors, in addition to stress studies. [2,3,4] Yoga as an intervention for medical college students has also been shown to improve psychological factors such as feelings of wellbeing and relaxation, to mention a few. [5] Yoga is about a lot more than simply physical poses. Yoga and similar techniques have been utilised by a wide range of people. According to a research, yoga and relaxation training decreased tension and anxiety during competitions and improved mental toughness in tennis players. [6] Both kundalini yoga and cognitive behaviour therapy are potential stress-reduction strategies, according to a research. [7] Yoganidra was utilised in schools to help medical students with disruptive conduct by stabilising their breathing during and after yoganidra. [8] Yoganidra also assisted yoga students in reducing regression and remorse. [9]

One such yogic exercise is Suryanamaskar. It's a set of 12 physical postures, according to Saraswati (1983). Pranamasan, hasta utthanasan, padahastasan, ashwasanchalanasan, ashtanaga namaskar, bhujangasan, and parvatasan are only a few of the asanas included in Suryanamaskar. [10] Suryanamaskar, according to Datye[11], is a ten-count upasana (worship) and vyayam (exercise). Suryanamaskar may be defined as a series of yogasanas (physical postures) coupled with breathing and mantrocchar after studying all of the criteria (recitations). The current study used a variant with ten postures, which is one of the numerous kinds available (10 counts). Suryanamaskar is well-known as a traditional practise or yogic exercise, however there are few evidence-based research on the impact of suryanamaskar on physiological changes [12,13], and none on suryanamaskar's psychological consequences. The effects of suryanamaskar on relaxation-Dispositions (R-dispositions) and stress dispositions were investigated using the ABC relaxation theory [14].

ABC relaxation

Relaxation, or centering, is defined by ABC relaxation theory as the act of maintaining passive simple concentration (sustaining attention, while minimising overt behaviour and covert cognition). [14] It is divided into three phases: (a) withdrawal, (b) recovery from exhaustion, effort, and stress, as well as relief from the restrictions and burdens of adult, analytic, linguistic thinking, and ordinary everyday expectations; and (c) re-entry into the world, revitalised and refreshed. These stages are represented in particular conscious experiences, known as relaxation-states, which are relaxation/centering-related states of mind (R-states). [14] Sleepiness, disengagement, physical relaxation, rested/refreshed, at ease/peace, energised, joyful, mental quiet, mystery, positive detachment (manifest as childlike innocence), awe and wonder, thankfulness and love, prayerfulness, and timeless/boundless/infinite/at one are just a few of the primary states. The single metastate is conscious. Aside from R-states, the theory specifies a slew of other relaxation-related variables. Stress symptoms, R-dispositions, and stress dispositions are the variables employed in this study. The physical, mental, and emotional signs of stress that people commonly experience are referred to as stress symptoms. R-disposition is the long-term proclivity to report R-states. Dispositions, as opposed to states, are long-lasting characteristics. The proclivity to report stress-states over time is referred to as stress disposition. Specific R-states have been identified as elicited by diverse activities[15,16], but not by suryanamaskar. ABC relaxation theory has been utilised in studies to investigate the process of relaxing using various relaxation methods. Relationships between health state, stress, R-dispositions, motives, and beliefs;[15] research on various treatments and approaches. [16] Breathing exercises and relaxation; [17] Yoga, meditation, and ABC relaxation theory; [18] ABC relaxation training as a depression treatment[19] have all been established. We want to see how suryanamaskar affects R-dispositions in medical college students who are under a lot of stress in this study. When compared to the control group, the suryanamaskar group is expected to have more R-dispositions and less stress dispositions.

MATERIALS AND METHODS

The major goal of this study was to see how suryanamaskar affected R-dispositions and stress dispositions in medical college students who were under a lot of stress.

Sample

This was a randomised control trial conducted at a single location. Out of 419 medical students (229 boys and 190 girls) that were assessed on the Smith Stress Symptoms Inventory (SSSI) at a college in (Harayana) India, 80 students (44 boys and 36 girls) completed the programme. The authorities and the principal of the college where the research was performed gave their approval to the study. On a self-report assessment, 295 people did not fulfill the criterion for having severe stress symptoms. If they satisfied the following criteria, medical college students with excessive stress were included in the study: I Students scoring in the 75th percentile on at least four of the SSSI's six subscales. (ii) Students who are not suffering from a serious physical ailment. (iii) Students aged 17 to 22 years old (iv) Students who do not participate in any other physical activity or sport.

A pretest on R-dispositions and stress dispositions was done on 124 individuals, with 80 of them contributing data to the posttest on R-dispositions and stress dispositions. Dropouts were ascribed to involvement in other college programs/activities, a lack of enthusiasm, and travel restrictions to the suryanamaskar program's location. During college, the standardised self-report questionnaire on stress symptoms was used to conduct the first screening at several locations across the institution. The suryanamaskar group received their posttest evaluation in the sports facility where the suryanamaskar programme was held, while the control group received it on the college campus.

Randomization

Subjects who agreed to take part in the trial were assigned to one of two groups: suryanamaskar or the control group's waitlist. Random numbers produced by a random number table were used for the randomization. The Suryanamaskar group and the control group were allocated to subjects at random. Suryanamaskar and the control groups were randomly allocated to 62 subjects, with 40 individuals in each group completing the programme (16 boys and 24 girls in the experimental group, and 28 boys and 12 girls in the control group). These students were from the Arts and Science faculty and ranged in age from 17 to 22 years old. The pupils were mostly from India, and the bulk of them spoke Marathi. The control group was placed on a waiting list, and the Suryanamaskar programme was held later for them as well.

Tools/instruments

The following self-report inventories were utilised in this investigation.

SSSI

The SSSI[14] is a questionnaire that assesses frequently reported stress symptoms. It was based on the Stress Costs

Inventory (1992) and the Smith Stress Symptoms Scale (1990) and taps six symptom categories developed through factor analysis: Worry/Negative Emotion (which can be scored as separate a priori worry and negative emotional subscales), striated muscular tension, autonomic arousal/anxiety, depression, and interpersonal conflict/anger. On a four-point Likert scale, thirty-five items ask participants to identify how they feel "right now" (state version) or "typically" (disposition version). The disposition version was utilised in this study. The reliabilities of Alpha range from 0.89 to 0.76.

Smith relaxation disposition inventory

Over the course of two weeks, the SRDI[14] assesses one's ability to relax. Sleepiness, disengagement, physical relaxation, rested/refreshed, at ease/peace, energised, joyful, mental quiet, mystery, positive detachment (manifest as childlike innocence), awe and wonder, thankfulness and love, prayerfulness, and timeless/boundless/infinite/at one are among the 14 R-States tapped. On a four-point Likert scale, this assessment has 30 items about how one feels "during the previous two weeks." The reliabilities of the alphas range from 0.75 to 0.65.

SRDI−stress subscale

The assessment also includes three subscales of dispositions, or the likelihood of encountering stressful states over a two-week period. Somatic stress, concern, and negative mood are among the Stress subscales. The reliabilities of the alphas range from 0.70 to 0.65.

Procedure

This research was carried out in a collegiate environment. A total of 419 medical college students were approached in groups from a college in (Harayana), India. Before addressing the student and teacher coordinators, the appropriate approvals from the college authorities were acquired. The participants of the group were asked to complete a set of two psychological tests (SSSI and SRDI) as well as provide demographic information. The respondents were given standard instructions as well as information on the confidentiality and anonymity of their replies. They were advised to be honest in their responses and that these tests had no bearing on their academic achievement.

Following the screening process, participants who were qualified for the research were allocated to one of two groups: suryanamaskar or control. The suryanamaskar exercise took place on the college grounds at a sports facility near an open field, with a team of specialists guiding the kids. Suryanamaskar trainers have at least five years of experience teaching suryanamaskar and were competent to teach suryanamaskar. The subjects provided informed permission and were monitored for any medical problems or contraindications. All participants' attendance records were kept, and the reasons for those who dropped out were also kept track of. On the 1st and 14th days, both groups were given a pretest and a posttest using the SRDI (which

included relaxation and stress subscales). The entire test was administered in English.

Intervention

For 14 days, the intervention group had a suryanamaskar session. Warm up, 13 rounds of suryanamaskar with mantras and breathing, and cooling down (sitting posture) were all part of the daily suryanamaskar practise, which lasted around 20 minutes. Because there are so many different methods to do suryanamaskar, a standard technique (10 counts) and set of instructions were created and followed throughout the sessions. Suryanamaskar participants were urged to keep incidental records in a notebook kept at the sports venue where the sessions were held. Expert teachers kept track of suryanamaskar practise on a regular basis.

Suryanamaskar and other forms of exercise were not given to the control group. Through the data sheet, it was ensured that they did not indulge in any other form of relaxation. Because the study's goal was not to compare R-dispositions between suryanamaskar and any other exercise, no activity was chosen for the control arm.

Data analysis

The information was gathered and analysed using SPSS (version 17). The pretest was utilised as a covariate in the descriptive statistics ANCOVA.

RESULTS

Table 1 shows the demographic information about the research participants, such as their residence, eating habits, sleeping patterns, alcohol usage, and smoking behaviours. The suryanamaskar and control groups' mean and SDs are shown in Table 2. The means are adjusted using ANCOVA, with the R-dispositions' respective pretest scores as the covariate. These results clearly demonstrate that the posttest scores for sleepiness were considerably reduced (F = 38.29, P 0.01, mean difference = 1.84, P 0.01). On the disposition Disengagement, the posttest score was not significantly different. The experimental group was significantly higher for the dispositions−Physical relaxation (F = 7.08, P < 0.01, mean difference =0.77, P < 0.05) mental quiet (F = 26.92, P < 0.01, mean difference =1.63, P < 0.05), at ease/peace (F = 25.04, P < 0.01, mean difference =1.71, P < 0.05), rested and refreshed (F = 92.16, P < 0.01, mean difference =1.34, P < 0.05), strength and awareness (F = 9.10, P < 0.01, mean difference =0.94, P < 0.05), and joy (F = 13.15, P < 0.01, mean difference =0.98, P < 0.05). Also it showed significantly higher for the dispositions−reduction in anxiety (F = 5.02, P < 0.01, mean difference =0.44, P < 0.05) sleeplessness (F = 23.31, P < 0.01, mean difference =0.64, P < 0.05),Other R-dispositions like love and thankfulness, prayerfulness, childlike innocence, awe and wonder, mystery, timeless/boundless were not found to be significantly different across the suryanamaskar and the control group.

Table 1: Demographic details

	Total %	Suryanamaskar Group (%)	Conrol Group (%)
Sex			
Male	43 (53.75)	23 (60.5)	20 (47.6)
Female	37 (46.25)	15 (39.4)	22 (52.3)
Residential status			
Local	31 (38.75)	11 (28.9)	20 (47.6)
Hostel	49 (51.25)	27 (71)	22 (52.3)
Eating habits			
Vegetarian	30 (37.5)	14 (35)	16 (40)
Non vegetarian	50 (62.5)	26 (65)	24 (60)
Sleeping habits			
Less than 6 h	2 (2.5)	1 (2.4)	1 (2.5)
6-8 h	55 (68.7)	28 (68.2)	27 (69.2)
8-10 h	21 (26.2)	11 (26.8)	10 (25.6)
More than 10 h	2 (2.5)	1 (2.4)	1 (2.5)
Smoking habit			
Nonsmokers	71 (88.7)	34 (85)	37 (92.5)
Occasional	7 (8.7)	5 (12.5)	2 (5)
Regular	2 (2.5)	1 (2.5)	1 (2.5)
Alcohol use			
No alcohol	61 (76.2)	24 (61.5)	37 (90.2)
Occasional	19 (23.7)	15 (38.4)	4 (9.7)
Regular	0 (0)	0 (0)	0 (0)

Table 2: Comparison of suryanamaskar and control group on relaxation dispositions

Relaxation dispositions	Pretest (n=40)	Post test (n=40)
Sleepiness		
Suryanamaskar (S)	4.77±1.94	2.92±1.18**
Mean±SD	4.86±1.58	4.78±1.53
Control (C)		−1.84**
Mean±SD		−2.43 to −1.24
Mean difference (S-C) (95% CI)		
Disengagement		
Suryanamaskar	4.51±1.92	4.32±1.80
Mean±SD	4.42±1.85	4.18±1.62
Control		0.10
Mean±SD		−0.64 to 0.86
Mean difference (S-C) (95% CI)		
Physical relaxation		
Suryanamaskar	3.49±1.53	4.66±1.72**
Mean±SD	3.55±1.13	3.93±1.40
Control		0.77*
Mean±SD		0.18 to 1.37
Mean difference (S-C) (95% CI)		
Mental quiet		
Suryanamaskar	3.50±1.26	5.86±1.53**
Mean±SD	4.14±1.40	4.60±1.64
Control		1.63*
Mean±SD		1.00 to 2.25
Mean difference (S-C) (95% CI)		
At ease/peace		
Suryanamaskar	6.02±1.32	8.17±1.54**
Mean±SD	6.12±1.64	6.49±1.88
Control		1.71*
Mean±SD		1.03 to 2.40
Mean difference (S-C) (95% CI)		
Rested refreshed		
Suryanamaskar	1.94±0.84	3.57±0.49**

Mean±SD	2.33±0.93	2.33±0.89
Control		1.34*
Mean±SD		1.06 to 1.62
Mean difference (S-C) (95% CI)		
Strength and awareness		
Suryanamaskar	4.27±1.10	5.80±1.41**
Mean±SD	5.20±1.59	5.25±1.47
Control		0.96*
Mean±SD		0.31 to 1.57
Mean difference (S-C) (95% CI)		
Joy		
Suryanamaskar	4.86±1.57	6.46±1.15**
Mean±SD	5.25±1.49	5.58±1.54
Control		0.98*
Mean±SD		0.47 to 1.52
Mean difference (S-C) (95% CI)		
Love and thankfulness		
Suryanamaskar	5.19±1.49	5.92±1.24
Mean±SD	5.19±1.63	5.43±1.86
Control		0.48
Mean±SD		−0.15 to 1.13
Mean difference (S-C) (95% CI)		
Prayerfulness		
Suryanamaskar	2.12±0.90	2.61±0.94
Mean±SD	2.49±0.87	2.57±0.92
Control		0.27
Mean±SD		−0.07 to 0.62
Mean difference (S-C) (95% CI)		
Childlike innocence		
Suryanamaskar	1.87±1.06	2.12±0.84
Mean±SD	2.34±1.09	2.22±0.96
Control		0.02
Mean±SD		−0.36 to 0.42
Mean difference (S-C) (95% CI)		
Awe and wonder		
Suryanamaskar	2.19±0.87	2.82±0.97
Mean±SD	2.59±1.14	2.56±0.97
Control		0.35
Mean±SD		−0.05 to 0.76
Mean difference (S-C) (95% CI)		
Mystery		
Suryanamaskar	2.50±1.13	2.29±1.02
Mean±SD	2.66±0.95	2.35±0.73
Control		0.00
Mean±SD		−0.37 to 0.37
Mean difference (S-C) (95% CI)		
Timeless/boundless		
Suryanamaskar	2.29±0.93	2.37±0.92
Mean±SD	2.42±1.00	2.61±1.08
Control		−0.17
Mean±SD		−0.57 to 0.21
Mean difference (S-C) (95% CI)		
Anxiety		
Suryanamaskar	5.31±1.22	2.24±0.34
Mean±SD	5.17±1.31	2.59±1.21
Control		0.44*
Mean±SD		0.44 to 0.20
Mean difference (S-C) (95% CI)		
Sleeplessness		
Suryanamaskar	4.13±0.31	2.21±0.55
Mean±SD	4.12±0.21	2.43±1.21
Control		0.64*

| Mean±SD | 0.47 to 0.19 |
| Mean difference (S-C) (95% CI) | |

CI=Confidence interval; SD=Standard deviation

Stress dispositions: somatic stress (F = 4.04, P 0.05, mean difference = 0.94, P 0.05), concern (F = 9.63, P 0.01, mean difference = 0.61, P 0.05), and negative mood (F = 7.15, P 0.01, mean difference = 1.10, P 0.05) were similarly lower in the experimental group than in the control group.

Table 3: Comparison of suryanamaskar and control group on stress dispositions

Stress subscales (disposition)	Pretest (n=40)	Postest (n=40)
Somatic stress		
Suryanamaskar	6.62±2.29	5.24±2.00*
Mean±SD	5.50±1.90	6.01±2.09
Control		−0.93*
Mean±SD		−1.87 to −0.00
Mean difference (S-C) (95% CI)		
Worry		
Suryanamaskar	2.92±0.91	2.24±1.00**
Mean±SD	3.00±0.91	2.88±0.98
Control		−0.60*
Mean±SD		−0.98 to −0.20
Mean difference (S-C) (95% CI)		
Negative emotion		
Suryanamaskar	7.47±2.24	5.59±2.00**
Mean±SD	7.59±2.22	6.74±2.01
Control		−1.09*
Mean±SD		−1.91 to −0.27
Mean difference (S-C) (95% CI)		

**P<0.01 level; *P<0.05 level. S=Suryanamaskar; C=Control. Posttest scores (S-C) adjusted for their pretest scores between suryanamaskar and control groups with 95% confidence interval and using analysis of covariancefor P values. CI=Confidence interval; SD=Standard deviation

DISCUSSION

The purpose of this study was to see how suryanamaskar affected R-dispositions in medical college students who were under a lot of stress. Participants who met the study's criteria, namely having a high level of stress symptoms, were allocated to one of two groups: suryanamaskar or control. The effects of different R-dispositions and stress dispositions were investigated. There is a substantial difference in 7 out of 14 R-dispositions and all three stress dispositions, as shown in Tables 2 and 3. Sleepiness and tension decreased as a mood, but physical relaxation, mental calm, ease and serenity, being refreshed, strength and alertness, and joy increased. Breathing, controlled movements, and mantras are all part of the suryanamaskar routine. Suryanamaskar's components are responsible for the observed impacts on the aforementioned R-dispositions. The above-mentioned relaxation states are explained by the ABC relaxation theory as relief from cognitive elements of stress such as conflict and frustration, as well as the quieting of externally engaged cognitive activity. This results in a reduction of self-directed and self-reflective effort, such as

mental calm, which is required to feel comfortable, as well as a cessation of thinking about, analysing, planning, or attempting to influence the external environment. On a dispositional level, it is apparent that a two-week programme aids participants in achieving a state of calm mind. These findings are consistent with prior research on ABC relaxation theory, yoga and meditation[18], and deep breathing. [17,20] Suryanamaskar is a method of active relaxation. Previous research has also found that active interpersonal relaxation pursuits are linked to strength, awareness, and joy. [14] The current suryanamaskar programme did not require participants to practise suryanamaskar alone or in small groups. Rather, this was a college-sponsored function held at a sports facility on campus. The nature of the activity in the current study, where more than one person (up to five people at a time) conducted suryanamaskar, can be linked to the beneficial effect on strength, alertness, and joy.

Two R-dispositions that were not shown to be substantially different in the suryanamaskar and control groups were prayerfulness, love, and gratitude. Previous research [14] suggests that those who prefer to relax through prayer, meditation, or chanting are more likely to experience these experiences. Despite the fact that suryanamaskar has a prayer component, it was not successful in eliciting prayerfulness as an R-disposition. Other factors like as practise and belief may have a role in the R-dispositions of prayerfulness, love, and gratitude.

On the subscales of stress dispositions, the findings can be interpreted in light of a study that claims yoga stretching is linked to strength and awareness, implying its suitability for negative emotion, progressive muscle relaxation, reduces anxiety, minimizes sleeplessness and autogenic training with physical relaxation, implying their suitability for somatic stress and meditation with mental quiet. [16] The benefits of suryanamaskar on physical relaxation and mental levels are shown to be multifaceted in the current research. Suryanamaskar appears to be beneficial for all three stress disposition subscales. This study contributes to the body of knowledge on suryanamaskar and its physiological effects. [3,4] This is the first research to look at the psychological impacts of suryanamaskar. As a result, the prediction that suryanamaskar participants will have greater R-dispositions and lower stress dispositions than the control group was accepted.

Stress reduction, good physical, and mental health activities for medical college students are not a new phenomena. Its beneficial effects on physiological and psychological factors have been demonstrated in several studies[4,21,22]. The benefits of brief progressive muscle relaxation in a high-stress college sample were studied in a comparable age range, with similar results indicating a favourable effect on mental and physical relaxation. [23] The current study adds to the body of knowledge by demonstrating that suryanamaskar, a yogic practise, has a favourable influence on R-dispositions and stress reduction on a dispositional level.

Our study has certain flaws, such as the lack of a placebo therapy in the control group. The factors studied were solely at the dispositional level, thus there is no assurance that the effects will endure. Additional research on suryanamaskar's therapeutic efficacy in the treatment of long-term, particular psychiatric disorders is needed. This research has implications for the use of suryanamaskar as a stress-reduction method for high-stress medical college students and for stress reduction on a dispositional level. More research in this approach might add to the body of knowledge about the effects of suryanamaskar as a yogic practise. Yoga, different asanas, and pranayam have all been studied as interventions. However, even though suryanamaskar is extensively practised, there is a need to research it via disciplines like as psychology, anthropology, and other social sciences.

CONCLUSION

Suryanamaskar was shown to be beneficial in promoting R-dispositions such as mental calm, decreases the anxiety, ease/peace, relaxed and rejuvenated, strength and reduce sleeplessness, promote alertness, and joy. The stress dispositions of somatic stress, anxiety, and negative mood were lower in the suryanamaskar group than in the control group.

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