



EFFECTS OF ONLINE TRAINING OF YOGA ON THE LEVEL OF ANGER OF THE STUDENTS OF CERTIFICATE PROGRAMME IN YOGA (CPY) OF SCHOOL OF HEALTH SCIENCES OF IGNOU

Health Science

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ABSTRACT

Background: Online yoga training was found to be feasible and acceptable, based on attendance and practice rates. Yoga can be used as non-pharmacological management of stress including anger. This study aims to find out the effect of online yoga training on anger among the students of Certificate Programme in Yoga (CPY) programme enrolled in the academic year 2021. **Methods:** This is a quasi-experimental design and was carried out on the students of CPY Programme during March to December 2021. All students enrolled (460) in CPY Programme in the January and July 2021 sessions were included as convenient sample. A total 150 students participated in this study. Students who filled out the online form before intervention but did not fill out the form after intervention were excluded from this study. The Novaco Anger Scale-Provocation Inventory (NAS-PI) with 25 questions was used as study instruments to measure the anger of an individual. Close structured questionnaire was sent to the students by email in google form format which was filled by the students pre and post-test. A 12-days online yoga practical training was provided as intervention to the students. **Result:** A total of 69 and 81 students in the January and July 2021 batch participated in this study respectively. Total mean value of the NAS-PI Score of pre and post-test of online yoga training was reduced from 38.2 ± 19.5 SD to 32.6 ± 15.4 SD of students of January 2021 (P value = 0.03) respectively and from 38.2 ± 20.1 SD to 30.7 ± 16.8 SD of students of July 2021 (P value = 0.009) respectively. **Conclusion:** Students experienced a reduction in anger score after completing a 12 days online yoga training. The online yoga training was effective in reducing the anger score among the students of CPY Programme.

KEYWORDS

Yoga, Online Yoga Training, Anger Reduction Through Online Yoga Training

INTRODUCTION

Online education, delivered via the Internet to computers, smartphones, and mobile devices, had already seen significant growth before the COVID-19 pandemic but became especially popular during lockdowns. This mode of learning allows students to acquire new knowledge or enhance existing knowledge effectively (Xie et al., 2020). The lockdown period for COVID-19 emphasized the importance of online learning in maintaining social distancing while keeping learners engaged (P. Jena, 2020). An international study revealed that the pandemic was moderately stressful for most people, with 11% experiencing high stress levels (Gloster et al., 2020). Additionally, 3.4 million Indian students in higher education faced distress due to the pandemic (Chhetri et al., 2021). A systematic review found online yoga feasible and acceptable based on attendance and practice rates (Brosnan et al., 2021).

Emotions are processes that prepare individuals to act and react, with anger being a negatively toned emotion resulting in antagonism (Ozyeshil Z, 2012; Novaco R.W., 2016). Anger, often experienced daily, can cause problems in various aspects of life and negatively impact health by increasing heart rate and blood pressure (Shahsavarani et al., 2015; Kiran U, Ladha S., 2017). Physicians link anger to coronary artery disease (CAD) development (Durel et al., 1989).

Yoga and meditation, nonpharmacologic modalities, are effective for stress and anxiety reduction and general health (Eroglu et al., 2014; Ross et al., 2015). Yoga, meaning unity of mind and body, has been practiced for over 5000 years and recently gained attention in the West (Barnes et al., 2004). In Patanjali Yogasutras, yoga is described as calming the fluctuations of the mind to achieve Samadhi, or a state of true nature (Swami Niranjanananda Saraswati, 2002).

A systematic review by Cocchiara et al. found yoga effective in managing stress in healthcare workers, though more methodologically robust studies are needed (Cocchiara et al., 2019). A six-week pilot program at the University of Rhode Island demonstrated that weekly yoga and meditation reduced stress and anxiety in college students (Lemay et al., 2019). A systematic review and meta-analysis indicated workplace yoga interventions were effective for stress management compared to no treatment (Della Valle et al., 2020).

Traditionally, yoga training has been face-to-face and effective for stress reduction. However, the impact of online yoga on anger reduction is unclear. This study aims to find the effect of online yoga training on anger among CPY program students enrolled in 2021.

This is a quasi-experimental design and was carried out on the students of CPY programme during March to December 2021. It was carried out in the School of Health Sciences (SOHS) of Indira Gandhi National Open University (IGNOU) launched a six months Certificate Programme in Yoga (CPY) in July 2019 for 12th Pass candidates. Admission was offered in January and July admission cycle of each year. This programme is offered through open and distance (ODL) mode. Self-Learning Materials (SLM) are given to the students for theory as well as for practical courses. The Certificate Programme in Yoga programme consists of three courses. Among them two are theory courses and one is a practical course. All the theory and practical courses are compulsory. Theory course 1, and course 2 represent the disciplines of Introduction to Yoga and Yogic Texts and Yoga and health respectively. The theory course 1 and 2 comprised of a total 18 units (chapters) and 14 units respectively. The practical course comprised of a practical manual with seven units, and a log book. The first online practical training session was conducted from 31st March to 28th April 2021 and the second online practical training session was conducted from 12th October to 20th November 2021. This study was carried out during March to December 2021.

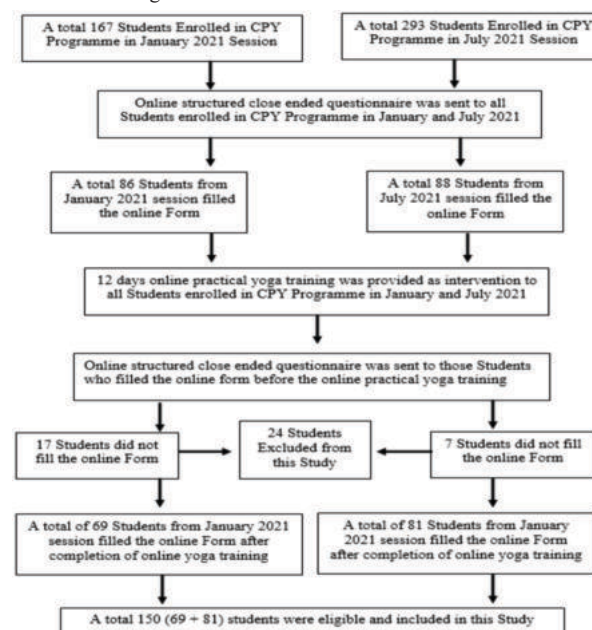


Figure No 1: Flow diagram of the Selection of the Candidates

METHODOLOGY

Data Collection Tools

The Novaco Anger Scale-Provocation Inventory (NAS-PI) with 25 questions was used as study instruments to measure the anger of an individual (19). This study instrument is already validated (Culhane & Morera, 2010; Mills et al., 1998; Moeller et al., 2016). This instrument was used with the permission from the original author. Each question has five options to respond (0 = if you would feel little or no annoyance, 1 = if you would feel a little irritated, 2 = if you would feel moderately upset, 3 = if you feel quite angry, 4 = if you would feel very angry). The minimum score can be zero and the maximum score can be 100. The total score of each individual is again classify into low anger (Score with 0 - 45), average anger (Score with 46 to 55), more than average anger (56 to 75), Frequently React to Anger (score with 76 to 85) and Frequently Furious Reaction in Anger (Score with 86 to 100).

These structured close ended questions were sent to the candidates through email in google form format. A few questions on demographic profile such as age, gender, place of residence, education, and occupation were also asked in this questionnaire. All students enrolled in January and July 2021 sessions in the CPY programme were included in this study. There are a total 167 and 293 students enrolled in the January 2021 and July 2021 session respectively. There was no control group in this study. Questionnaires were sent to all students enrolled in both sessions. However, a total 69 students from January 2021 and 81 students from July 2021 students participated in this study. Students who filled the online form before the practical training but not filled the form after the training were excluded from this study. A total 17 students (10 students from January batch and 7 students from July batch) fill online form before training but did not fill the form after training and were not included in analysis of this study. The questionnaire was sent through google form to the students through email and they were requested to fill the form before the beginning of any theory as well as practical training. Form filling was not mandatory for the students and they had the choice to not fill this form. Forms filled by the students after starting of the practical training were not included in this study. Students were requested to fill the same form again after completion of online practical training. A second reminder was sent through email after a week to those students who filled the form before online practical training and had not filled the form after the completion of training. Students who filled the form again after the second week of the first reminder were not included in this study. The same mechanism was followed to collect data from the second batch also. Students were not informed about the objective of filling this google form and they were kept on blind about this study.

Intervention

The online yoga training included prayer, sohamjapa, four Shatakarma (cleansing practices), eight Sandichalana (loosening exercises), Surya-Namaskara, and various asanas [9 standing, 20 seating, 6 prone, 12 supine], six Pranayamas, three Mudras, and four Bandhas. Conducted daily for two hours (7-9 am) via Google Meet, it featured live demonstrations, supervised practice, and Q&A sessions. The activities were pre-scheduled, allowing students to prepare in advance. Recorded sessions were available on YouTube for asynchronous learners. The 12-day course included a detailed practical manual. Each session followed a structured format: instructions, demonstrations, practice corrections, benefits, precautions, common mistakes, and questions & answers. Online theory sessions and interactive radio counselling complemented the practical training. Students had to pass both theory and practical assessments to earn the certificate.

Data Analysis

The Novaco Anger Scale-Provocation Inventory (NAS-PI) is an ordinal categorical variable. Age was continuous, while gender and residence were binary. Education and occupation were nominal. Demographics like gender, residence, education, and occupation were described in percentages. NAS-PI scores were categorized into five anger levels. Pretest and posttest NAS-PI scores were compared using the Spearman correlation coefficient. Differences in mean pretest and posttest scores were analyzed with Wilcoxon and Kruskal-Wallis tests for dichotomous and nominal variables, respectively. Data analysis was conducted using Epi Info (version 7.2), with a significance level of $p < 0.05$.

RESULT

Number of students who responded in the pre and post online practical training were 69 (41.3%) and 81 (27.6%) in the January 2021 and July 2021 batches respectively. Total number of students respondents were

150 (32.6%) of a total 460 students of both the batches. Male and female respondents were 28 (40.6%) and 41 (59.4%) in the January 2021 batch and 36 (44.4%) and 45 (55.6%) in July 2021 batch respectively.

Majority of the respondent students belonged to urban areas. A very small percentage of the students had 12th pass qualification and the rest of the respondents were with graduate or post graduate qualifications. Around 30% respondents were students by occupation in the January and July 2021 session. Mean age of male and female are 34.2 ± 11.6 SD and 30.4 ± 7.7 SD for January 2021 session and 31.7 ± 10.8 SD and 31.7 ± 9.1 SD for July 2021 session.

Table No. 1: Demographic profile of the responded students

Item	Students of January 2021	Students of July 2021
Residence		
Rural	20 (29%)	29 (35.8%)
Urban	49 (71%)	52 (64.2%)
Education level		
12th Pass	4 (5.8%)	15 (18.5%)
Graduate	36 (52.2%)	33 (40.7%)
Post Graduate	26 (37.7%)	30 (37%)
Above Post Graduate	3 (4.3%)	3 (3.7%)
Occupation		
Students	21 (30.4%)	25 (30.9%)
House wife	7 (10.1%)	10 (12.3%)
Employ in Govt. Sector	16 (23.2%)	16 (19.8%)
Employ in Private Sector	10 (14.5%)	18 (22.2%)
Self Employed	11 (15.9%)	6 (7.4%)
Others	4 (5.8%)	6 (7.4%)
Mean Age		
Male	34.2 ± 11.6 SD	31.7 ± 10.8 SD
Female	30.4 ± 7.7 SD	31.7 ± 9.1 SD

The students that participated in this study were very diverse in age, occupation and place of residence. The students belonged to almost all states of the country. A total number of students enrolled in the January 2021 and July 2021 sessions were 167 and 293 respectively. A total of 69 (41.3% out of total students) and 81 (27.6% out of total students) students from January 2021 and July 2021 batch responded respectively. A total of 17 students (10 students from January batch and 7 students from July batch) filled an online form before training but did not fill the form after training and were not included in the analysis of this study.

The percentage of students in low anger, average anger and more than average anger as per NAS PI Score of pretest and posttest of online yoga training was 50 (61.7%) [95% CI 50.3 – 72.3], 14 (14.3%) [95% CI 9.8 – 27.3], 15 (18.5%) [95% CI 10.7 – 29.7] and was 65 (80.2%) [95% CI 69.9 – 88.3], 11 (13.5%) [95% CI 6.9 – 23], 5 (6.2%) [95% CI 2 – 13.8] of the students of July 2021 respectively. The difference of the number in low anger, average anger and more than average anger in pretest and posttest of online yoga training was significant (p value = 0.006 in students of January 2021 batch and p value = 0.05 in students of July 2021 batch).

Table No. 2: Frequency of Level of Anger among the students

Anger Score (%)	Students of January 2021		P Value
	Pretest	Posttest	
Low Anger	39 (56.5%) [95% CI 44 – 68.4]	54 (78.3%) [95% CI 66.7 – 87.3]	P = 0.006
Average Anger	16 (23.2%) [95% CI 13.8 – 34.9]	12 (17.4%) [95% CI 9.3 – 28.4]	
More than Average Anger	14 (20.3%) [95% CI 11.6 – 31.7]	3 (4.3%) [95% CI 0.9 – 12.3]	
Frequently React to Anger	0	0	
Frequently Furious Reaction in Anger	0	0	
	Students of July 2021		

Low Anger	50 (61.7%) [95% CI 50.3 – 72.3]	65 (80.2%) [95% CI 69.9 – 88.3]	P = 0.05
Average Anger	14 (14.3%) [95% CI 9.8 – 27.3]	11 (13.5%) [95% CI 6.9– 23]	
More than Average Anger	15 (18.5%) [95% CI 10.7 – 29.7]	5 (6.2%) [95% CI 2 – 13.8]	
Frequently React to Anger	1 (1.2%) [95% CI 0.03 – 6.7]	0	
Frequently Furious Reaction in Anger	1 (1.2%) [95% CI 0.03 – 6.7]	0	

Total mean value of the NAS-PI Score of pretest and posttest of online yoga training was reduced from 38.2 ± 19.5 SD to 32.6 ± 15.4 SD of students of January 2021. Differences in mean value of pretest and posttest of online yoga training of the students were significant (p value = 0.03).

Total mean value of the NAS-PI Score of pretest and posttest of online yoga training was reduced from 38.2 ± 20.1 SD to 30.7 ± 16.8 SD of students in July 2021. Differences in mean value of pretest and posttest of online yoga training of the students were significant (p value = 0.009).

The mean value of the NAS-PI score of the low anger, average anger and more than average anger of pretest and posttest of online yoga training was 24.6 ± 14.2 SD, 50.8 ± 2.6 SD, 61.6 ± 5.9 SD and 27.1 ± 12.5 SD, 50.7 ± 2 SD, 60.7 ± 3.2 SD of the students of January 2021 respectively. The mean value of the NAS-PI score of the low anger, average anger and more than average anger of pretest and posttest of online yoga training was 24.7 ± 14.9 SD, 43.1 ± 19.9 SD, 64.2 ± 11 SD, and 24.9 ± 16.9 SD, 36.9 ± 14.4 SD, 61.4 ± 4.1 SD of the students of July 2021 respectively.

Table No. 3. Mean value of NAS-PI score among the students

NAS-PI Score (Mean)	Students of January 2021			Students of July 2021 (mean $\pm$ SD)		
	Pre $\pm$ SD	Post $\pm$ SD	P Value	Pre $\pm$ SD	Post $\pm$ SD	P Value
Low Anger	24.6 ± 14.2	27.1 ± 12.5	0.47	24.7 ± 14.9	24.9 ± 16.9	0.8
Average Anger	50.8 ± 2.6	50.7 ± 2	0.91	43.1 ± 19.9	36.9 ± 14.4	0.9
More than Average Anger	61.6 ± 5.9	60.7 ± 3.2	0.65	64.2 ± 11	61.4 ± 4.1	0.05
Total Participants	38.2 ± 19.5	32.6 ± 15.4	0.03	38.2 ± 20.1	30.7 ± 16.8	0.009

DISCUSSION

The percentage of the students belonging to more than average anger category was reduced from 20.3% [95% CI 11.6 – 31.7] in pretest to 4.3% [95% CI 0.9 – 12.3] in posttest among the students of January 2021 batch and from 18.5% [95% CI 10.7 – 29.7] in pretest to 6.2% [95% CI 2 – 13.8] in posttest among the students of July 2021 batch. The percentage of the students belongs to average anger category was reduced from 23.2% [95% CI 13.8 – 34.9] in pretest to 17.4% [95% CI 9.3 – 28.4] in posttest among the students of January 2021 batch and from 14.3% [95% CI 9.8 – 27.3] in pretest to 13.5% [95% CI 6.9 – 23] in posttest among the students of July 2021 batch. However, the percentage of the students belongs to low anger category was increase from 56.5% [95% CI 44 – 68.4] in pretest to 78.3% [95% CI 66.7 – 87.3] in posttest among the students of January 2021 batch and from 61.7% [95% CI 50.3 – 72.3] in pretest to 80.2% [95% CI 69.9 – 88.3] in posttest among the students of July 2021 batch. This is because NAS-PI score has decreased for many students after the online training of yoga. Similarly, a randomized control feasibility trial was conducted to reduce post-traumatic stress in women who have experienced stillbirth with online yoga. It was observed that there were significant decreases in Post-Traumatic Stress Disorder (PTSD) and depression, and improvements in self-rated health at post-intervention for both intervention groups. There was a significant difference in depression scores ($p = .036$) and grief intensity ($p = .009$) between the moderate dose (MD) [150 minutes yoga per week] and stretch-and-tone control group (STC) groups. PTSD showed non-significant decreases of 43% and 56% at post-intervention in low dose (LD) [60 minutes yoga per week] and MD groups, respectively (22% decrease in control). (Huberty et al., 2020) A Mood Network Study conducted with 30-

minute online Hatha yoga class on 56 adults who reported being diagnosed with a mood disorder and it was observed that there was a statistically significant decrease in negative affect after completing the class ($t = -6.05$; $P < 0.001$), but positive affect did not change ($P > 0.10$). (Uebelacker et al., 2018)

The percentage of students in low anger, average anger and more than average anger as per NAS PI Score of pretest and posttest of online yoga training was 39 (56.5%) [95% CI 44 – 68.4], 16 (23.2%) [95% CI 13.8 – 34.9], 14 (20.3%) [95% CI 11.6 – 31.7] and was 54 (78.3%) [95% CI 66.7 – 87.3], 12 (17.4%) [95% CI 9.3 – 28.4], 3 (4.3%) [95% CI 0.9 – 12.3] of the students of January 2021 respectively. The difference of the number in low anger, average anger and more than average anger in pretest and posttest online yoga training was significant (p value < 0.05). Similarly, a 12-week, home-based, online yoga intervention is feasible in Myeloproliferative neoplasms (MPNs) patients and shows preliminary promise for improving symptom burden. Participants experienced significant improvements in total symptom burden, anxiety, depression, sleep disturbance and fatigue, with no differences in outcomes between those who completed more or less than the prescribed 60 minutes of yoga each week. (Huberty et al., 2017)

The mean value of total NAS-PI score was reduced from 38.2 ± 19.5 SD in pretest to 32.6 ± 15.4 SD in posttest in the students of January sessions and from 38.2 ± 20.1 SD in pretest to 30.7 ± 16.8 SD in posttest in the students of July session. The mean value of total NAS-PI score was significantly reduced in the both batches of the students (p value < 0.05). The percentage of students under the category of low anger, average anger and more than average anger were significantly improved after the online yoga training (p value < 0.05). Similarly, a pilot clinical trial was conducted Yoga as adjunct therapy for adolescents with inflammatory bowel disease. Over the 8-week study period, patients were assigned three 60-minute, in-person yoga classes at weeks 1, 3 and 8, and three 30-minute, online yoga videos per week. It was reported that there is reduced stress and improved ability to identify and manage physical symptoms. (Arruda et al., 2018) Online yoga (60 min/week of yoga) demonstrated small effects on sleep, pain, and anxiety as well as a moderate effect on depression in myeloproliferative neoplasm patients. (Huberty et al., 2019)

Central norepinephrine (NE) is the substrate for emotions that trigger “fight or flight” response, such as fear and anger. (Wang et al., 2020) Parasympathetic Nervous System (PSNS) releases the neurotransmitter acetylcholine to prevent arousal of the emotion of anger by neutralizing stress hormones so that the body can relax and calm down. People with dominating PSNS are under less risk of heart disease this concludes that people with Type A personalities are higher in risk of heart disease duets their weaker PSNS responses with less life time period in relaxation. (Yadav et al., 2017)

The practice of yoga reduces allostatic load in stress response systems and restores optimal homeostasis; increases parasympathetic nervous (PN), decreases hypothalamic-pituitary-adrenal (HPA) axis; increases GABA activity; stretches receptors in the alveoli, baroreceptors, chemoreceptors, and other sensors throughout the respiratory structures sends information about the state and activity of the respiratory system through vagal afferents and brainstem relay stations to other CNS structures. (Streeter et al., 2012) Further it has been observed that the practice of yoga helped in decreasing SNS activity, reducing inflammatory markers (tumor necrosis factor, interleukin-2, C-reactive protein), reducing stress markers (cortisol), increasing strength, flexibility, circulation and cardiorespiratory capacity, reducing social isolation, fostering networks that reinforce physical activity, and increasing awareness of physical and mental states. (Wren et al., 2011)

This study was carried out only among the group of students enrolled in the certificate programme in yoga. Only motivated students who were willing to learn yoga were accepted into this programme. The group of the students enrolled in this group may not represent the entire society. Many students chose not to fill the feedback form for this study. There was no control group in this study.

Conclusion and recommendation

In this study, a reduction in total score of anger after completion of online yoga training was demonstrated in both the batches of the students of CPY programme. These results suggest that adopting

regular practice of online yoga training may reduce anger among the students. It may not be feasible for everyone to join the yoga training in face to face mode. Future studies with a larger number of students and long-term follow-up are needed to ensure a sustained beneficial effect. Higher educational institutions may consider the inclusion of online yoga training to reduce anger among its students.

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Conflicts of interest

There are no conflict of interest.

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