

Impact of a Yoga-Based Intervention on Emotion Regulation in IT Professionals

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ABSTRACT

Background: Studies have reported that the majority of IT professionals would benefit from enhancing their emotion regulation strategies. It has been proven that Yoga has positive effects on emotion regulation enhancement.

Aim: The present study was designed to assess the effectiveness of a 12-week yoga-based intervention on two dimensions of emotion regulation, namely cognitive reappraisal and expressive suppression, in IT professionals working in Bengaluru City, Karnataka, India.

Materials and Methods: A purposive sample of 42 healthy Information Technology (IT) professionals (male = 17; female = 25) within the age range 23–47 years (mean age 35.26 ± 5.66), working in IT companies in Bengaluru City, Karnataka, India were recruited as the participants for the present study. Participants were administered the Emotion Regulation Questionnaire (ERQ) before and after the yoga intervention. A 60-minute session of group yoga was given twice a week, in an online mode via a teleconferencing software Zoom, for 12 weeks.

Results: In comparison with pre scores, there was a significant increase in the post scores of the cognitive reappraisal domain for the experimental group ($t = 5.9379$), whereas for the control group there was no significant difference ($t = -1.5077$). Furthermore, there was a significant decrease ($t = -9.2435$) for the expressive suppression domain for experimental group ($t = -9.2435$), while for control group there was no significant difference ($t = -1.7556$).

Conclusion: The current study suggests that yoga helps with both emotion regulation strategies, i.e. increases the use of cognitive reappraisal and reduces the use of expressive suppression.

Keywords: yoga, emotion regulation, IT professionals

INTRODUCTION

Information technology (IT) professionals around the globe work long and erratic hours in a fast-paced working environment. Regardless of lucrative remuneration packages and high social status, their health status is alarming – sleep disorders, poor cognitive and executive functioning, depression and anxiety are prevailing. Furthermore, ergonomic hazards, occupational stress and failure to maintain a work-life balance have become common. Therefore, the majority of the IT workforce suffer from various psychological and/or physical ailments (Padma et al., 2015), which directly affect their motivation and performance (Graziotin, Wang, & Abrahamsson, 2014). Lifestyle and work style during the COVID-19 pandemic, i.e. the new normal, have been taking a toll on IT workforce health and well-being, and productivity. Social distancing, working from home (WFH), work-life imbalance, poor ergonomics and work infrastructure at home, absence of child care, educational and fitness facilities made the working conditions for many IT professionals more difficult (Ralph et al., 2020). Hence, higher rates of stress, depression, anxiety and sleep disorders have become frequent issues among the working population

(Galea, Merchant, & Lurie, 2020; Neto et al., 2020)

Emotion dysregulation leads to a variety of negative outcomes (Daly, Haden, Hagins, Papouchis, & Ramirez, 2015) whereas emotion regulation is a crucial skill for successfully dealing with interpersonal conflicts and daily situations (Oore, Leiter, & LeBlanc, 2015). Emotion regulation is defined as “extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals” (Thompson, 1994). Emotion regulation capacities are influenced by body systems, including neurophysiological, physical, cognitive, behavioural, and social systems (Dahl, 2012). Different strategies can be employed to regulate emotional response (Fazia et al., 2020), and the current study investigates two of them – cognitive reappraisal and expressive suppression. A cognitive reappraisal is a form of cognitive change in which a potentially emotionally arousing situation is construed in a way that modifies its emotional impact (Lazarus & Alfert, 1964) while expressive suppression is a form of response modulation in which ongoing emotion-expressive behaviour is inhibited (Gross, 1998).

The nature of work varies greatly across different parts of the IT industry, also having different impacts on employee feelings, emotions, health and wellbeing but requiring the same set of skills to regulate one's emotions in the best possible manner, with the purpose of improving interpersonal communication and not causing conflicts. According to Graziotin, Wang, & Abrahamsson (2014), a software developer can experience a full spectrum of emotions while programming, from being in a flow, very happy and productive, to experiencing unhappiness, despair, frustration and anger, due to a bad code, conflict with a client or a team member. In order to avoid motivation loss, work withdrawal, work submission delay and a productivity drop, a software developer should properly manage one's emotions. Furthermore, IT professionals are more introverted and less trained to positively respond to aggressive communication from their clients and team members (Hendon, Powell, & Wimmer, 2017; Shih, Lie, Klein and Jiang, 2014). Consequently, their emotional response affects their job satisfaction and working performance either positively or negatively, highlighting the importance of emotion regulation skills.

Yoga is an ancient Indian science of balancing mind, body and spirit, said to be

5000 years old. The term *yoga* is derived from the Sanskrit root *yuj*, meaning “to bind or yoke together”, usually denoting a union with the divine. The practice of yoga has a positive effect on emotion regulation (Daly et al., 2015). According to Menezes, Kiesow, Sperb & Hertzberg (2015), long term yoga practitioners use cognitive reappraisal more often than participants practicing yoga for a shorter duration. The same study found that emotion regulation enhancement can be a hypothetical mechanism through which yoga and mindfulness influence psychological health and well-being. Furthermore, yoga could promote emotion regulation skills through such mechanisms as reappraisal, attention regulation, self-monitoring, self-awareness, and autonomic regulation.

Therefore, the present study was designed to assess the effectiveness of a 12-week yoga-based intervention on two dimensions of emotion regulation, namely cognitive reappraisal and expressive suppression, in IT professionals working in Bengaluru City, Karnataka, India.

MATERIALS AND METHODS

Participants

A purposive sample of 42 healthy Information Technology (IT) professionals (male = 17; female = 25) within the age range 23–47 years (mean age 35.26±5.66),

working in IT companies in Bengaluru City, Karnataka, India were recruited as the participants for the present study.

Subject selection criteria

Inclusion Criteria

1. IT and ITeS professionals working in Bengaluru City
2. Age range: 25-45
3. No physical activity for the last 6 months, counting till the date of the beginning of the study
4. Not relocating during 3 months from the date of the beginning of the study
5. Fluent in the English language
6. Individuals who are willing to participate in the research study.

Exclusion Criteria

1. Known pregnancy
2. Individuals with other pre-existing endocrinal diseases, cardiac problems, psychiatric disorders, medical problems (non-diabetic, non-hypertensive)
3. Individuals who had surgery within 6 months prior to the date of the beginning of the study
4. Individuals who are on any medication like amphetamines, sedatives, benzodiazepines,

central nervous system stimulants, steroids or any other drug that grossly affects the sleep;

5. Individuals indulging in smoking, alcohol and drug use.
6. Individuals not willing to participate in the research study.

Procedure

The design of the study was an intervention-control group pre-post. The sample in this study consists of IT professionals working in Bengaluru City, Karnataka, India. A flyer containing information about the study was e-mailed to various IT companies across Bengaluru and was delivered to their employees through the company's means of communication. Additionally, the flyer was posted to various groups of IT professionals on social media. Interested individuals were motivated to share the information in their circle of friends and colleagues.

After registered interested individuals were assessed for eligibility, they were randomized into either intervention (experimental) or control group. After detailed explanations of the study, written informed consent was obtained from all participants before the onset of the study. Participants were assessed on the baseline and after the 12 weeks of intervention. The

intervention group (n=23) was attending online yoga classes, control group (n=19) followed their regular daily routine and did not do any additional activity. Participation in the study was voluntary and anonymous; participants were free to withdraw from the study at any moment. Study participants were not compensated for participating in the study.

Intervention

A 60-minute session of group yoga was given twice a week, in an online mode via

a teleconferencing software Zoom. Each session of yoga intervention included asanas (yogic postures), pranayamas (yogic breathing exercises) and relaxation (either Shavasana or Yoga Nidra). Yoga intervention was given by an academically trained yoga therapist. Practices mentioned in Table 1 were systematically introduced and repeated throughout the entire intervention period. No adverse effects were reported.

Table 1. Components of the yoga-based intervention

Asanas	
Primary stage	Svastikasana, Vajrasana, Supta vajrasana, Simhasana, Tadasana I, Trikonasana, Parsvakonasana, Purvothanasana, Pavanamuktasana, Bhujangasana, Uttanapadasana, Shavasana
Secondary stage	Paschimottanasana, Shalabasana, Dhanurasana, Janushirshasana, Bharadwajasana
Tertiary stage	Mahamudra, Upavistakonasana, Baddhakonasana, Viparitarani, Halasana, Suptakonasana
Pranayamas	
Ujjayi, Anuloma Viloma, Bhastrika, Bhramari	
Relaxation	
Shavasana I & II, Yoga Nidra	

Assessments

Emotion regulation was assessed using the Emotion Regulation Questionnaire (ERQ). The ERQ is a 10-item scale developed by Gross and John in 2003 to measure the habitual use of two emotion regulation strategies: *cognitive reappraisal* and

expressive suppression. Respondents answer each item on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). The items that make up the *cognitive reappraisal* facet are 6, while the items that make up the *expressive suppression* facet are four (Gross & John,

2003; Manju, 2016). We analysed the mean and median scores of the items-specific domains. A higher score after the intervention in each subscale indicates more frequent use of that emotional regulation strategy (Fazia et al., 2020). The original study by Gross (1998) reports that the mean score for the *suppression* domain is 3.39 (SD = 1.14) whilst for the *reappraisal* domain is 4.6 (SD = 0.98) on American undergraduates.

Statistical analysis

Statistical analysis was performed using software package R version 3.6.2 (2019-12-12) -- "Dark and Stormy Night" Copyright (C) 2019 The R Foundation for Statistical Computing. When tested with Shapiro–Wilk test, data were found to be normally distributed. Hence, parametric tests were used to draw the inferences. A chi-squared test for independence was used to check the dependency of categorical variables. Paired sample t-tests were used to compare the pre- and post-intervention outcome measurements, and within-group differences. All statistical analyses were computed with two-tailed tests.

RESULTS

The internal consistency of the ERQ questionnaire was good for both subscales. The values of Cronbach's alpha for cognitive reappraisal subscale was $\alpha = 0.897$ and for expressive suppression subscale $\alpha = 0.851$. Since the Cronbach's alpha for both of these data set was lying between $\alpha = 0.80$ and $\alpha = 0.90$, we can conclude the internal consistency was good and the set of questions were reliable to carry out the study.

The baseline sociodemographic profiles of study groups are presented in Table 2. Brief descriptive statistics of the questionnaire scores at the pre-intervention time (t_0) and post-intervention time (t_1) are reported in Table 3. The pre- and post-data were analysed using paired t-test and conclusions were obtained for $p < 0.005$. In comparison with pre scores, there was a significant increase in the post scores of the cognitive reappraisal domain for the experimental group ($t = 5.9379$), whereas for the control group there was no significant difference ($t = -1.5077$). Furthermore, there was a significant decrease ($t = -9.2435$) for the expressive suppression domain for experimental group ($t = -9.2435$), while for control group there was no significant difference ($t = -1.7556$). The current study suggests that yoga helps with both emotion regulation

strategies, i.e. increases the use of cognitive reappraisal and reduces the use of expressive suppression.

Furthermore, the mean of the pre- and postscores for the cognitive reappraisal domain and expressive suppression domain for the experimental group are compared in Figure 1, whereas Figure 2

depicts the same but for the control group. From the two figures, we can conclude that the experimental group showed significant differences when compared to the control group, i.e. in the experimental group the cognitive reappraisal significantly increased while expressive suppression significantly decreased.

Table 2. Baseline sociodemographic profile of study groups

Characteristic M±SD or %	Total sample (n = 42)	Yoga group (n = 23)	Control group (n = 19)
Age (years)	35.26±5.66	34.76±5.72	36.16±5.43
Sex			
Male	17 (40.5%)	9 (39%)	8 (42%)
Female	25 (59.5%)	14 (61%)	11 (58%)
Educational level			
Diploma	8 (19%)	2 (8.7%)	6 (31.6%)
Degree	32 (76%)	20 (87%)	12 (63.2%)
PhD	2 (5%)	1 (4.3%)	1 (5.2%)

Notes. n = number of participants, M = mean, (SD) = standard deviation

Table 3. Summary of the pre/post intervention outcome measurements

ERQ subscale	Experimental group (n=23)				Control group (n=19)			
	Pre-intervention (t ₀)		Post-intervention (t ₁)		Pre-intervention (t ₀)		Post-intervention (t ₁)	
	Mean (SD)	Median (min-max)	Mean (SD)	Median (min-max)	Mean (SD)	Median (min-max)	Mean (SD)	Median (min-max)
Cognitive reappraisal	4.9444(1.4105)	5(2-7)	5.5158(1.0627)	6(3.33-7)	4.4210(1.2486)	5(2.16-6.33)	4.2982(.0725)	4.5(2.33-6.33)
Expressive suppression	4.4523(1.5539)	5(1.75-6.35)	3.9167(1.3214)	4(1.75-6.25)	4.8158(1.4181)	5(2.25-7)	4.6242(1.2774)	5(2.5-7)

Notes. n = number of participants, (SD) = standard deviation

Figure 1. Pre/post intervention outcome mean values for experimental group

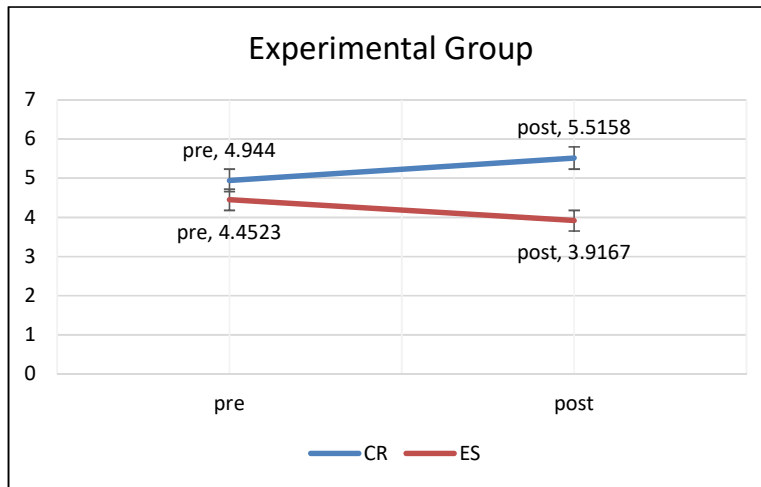
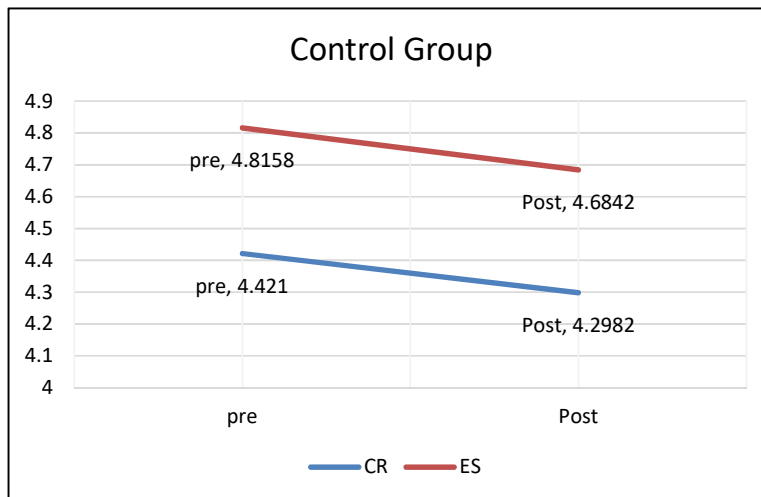


Figure 2. Pre/post intervention outcome mean values for control group



DISCUSSION AND CONCLUSIONS

The current study was designed to assess the effects of the yoga-based intervention on the use of two emotion regulation strategies, namely cognitive reappraisal and expressive suppression, in IT professionals. The findings indicated

positive effects of yoga on emotion regulation in IT professionals, i.e. the significant increase in the use of cognitive reappraisal and a significant reduction in the use of expressive suppression after a 12-week yoga-based intervention. This was supported by the outcomes of

previous studies which demonstrated that regular yoga practice enhances emotion regulation (Bhandrani et al., 2012; Daly, Haden, Hagins, Papouchis, & Ramirez, 2015; Fazia et al., 2020).

The limitation of the present study is a small sample size, which can be addressed in future research by incorporating a large sample size and robust research design. Replication or expansion of the present study would be ideal and valuable, as there is a need for methodologically strong studies with large sample sizes conducted with the population of IT professionals.

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Based on the current research outcome, Information Technology companies can incorporate yoga sessions into their corporate health and well-being programmes, in order to enhance emotion regulation in their workforce, thus reducing the negative outcomes of the emotional labour, such as burnout, and improving employee motivation and performance.

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