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Role of Yoga and Meditation on Symptoms of Stress during COVID- 19 Pandemic

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Abstract

Lack of information about heath conditions, lack of control over disease and uncertainty about the future trend of any disease are the essential sources for stress. During the period of corona virus pandemic everyone, irrespective of age, socio- economic status and gender faces a state of uncertainty, over load of information, panic and often find the situation out of control. The experience of stress depends on a person's coping abilities and life style practices. Yoga and meditation may be important tools in this current pandemic scenario, helping to manage stress and promote self- regulation. The Objective is to explore the difference in positive and negative symptoms of stress among people practicing yoga and meditation in different degree during COVID-19 pandemic. Incidental sampling technique was used to collect data. The survey was conducted on 102 participants. Only 95 participants fulfilled the inclusion criteria. The questions to be asked for survey were prepared with the help of experts from Psychology, Medicine & yoga experts. Survey design was used. For analyzing the data descriptive statistics, frequency table and bar graph were used. The participants were divided into four groups practicing Yoga/Meditation always (Group I, n= 22), often (Group II, n=18), sometime (Group III, n=32) and never (Group IV, n=23). Result reveals that respondent of group I, group II and group III who always, often or sometimes practiced yoga/ meditation had better quality of life, sufficient sleep, control of anger, and experience of happiness, peace of mind and concentration of mind as compared to group IV who never practiced yoga/meditation.

Keywords: yoga, meditation, stress symptoms, positive affects, negative affects and COVID-19

Introduction

Lack of information about health conditions, lack of control over disease, and uncertainty about the future trend of any disease are the essential sources of stress. During the period of the corona virus pandemic, everyone, irrespective of age, socio-economic status, and gender, faces a state of uncertainty, overloaded information, panic, and often finds the situation out of control. Restriction in travel, problems and difficulties in procuring day-to-day needs, loss of job, disturbance in daily routine and social distancing due to lockdown imposed by the government produce many psychological symptoms such as anxiety, stress, insomnia, depression, lack of concentration, anger and irritation etc.

The experience of stress depends on a person's coping abilities and lifestyle practices. If the cognitive appraisal of stress is managed through one's coping skills, the stress can be handled and the person can mitigate the negative consequences of stressful situations. Experiences of relaxation, concentration, control over negative thoughts, sound sleep, and

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happiness can maintain the quality of life despite the challenges of life.

A lot of empirical research and evidence supports that yoga and meditation are helpful strategies for controlling and managing stress and increasing well-being. People who practise yoga and meditation experience less anxiety and depression as well as fewer symptoms of post-traumatic stress disorder. Yoga and meditation improve well-being as well as increase gratitude, compassion, relatedness, acceptance, centeredness, empowerment, self-esteem, self-awareness, and hope. Several studies have reported the impact of yoga on better emotional regulation, self-compassion, forgiveness, and post-traumatic growth; good sleep; less anxiety; positive coping strategies; and better relationships with peers and family members (Sherry, 2020).

Yoga and meditation may be important tools in this current pandemic scenario, helping to manage stress and promote self-regulation. We all have a biological coping system for responding to stress, but sometimes our stress response can become out of balance. We are confronted with various life circumstances which activate the sympathetic as well as parasympathetic nervous systems. A sympathetic response is the body's way of responding to stress, which can be either fight or flight. The activation of the sympathetic nervous system is balanced by our parasympathetic responses, which help our body to rest and relax. Yoga and meditation help to bring our parasympathetic response back and allow us to find balance. Stress and anxiety often trigger the sympathetic nervous system, which results in high blood pressure, tense muscles, poor concentration, and high breathing levels. Activation of our parasympathetic response brings us into a more relaxed stage and permits us to remain calm, related, concentrated, and compassionate. Deep breathing, mindfulness, yoga, and meditation stimulate the vagus nerve, which activates the parasympathetic nervous system and supports self-regulation and stress management.

Manoj (2020) said that yoga is a very effective tool as the stretching poses help to reduce tension in muscles and joints, and this can, in turn, help relax the sympathetic system. There are many types of yoga poses that help with managing high blood pressure, thereby reducing the stress symptoms. Tiwari (2020) said that hormonal balance is the key feature of a strong immune system. Strong immunity has greater success in fighting the COVID-19 infection.

Infection of the corona virus in the body leads to widespread and acute activation of the inflammatory defenses, although originally intended to combat the pathogen, instead resulting in widespread tissue damage to the host and acute respiratory distress syndrome (ARDS), which can ultimately produce extreme critical diseases like pulmonary aspiration, septic shock, and maybe the cause of potential death (Fu et. al., 2020). Inflammation could be brought under control through stimulation of the vagus nerve complex, a major component of the central and peripheral nervous system, which also controls responses to psychosocial stress and stimulation of which can reverse the "fight or flight" response through replacing it with a relaxation response (Pavlov & Tracey, 2005). The same result was found by Bushell and others. They found that intensive forms of meditation and yoga could be very effective as adjunctive interventions against chronic forms of infection diseases like HIV/AIDS, SARS, and also malaria **(**Bushell et al., 2020).

The cytokinin-related effects of meditation and yoga asanas are related to a decrease in sympathetic nervous system activation as well as parallel reductions in levels of catecholamine (Jang et al., 2017). The effects of meditation practises on immune cells, such as NK and T cells, are relevant to the innate adaptive immune system (Infante et al., 2017).highlight that the regular practise of meditation and yoga is associated with elevations in melatonin (Martarelli et al., 2011)**.** Studies in animals and humans have found beneficial effects of melatonin against serious viral infections like HIV AIDS and influenza A-H1N1 (Zhou et al., 2020).

When we pass through a stressful situation, then the HPA axis becomes active and corticosteroid (cortisol) hormones are released from the adrenal gland, which is known as stress hormone. If corticosteroid secretion is sustained for an extended period of time, it weakens the immune system and causes a variety of diseases such as ulcers, diabetes, cancer, increased heart rate and blood pressure, and so on (McLeod, 2010).

In two ways, yoga and meditation help in self-regulation during stressful situations. Firstly, are **top-down processing**-altering messages from our brain to our body, and secondly, **bottom-up processing-altering** messages from our body to our brain. It happens through our pranayam, aasana, and practice of mindfulness. A bottom-up approach alerts the autonomic nervous system functioning (sympathetic and parasympathetic responses) and threat detection system, and a top-down approach modulates messages from the prefrontal cortex, the executive functioning part of our brain that helps us to be involved in critical thinking, better memorization, and self-control.

The corona virus is a novel situation. It will be interesting to explore the impact of indigenous ways of coping with stress during this pandemic period, i.e., yoga and meditation. Therefore, the research question for the present study was "What is the difference in the stress symptoms of people practising yoga and meditation from those who do not practice it?"

Objectives

To explore the difference in positive and negative symptoms of stress among people practising yoga and meditation to varying degrees during the COVID-19 pandemic.

Method

Sample: An incidental sampling technique was used to collect data. The survey was administered to 102 participants. Only 95 participants fulfilled the inclusion criteria. The characteristics of the sample are as below:

- Participants who had passed at least 12th class were eligible.
- The ages range from 19 to 42 years. People less than age 19 and older than 42 years are not included.
- Educational qualification less than 12th class were not included.

Demographic Details

LOCATION	PERCENTAGE	Gender	Percentage
Rural	39%	Male	57%
Semi- Rural Urban	15%	Female	43%
Urban	46%		

Measures: The questions to be asked for the survey were prepared with the help of experts from psychology, medicine, and yoga. A total of 12 items were used in the survey for collecting data. Of which, six items were related to positive symptoms of stress and the other six items were related to negative symptoms of stress. Positive symptoms of stress are measured in terms of anxiety, irritability, sadness, restlessness, fear of corona and anger. A higher score on these items means greater stress. While negative stress symptoms are measured in terms of good quality of life, adequate sleep, happiness experience, anger control, mind control, and peace of mind score on these items means less stress. Each item has a 4 point response format: always, often, sometimes, and never.

Method of data collection: Survey design was used to explore the role of yoga and meditation during the corona virus pandemic period. Data was collected using an online Google form as per the Indian government's recommendation to minimize face-to-face physical interaction.

Method of Data Analysis: For analyzing the data, descriptive statistics, frequency tables, and bar graphs were used. The participants were divided into four groups: always (Group I, n = 22), frequently (Group II, n = 18), occasionally (Group III, n = 32), and never (Group IV, n = 23).Since each item has a 4 point response, always, often, sometimes, and never, but only

the always and often response percentage was included for data analysis.

Results and Discussion

The purpose of the present survey is to find out the role of meditation and yoga in the experience of stress by people during the lockdown period of the corona virus pandemic. To fulfill this purpose, data from 95 participants was collected and analyzed. The participants were divided into four groups practicing yoga/meditation always (Group I), often (Group II), sometimes (Group III) and never (Group IV). The response for each question was taken in a 4-point response format: always, often, sometimes, and never. For analyzing the data, descriptive statistics, frequency table, bar chart, and t-test of percentage were used. Since each item has 4 point responses, always, often, sometimes, and never, but only the always and often response percentages were included for data analysis. The details of the responses of participants have been given in the frequency table.

Table 1

Responses of four groups of yoga practitioners regarding the positive symptoms of stress

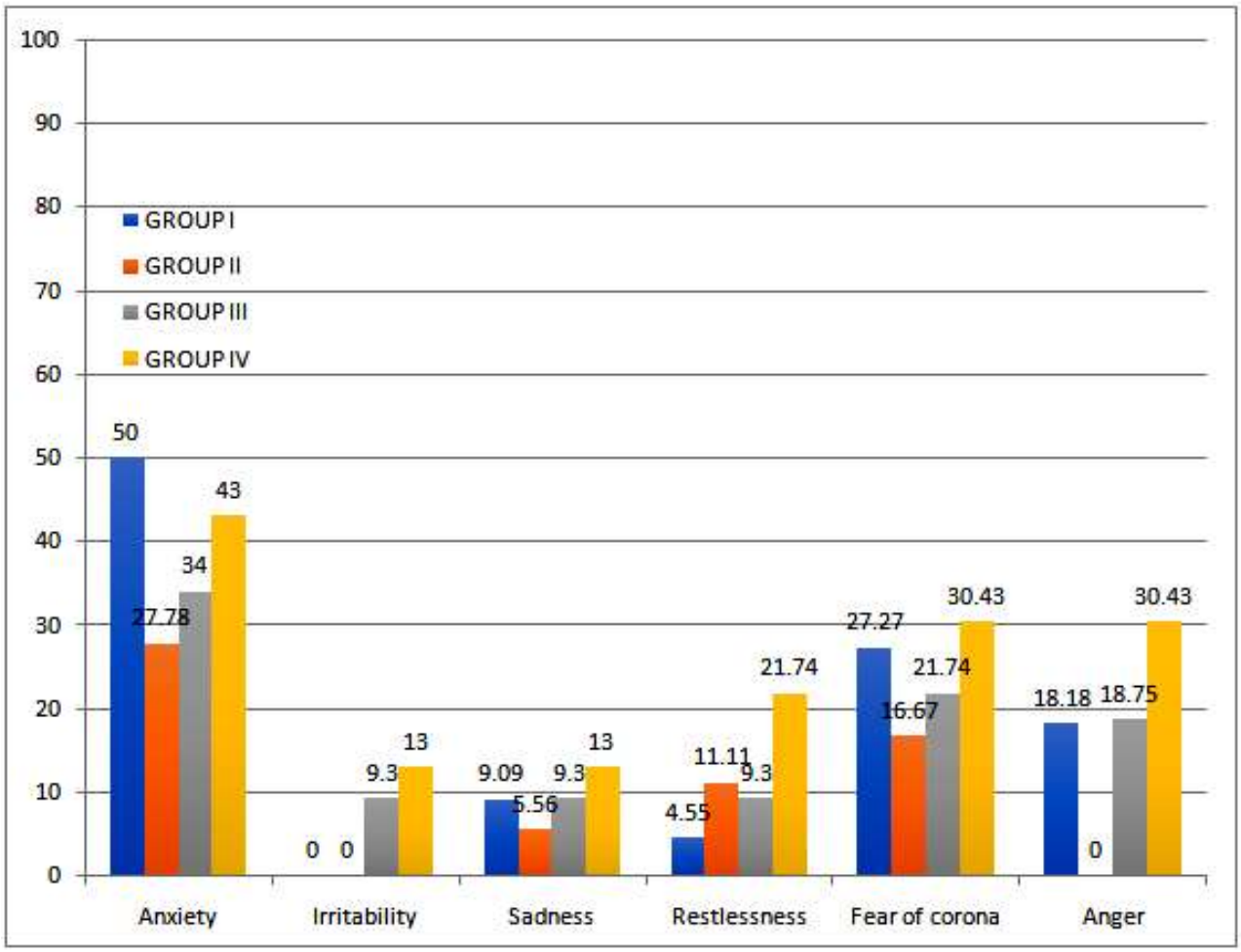
Yoga/ Meditation Practice (N= 95)	Group I (n= 22) (Always)	Group II (n= 18) (Often)	Group III (n–32) (Sometimes)	Group IV (n= 23) (Never)
Item Response/ No.	Always/ Often %	Always/ Often %	Always / Often %	Always/ Often %
Anxiety	50	27.78	34	43
Irritability	0	0	9.3	13
Sadness	9.09	5.56	9.3	13
Restlessness	4.55	11.11	9.3	21.74
Fear of corona	27.27	16.67	21.74	30.43
Anger	18.18	0	18.75	30.43

Table 2

t- value of each item corresponding percentage of responses of positive symptoms of stress between group I & IV, group II & IV and group III & IV

Item	Value of t- test		
	Between Group I & Group IV, df= 43	Between Group II & Group IV, df= 39	Between Group III & Group IV, df= 53
Anxiety	0.47	1.06	0.64
Irritability	1.75****	1.67	0.40
Sadness	0.41	0.84	0.40
Restlessness	1.70****	0.94	1.18
Fear of corona	0.23	1.07	0.67
Anger	0.95	2.71*	1.17

* Significant on p value of 0.01
** Significant on p value of 0.02
*** Significant on p value of 0.05
****Significant on p value of 0.10



Bar Chart 1: Responses of four groups of yoga practitioners regarding positive symptoms of stress

Table 1 reveals the responses of four groups of yoga and meditation practitioners in terms of their experience of positive symptoms of stress, i.e., anxiety, irritability, sadness, restlessness, fear of corona and anger. Table 2 shows the significance of differences in obtained percentages. A perusal of tables 1 and 2 reveals that the experience of anxiety has been reported by 50%, 27.78%, 34%, and 43% of the respondents of the four groups, respectively. There is no significant difference in the experience of anxiety between groups I and IV (t = 0.47), group II and IV (t = 1.06) and group III and IV (t = 0.64). Feelings of irritability have been reported by 0%, 0%, 9.3%, and 13% of the respondents of the four groups, respectively. There is a significant difference in the feeling of irritability between groups I and IV (t = 1.75****), but no significant difference in group II and IV (t = 1.67) and group III and IV (t = 0.40). Feelings of sadness have been reported by 9.09%, 5.56%, 9.3%, and 13% of the respondents of the four groups, respectively. There is no significant difference in the feeling of sadness between group I and IV (t = 0.41), group II & IV (t = 0.84) and group III & IV (t = 0.40). Feelings of restlessness have been reported by 4.55%, 11.11%, 9.3%, and 21.74% of the respondents of the four groups, respectively. There is a significant difference in the feeling of restlessness between groups I and IV (t = 1.70****), but no significant difference in group II & IV (t = 0.94) and group III & IV (t = 1.18). Feelings of fear of corona have been reported by 27.27%, 16.67%, 21.74%, and 30.43% of the

respondents of the four groups, respectively. There is no significant difference in the feeling of fear of corona between group I and IV (t = 0.23), group II and IV (t = 1.07) and group III and IV (t = 0.67). Feelings of anger have been reported by 18.18%, 0%, 18.75%, and 30.43% of the respondents of the four groups, respectively. There is no significant difference in the feeling of anger between groups I and IV (t = 0.95), and groups III and IV (t = 1.17), but a significant difference between groups II and IV (t = 2.71*).

It means that the only significant difference has been found between groups I and IV in the feeling of irritability (t = 1.75****) and feeling of restlessness (t = 1.70****) and between groups II and IV in the experience of anger (t = 2.71*). It is to be added here that in the group I who **always** practice yoga/meditation, a higher percentage of participants reported experiences of anxiety (50%), sadness (9.09%), fear of corona (27.27%), and anger (18.18%), as compared to those who **often** practice it. And also, among those who **never** practice yoga or meditation, 43% of participants reported experiencing anxiety. The possible explanation may be that rigid compliance of yoga/ meditation practice by the participants and their inability to practice it due to the corona pandemic induces feelings of anxiety, sadness, fear, and anger, while people who were flexible experienced less anxiety, sadness, fear, and anger. Practitioners of yoga or meditation may experience feelings of inability to continue practicing yoga or meditation, as well as feelings of guilt. To overcome such negative feelings, they are required to be flexible and still continue to practice yoga and meditation.

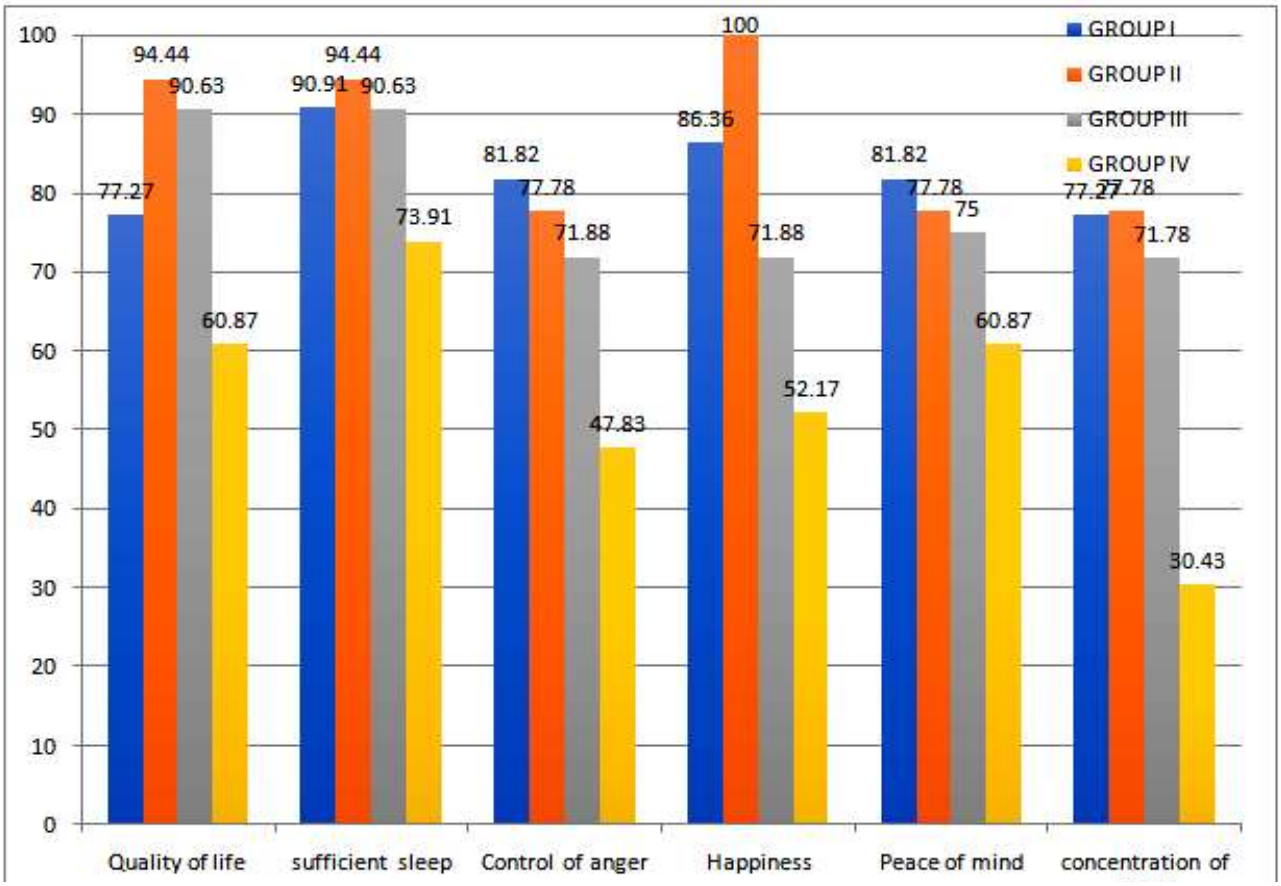
Table 3
Percentage of responses of four groups of yoga practitioners regarding the negative symptoms of stress

Item	Value of t- test		
	Between Group I & Group IV, df= 43	Between Group II & Group IV, df= 39	Between Group III & Group IV, df= 53
Good quality of life	1.18	2.62**	2.42**
Sufficient sleep	1.49	1.82****	1.51
Control of anger	2.38***	2.05***	1.66
Experience of happiness	2.47 **	3.62*	1.37
Peace of mind	1.55	1.19	1.02
Concentration of mind	3.14*	3.17*	2.79*

Table 4
t- value of each item corresponding percentage of responses of negative symptoms of stress between group I & IV, group II & IV and group III & IV

Yoga/Meditation Practice (N= 95)	Group I (n= 22) (Always)	Group II (n= 18) (Often)	Group III(n=32) (Sometimes)	Group IV (n= 23) (Never)
Item Response	Always/ Often %	Always/Often %	Always/ Often %	Always/Often %
Good quality of life	77.27	94.44	90.63	60.87
Sufficient sleep	90.91	94.44	90.63	73.91
Control of anger	81.82	77.78	71.88	47.83
Experience of happiness	86.36	100	71.88	52.17
Peace of mind	81.82	77.78	75	60.87
Concentration of mind	77.27	77.78	71.88	30.43

* Significant on p value of 0.01
** Significant on p value of 0.02
***Significant on p value of 0.05
**** Significant on p value of 0.10



Bar Chart 2: Responses of four group of yoga practitioner regarding negative symptoms of stress

Table 3 reveals the responses of four groups of yoga/meditation practitioners in terms of experience of negative symptoms of stress, i.e., quality of life, sufficient sleep, control of anger, experience of happiness, peace of mind, and concentration of mind. Table 4 shows the significant differences in obtained percentages. Tables 3 and 4 show that good quality of life was reported by 77.27%, 94.44%, 90.63%, and 60.87% of respondents in each of the four groups, respectively. Significant differences have been found between groups II & IV (t = 2.62**) and group III & IV (t = 2.62**), but no significant difference has been found between groups I and IV (t = 1.18). Sufficient sleep has been reported by 90.91%, 94.44%, 90.63%, and 73.91% of respondents in four groups, respectively. A significant difference has been found between groups II & IV (t = 1.82****), but no significant differences have been found between groups I and IV (t = 1.49), and group III & IV (t = 1.51). Control of anger has been reported by 81.82%, 77.78%, 71.88%, and 47.83% of respondents of four groups, respectively. Significant differences have been found between groups I and IV (t = 2.38***), group II and IV (t = 2.05***), but no significant difference has been found between groups III and IV (t = 1.66). Experience of happiness has been reported by 86.36%, 100%, 71.88%, and 52.17% of the respondents of four groups, respectively. Significant differences were discovered between groups I and IV (t = 2.47**) and II and IV (t = 3.62*), but no significant differences were discovered between groups III and IV (t = 1.37).Peace of mind has been reported by 81.82%, 77.78%, 75%, and 60.87% of respondents of four groups, respectively. No significant differences have been found between groups I and IV (t = 1.55), group II & IV (t = 1.19),

and group III & IV (t = 1.02). Concentration of mind has been reported by 77.27%, 77.78%, 71.88%, and 30.43% of respondents of four groups, respectively. Significant differences have been found between groups I and IV (t = 3.14*), group II & IV (t = 3.17*) and group III & IV (t = 2.79*).

This result reveals that respondents of groups I, II, and III who always, often, or sometimes practiced yoga/ meditation had a better quality of life, sufficient sleep, control of anger, experience of happiness, peace of mind, and concentration of mind as compared to group IV who never practiced yoga. The probable reason for this finding may be that the practice of self-management techniques through yoga or meditation helps the participants to have sufficient sleep, control of anger, experience more positive emotions, and be able to concentrate more as compared to those who never practiced yoga or meditation.

The above findings reveal that the practice of yoga or meditation is not sufficient for reducing the experience of symptoms of stress like anxiety, irritability, sadness, restlessness, and fear of corona, which are the negative emotions. But it has a sufficient impact on reducing stress by developing a good quality of life, capacity to control the mind, enhancing the experience of happiness, and ability to concentrate, which are related to enhancing positive emotions. These findings can be explained in terms of the asymmetry between positive and negative effect in the dimensions of reactivity, duration, and cognitive involvement (Larsen, 2009).

We can clearly see that control of anger, experience of happiness, concentration of mind, and good quality of life can be more easily worked upon and enhanced because they are conscious behaviors and based on the choices of a person. While the roots of stress, anxiety, irritability, sadness, restlessness, fear, and anger can be found dormant in the subconscious mind, It requires more deep work on negative beliefs, assumptions, and dysfunctional habits with the help of a counselor or psychotherapist.

Baumeister et al. (2001) reviewed a great deal of data depicting that the system of negative affects (NA) is more reactive than the system of positive affects (PA). The general idea is that "bad is stronger than good". This stronger influence of negative affect has also been acknowledged by Cacioppo and colleagues (1999, 2005). Musch and Klauer (2003) are of the view that negative events compared to positive events capture more attention resources and are stored in memory in a more accessible manner. People adapt to positive emotions more easily than negative emotions.

The frequency tables indicate that the practice of yoga or meditation is useful in traumatic situations like the corona virus pandemic. The tables of responses reveal that in the yoga/meditation group, the positive symptoms of stress (like anxiety, irritability, sadness, restlessness, fear of corona and anger) are less, whereas the negative symptoms of stress (quality of life, sufficient sleep, control of anger, happiness, and peace of mind and concentration of mind) are greater than in the non-yoga/meditation group. The findings of the present study get support from other research. Nagarathna et al. (2021) found that sleeping habits and lifestyle are better while stress and anxiety are lower in yoga groups than in non-yoga groups. Breedvelt et al. (2019) found in their research that there are moderate positive effects of yoga and mindfulness meditation on symptoms of anxiety, stress, and depression. Hendriks (2018) found Sahaj Yoga increases positive affects like happiness, feeling inspired, integrity, and feelings of bliss and decreases negative affects like sadness, feeling upset, angry, nervousness, fear, and instability. A similar result was found by Deshpande (2017). Fredrickson et al. (2008) found that meditation helps to generate positive emotions**.** The responses of yoga and meditation groups regarding the experience of anxiety are not much different than those of non-yoga and meditation groups. It seems that the corona virus pandemic situation was perceived as threatening, thereby enhancing the negative emotions among all the participants, irrespective of whether they were practicing yoga or meditation.

As a result, because yoga and meditation activate our parasympathetic nervous system (PNS), we can use them to cope with the demands of a corona virus pandemic or other stressful situation. The activation of the parasympathetic nervous system reduces stress symptoms, makes us more relaxed and increases concentration, calmness, happiness, life satisfaction and other positive characteristics. Yoga and meditation also regulate hormonal secretion and neurotransmitters and enhance the immune system. If we increase our positive emotions like happiness, quality of life, concentration of mind, good sleep and peace of mind, it will also be beneficial in fighting stressful situations as well as the corona pandemic.

Implications

The findings of this study imply that yoga and meditation relax and purify the brain, thereby generating a positive energy field that brings us closer to our true self. When we practice yoga and meditation, it brings our body, mind, and spirit into complete harmony. Altogether, the findings of this study show that practicing yoga and meditation enhance an individual's level of happiness, quality of life, concentration of mind, good sleep, and peace of mind. Experiencing such positive emotions may reduce the fear and stress related to uncertainty caused by the COVID-19 pandemic. Moreover, findings also imply that yoga and meditation have long-term effects. Therefore, regular and long-term practice of yoga and meditation will not only enhance positive emotions but also help in reducing negative emotions like anger, irritability, restlessness, and anxiety associated with the COVID-19 pandemic or other uncertainties of life. It may also help health practitioners to promote yoga and meditation-based interventions to facilitate the self-management of negative emotions associated with diseases and pandemic situations.

The participants of the present survey were either from the young adult group or they belonged to the middle age group (19 to 43 years old), and these stages of the life cycle incorporate pursuing many life goals and spending time fulfilling them. They might not get enough time to follow a rigid time schedule of practicing yoga and meditation. Some flexibility may be a coping resource to help them follow these practices as well as pursue their life courses. This implies that people of these life stages should maintain a balance between their life dimensions and spiritual practices like yoga and meditation, because spirituality is a journey that demands perseverance and practice.

Limitations and Suggestions

The sample size (n = 95) of the present study was small and not equally distributed among all four groups. The sample was divided into four groups, i.e., practicing yoga/meditation always (group I), often (group II), sometimes (group III) and never (group IV), but participants were not classified according to the time duration of practicing yoga. Therefore, in further research, we can take a large sample size and an equal distribution of groups. Moreover, information regarding their practice duration of yoga and meditation could also provide a better understanding of the effects of yoga and meditation. The questionnaire used in this survey was not a standardized test. It was made with the help of teachers and yoga experts, but its reliability and validity were not checked. So these factors set a limit to the generalizability of the study. A standard questionnaire can be used for more valid generalization.

Conclusion

When we practice yoga/meditation, it decreases activity of sympathetic nervous system and increases activity of parasympathetic nervous system. This activation of nervous system becomes very helpful to calm and concentrate the mind of the practitioners of yoga/meditation. It also helps to generate the alpha and theta brain waves and positive emotions which help to cope with stress symptoms in any stressful situation like corona pandemic. Thus practicing yoga/meditation is a very effective practice in corona virus pandemic and when we are passing through an uncertainty.

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