

# CHAPTER 7

## DISCUSSIONS

## 7.0 DISCUSSION

The present study aimed to investigate the effect of practicing *Ānāpānasati* Meditation for six months at the level of anxiety, verbal aggression, and depression as measured using STAI, VAS, and BDI scores. In this section, we examined the results of the study to understand the efficacy of *Ānāpānasati* Meditation.

### 7.1 ANXIETY

We studied the effect of *Ānāpānasati* Meditation in individuals with the STAI scale for assessing the anxiety levels. The need for this study seems to be important when we consider the severity of the damage caused by anxiety to mankind. STAI scale is widely used in assessing anxiety levels. Literature review shows that the number of citations with STAI is more when compared to other measures. The scale was originally designed for a normal population, which was extended later for clinical studies (McDowell, 2006). In the present study, at the end of the six months, we have observed that the anxiety levels of the subjects in the experimental group have reduced significantly whereas in the control group the anxiety levels have moderately increased. Previous studies on *Ānāpānasati* Meditation have shown that the stress parameter activation coefficient and health parameter integral area, as measured by the Electro Photonic Imaging (EPI) technique, have reduced significantly with meditation (Deo et al. 2015).

Earlier studies on mindfulness meditation established the effectiveness of meditation in reducing anxiety and depression levels (Green et al. 2015; Davoudi, Omid, Sehat, and Sepehrmanesh, 2017; Wrzosek, Wojnar, Sawicka, Tałałaj, and Nowicka, 2018) and our results with *Ānāpānasati* meditation match with the results of the previous studies. The role of *Yoga* in improving the quality of life which gets influenced by negative emotions and aggression is well understood (Boyle et al. 2018; Deshpande, Nagendra, & Raghuram, 2009). Meditation

which is a limb of *Yoga* (Inventory 2003) has a significant role in improving the quality of life and reducing anxiety and depression levels. The results of the study also highlight the importance of meditation in reducing anxiety levels as measured by STAI.

The data further analyses revealed that after practicing *Ānāpānasati* Meditation for six months, anxiety has decreased in both age groups. The STAI score was lying between 40 to 60 for the majority of the participants in both the experimental and the control groups. The STAI score has moderately increased in the subjects who were having a score less than 40 after the intervention and the reason for such an increase we need to understand from various factors such as the physiological, psychological, and socio-economical status of the individuals and not considering them in our study is a limitation.

This is probably for the first time the effect of *Ānāpānasati* Meditation on anxiety was under study and the results were promising and paved the way for in-depth studies to unravel the hidden potential of the meditation. Subramanya P et al. have studied the effect of Cyclic Meditation (CM) and Supine Rest (SR) on memory scores and state anxiety levels and results have shown that the anxiety levels have reduced after Cyclic Meditation compared to Supine Rest (Subramanya & Telles, 2009). The results of the current study match with the previous results but the difference is that the earlier study checked immediate effect whereas the current study has assessed the state anxiety levels after six months of intervention. The results of the current study confirm the long-term effect of *Ānāpānasati* Meditation on anxiety.

The STAI score results of various mindful meditation techniques from the earlier studies on anxiety are captured in Table 15.

**Table 15: Comparison of the STAI scores of the earlier studies with the current study**

Intervention	Duration	Experimental Group		Control Group	
		STAI (PRE)	STAI (POST)	STAI (PRE)	STAI (POST)
<i>Ānāpānasati</i> Meditation	6 months	47.61 ± 7.41	44.58±5.08	50.55±4.25	52.02± 4.41
OM Meditation (D. Singh, Suhas, Naveen, & Nagendra, 2014)	Long Term Practitioners	26.24±10.21	No Post	32.75±8.29	
Mind Sound Resonance Technique (MSRT) (Dhansoia, Bhargav, & Metri, 2015)	Immediate Effect	52.42±17.00	28.42 ± 3.87	49.92±21.85	46.08±22.29
Meditation Based Complex Exercise Program (MMBCEP) (Son & Choi, 2018)	8 weeks	40.37 ± 4.77	38.14 ± 9.33	40.73±8.67	46.78±7.79
Mindfulness Based Stress Reduction (MBSR) (Vøllestad, Sivertsen, & Nielsen,2011)	8 weeks	40.5±9.2	36.5±12.6	41.5±8.6	45.7±11.7

Dipeshwar et al. have studied the effect of the long-term practice of meditation on psychological health and the results suggest that anxiety levels are low in meditators compared to non-meditators. Vipin has studied the effect of MSRT on anxiety. They have observed a substantial decrease in the anxiety score immediately after completing MSRT. In our study also observed in *Ānāpānasati* Meditation a similar result in reducing the STAI scores. These results are similar to the results of the studies conducted using MBSR and MMBCEP techniques. *Ānāpānasati* Meditation is a very simple technique and an easy one to practice when compared to other meditation techniques. And it is yet equally effective in reducing anxiety levels.

The results of the current study confirm the effectiveness of *Ānāpānasati* Meditation but warrant further in-depth study to understand its effects on anxiety associated with other physiological and psychological disorders.

## **7.2 VERBAL AGGRESSION**

The study aimed to investigate the effect of *Ānāpānasati* Meditation on verbal aggression. The study revealed that after six months of intervention, there was a significant reduction in the VAS score of the participants practicing *Ānāpānasati* Meditation when compared to the participants who were not doing meditation. The results of the present study were consistent with the results of previous studies on aggression by Singh et.al (Lancioni et al. 2007; Singh & Lancioni, 2013; Singh et al. 2016) but differ from the results of the study on aggression by Milan et al. (Milani et al. 2013). The studies on aggression by Singh et.al, have demonstrated the effectiveness of meditation on the Soles of the Feet (SOF) on both physical and verbal aggression and from the results of the present study, one observes a similar effect on verbal aggression with the mindfulness of breathing as an intervention that we think is a significant first step towards understanding the effect of *Ānāpānasati* Meditation on aggression. The only difference is that previous studies focussed on individuals with psychological or neurodevelopmental disorders, whereas the current study is on individuals with normal health.

Although Mindfulness-Based Cognitive Therapy (MBCT) is widely used in treating psychiatric disorders (Jong et al. 2018) it has not shown significant effects when studied on people at rehabilitation centers (Milani et al, 2013). The authors attributed this to the prevailing environment especially that of prison and recommended conducting the studies on other groups outside the prison environment with a follow-up of at least six months. In the present study, one observes a significant reduction in verbal aggression when normal, healthy individuals practiced *Ānāpānasati* Meditation for six months.

Researchers suggest that mindfulness leads to psychological well-being and recent studies on hostility, anger, and aggression have shown positive outcomes with mindfulness intervention (Brown & Ryan, 2003). In the present study, we observed a significant reduction in the VAS score with a six-month intervention of *Ānāpānasati* Meditation. In the experimental group, the VAS score has shown a significant reduction in both males and females. In the experimental group, a significant reduction in the VAS score was consistent across the two age groups, below and above 45 years. The results suggest that *Ānāpānasati* Meditation is effective in all groups.

A previous study of verbal aggression with *Yoga* as an intervention observed that a similar reduction in VAS score in the *Yoga* group occurred when compared to the control group. The *Yoga* program in the study consists of various breathing exercises, *Āsanās*, *Prānāyāma* and meditation. According to *Patañjali*, *Yoga* is effective in developing mastery over the mind and meditation has a significant role in calming down the mind leading to a reduction in the level of aggression. The difference between the previous and current studies is that in the previous study meditation was for 10 minutes along with other *yogic* practices and the intervention was for eight weeks, whereas in the current study, only *Ānāpānasati* Meditation was for six months and there were no *yogic* practices. Both the experiments have shown a similar reduction in the VAS score, which emphasizes the importance of *Yoga* and meditation in reducing aggression.

The results of the earlier studies on the effect of *Yoga* on aggression, as measured using the VAS score, are captured in Table 16.

**Table 16: Comparison of the VAS scores of the earlier studies with the current study**

Intervention	Duration	Experimental Group		Control Group	
		VAS (PRE)	VAS (POST)	VAS (PRE)	VAS (POST)
<i>Ānāpānasati</i> Meditation	6 months	66.53 ± 6.93	46.97 ± 6.79	66.73 ± 12.15	64.97 ± 13.16
<i>Yoga</i> (Deshpande et al. 2008)	8 weeks	59.77 ± 7.51	57.36 ± 6.20	58.71 ±9.25	59.93 ± 8.63

Deshpande et.al have studied the effect of *Yoga* on verbal aggression and reported that 8 weeks of *yoga* practice has shown a significant reduction in the VAS score (Deshpande et al. 2008). The results of our study and the earlier studies have shown that verbal aggression has reduced significantly by practicing *Ānāpānasati* Meditation and *Yoga*. This is the first time probably we have studied the effect of *Ānāpānasati* Meditation on verbal aggression. VAS score has reduced significantly with the practice of *Ānāpānasati* Meditation compared to the reduction of the VAS score with the practice of *Yoga*.

The practice of *Ānāpānasati* develops concentration that leads to intuitive insights (Borders, Earle wine & Jajodia, 2010). One will be able to calm the mental formation with complete

control on such defilements. Verbal aggression is one of the causes of eroding the mind and the results of the present study suggest that mindfulness of breathing controls verbal aggression effectively. This is the first time the effect of *Ānāpānasati* Meditation on verbal aggression, which we have studied, and a reduction in VAS score from the present study emphasizes the significance of *Ānāpānasati* Meditation as an intervention in reducing the aggression. Earlier the effect of *Ānāpānasati* Meditation on stress levels of persons as measured by the EPI, which Guru Deo et al. studied. Their study suggested that the practice of *Ānāpānasati* Meditation reduces stress levels (Deo, Itagi, Thaiyar & Kuldeep, 2015). The results of a study by Brown and Ryan suggest that mindfulness is closely associated with attention and awareness and a similar relation is explained in *Ānāpānasati* that says the practice of mindfulness of breathing by paying attention to breathe leads to awareness and clear comprehension. They also suggest that enhanced mindfulness increases awareness and reduces aggression and other psychological symptoms. The results of the present study were consistent with the research findings and also signify the role of *Ānāpānasati* in reducing aggression. There is a need to do focussed studies to establish the effectiveness of *Ānāpānasati* in addressing psychological disorders.

### **7.3 DEPRESSION**

The present study was to investigate the effect of *Ānāpānasati* Meditation on people with the BDI score for assessing depression levels. BDI score is the well-established scale for assessing depression (Okamoto, Miyake, Nagasawa, & Yoshihara, 2018; Tulloh et al. 2018; Wrzosek, Wojnar, Sawicka, Tałałaj & Nowicka, 2018). The BDI scores have significantly reduced in the participants who have participated in *Ānāpānasati* Meditation, whereas in the control group there was no significant change in the BDI score.

In *Ānāpānasati*, as the name suggests, there is only an observation of inhaling and exhaling and there is no interference of the breathing in and out. It is just an observation of breathing in

and out and nothing else. *Ānāpānasati* translates as the mindfulness (*Sati*) of inhalation (*Āna*) and exhalation (*Apāna*) as a result of an engaged observation of it.

The mindfulness meditation technique has gained significant research interest and has shown positive results on depression (Green et al. 2015). In the present study, one observes that the depression levels have reduced with *Ānāpānasati* Meditation. The difference is that earlier studies have used hospital anxiety and depression scale-subscale depression, 20 item Centre for Epidemiologic Studies depression scale, 17 item Hamilton depression scale whereas the present study uses Beck's depression inventory II. In the experimental group, we divided the subjects into four groups based on age. We have observed that *Ānāpānasati* was effective in all the age groups as the post-BDI score has changed from moderate to low after six months of intervention. Similar analysis done for the control group revealed that the change in the BDI score was not that significant. At the end of the six-month intervention, the BDI score has shown a significant change from mild, moderate, and severe depression levels to lower depression levels when compared to the control group. Earlier studies explain the therapeutic benefits of mindfulness meditation, but this is the first time the effect of *Ānāpānasati* Meditation was under study on depression and the results were encouraging.

A Comparison of the BDI scores with the results of the earlier studies is furnished in Table 17 below.

**Table 17: Comparison of the BDI scores of the earlier studies with the current study**

Intervention	Duration	Experimental Group		Control Group	
		BDI (PRE)	BDI (POST)	BDI (PRE)	BDI (POST)
	6 months	25.78±9.32	4.02 ±5.33	15.33 ± 11.43	16.60± 12.77

<i>Ānāpānasati</i> Meditation					
<i>Yoga Nidra</i> and Meditation (Ferreira- Vorkapic, Borba- Pinheiro, Marchioro & Santana, 2018)	3 months	13.2	9.5	11.5	11.2
Mindfulness-Based Cognitive Therapy (MBCT) (Hosseinzadeh Asl & Barahmand, 2014)	8 weeks	26.75±12.26	16.94±7.64	24.52±8.46	23.65±8.05
Mindful Awareness Practices (MAP) (Lopez-Maya, Olmstead, & Irwin, 2019)	6 weeks	16.6 ± 0.8	6.5 ± 0.8	16.3 ±0.8	8.7 ± 0.8
Mindfulness Based Stress Reduction (MBSR) (Vøllestad et al. 2011)	8 weeks	17.3 ± 9.0	10.8 ±9.9	16.4 ± 8.2	16.2 ± 8.9

In our study, six months of practice of *Ānāpānasati* Meditation have shown a significant reduction in depression levels as measured using the BDI score. We see a similar reduction in the studies conducted using other mindful meditation techniques such as *Yoga Nidra*, Mindfulness-Based Cognitive Therapy (MBCT), Mindful Awareness Practices (MAP), Mindfulness-Based Stress Reduction (MBSR). The duration of the intervention is longer in our study compared to other studies, but the scores have reduced substantially with *Ānāpānasati* Meditation compared to other techniques. The results, our study suggests that *Ānāpānasati* Meditation is more effective in reducing depression levels. There is a need to do in-depth studies to unravel the hidden potential of the *Ānāpānasati* Meditation technique.

According to the Delphi poll on future trends of psychotherapy, mindfulness theories along with cognitive-behavioural, integrative, and multi-cultural theories become increasingly useful in the next decade (Norcross, Pfund, & Prochaska, 2013). This emphasizes the importance of studying mindfulness meditation techniques as that of psychotherapy (Mortamais, Abdennour, Bergua & Tzourio, 2018). We took up investigating the effect of *Ānāpānasati* Meditation on depression. The first study on the effect of *Ānāpānasati* Meditation on Electron Photonic Imaging (EPI) parameters has shown that the stress parameter activation coefficient (AC) and health parameter integral area (IA) has reduced significantly. (Deo et al. 2015). In another study, Lee et.al have shown that the *Ānāpānasati* (Focussed Attention Meditation) correlates with attention task performance (Okamoto Miyake, Nagasawa & Yoshihara, 2018). As the results with *Ānāpānasati* Meditation were encouraging the researcher aimed at investigating its effect on depression, and the BDI score in the present study has reduced from moderate to low in meditators compared to non-meditators. The results of the first study are promising.

As for the simplicity of the procedure of *Ānāpānasati* Meditation, it is explicit when viewed from the following other kinds of meditations:

### **The Technique of Cyclic Meditation (Nagendra & Nagarathna, 2001):**

The key factors of Cyclic Meditation are the postures of relaxation, slow movements, the inner awareness of breathing, heartbeat, blood flow, etc. And experiencing three-dimensional and all-pervasive awareness is essential. Prayer, Instant Relaxation Technique, *Tādāsana*, *Ardhakati cakrāsana*, *Pādahastāsana*, Deep Relaxation Technique, and Closing Prayer are included in the cyclic meditation.

### **Transcendental Meditation technique:**

The Transcendental Meditation technique or TM is a form of silent mantra meditation. The meditation practice involves the use of a mantra for 20 minutes twice a day while sitting with one's eyes closed.

### **Mindfulness Meditation:**

Mindfulness is a type of meditation in which you focus on being intensely aware of what you're sensing and feeling in the moment, without interpretation or judgment. Practicing mindfulness involves breathing methods, guided imagery, and other practices to relax the body and mind.

All kinds of meditation are more or less aiming to calm down the mind, though they may have differences in practices. However, breathing, i.e., inhaling and exhaling is common in all these practices. *Ānāpānasati* Meditation involves mindful breathing alone.

### **A Comparison of the results of *Ānāpānasati* Meditation with other kinds of meditation practices:**

The comparison tables Nos. 15, 16, and 17 show that the effect of *Ānāpānasati* Meditation is more efficacious than other practices. Comparisons could be about the results alone, since methods and parameters may always differ. Further, the easy method of *Ānāpānasati* Meditation brings strength in getting better results in people compared to other kinds of practices.