

## **EFFECT OF YOGA PRACTICE ON DEPRESSION**

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### **Introduction**

Depression is a psychological condition, characterized by a pervasive low mood, low self-esteem, and loss of interest or pleasure in normally enjoyable activities. The World Health Organization (WHO), defines depression as a mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration. (1)

The report on Global Burden of Disease estimates the point prevalence of unipolar depressive episodes to be 1.9% for men and 3.2% for women (2). Depression is an important global public health problem due to both its relatively high lifetime prevalence and the significant disability that it causes. It is also responsible for the greatest proportion of burden attributable to non-fatal health outcomes, accounting for almost 12% of total years lived with disability worldwide (2). Without treatment, depression has the tendency to assume a chronic course, to recur, and to be associated with increasing disability over time. (3). A RAND Corporation study found that patients with depressive symptoms spend more days in bed than those with diabetes, arthritis, back problems, lung problems or gastrointestinal disorders.(4)

The exact etiology of depression is yet to be determined; however, it has been proposed that multiple factors, including biological, psychological, and environmental factors are involved in the presentation of depression. In addition to it, there are also psychosocial factors that contribute to the

development of mood disorders. For example, an individual with little or no social support will have fewer resources to handle stress and thereby will be at a greater risk of developing a mood disorder.

The current practice of treatment for depression is a visit to a doctor which involves “the patient’s version” of how they have been feeling “emotionally”. Especially with antidepressant treatment, the typical depressed person mostly gets a prescription without ever having any conclusive laboratory evidence of what is causing their symptoms (5).

The most commonly indicated and current treatments for depression are psychiatric medications and psychotherapy. Psychotherapy allows the individual to explore their issues with their therapist in a therapeutic relationship. Antidepressants are the main kind of psychiatric medications. These decrease the re-uptake and distraction of the neurotransmitter by the pre-synaptic neuron. Treatment through medication has always been cyclical and the subjects usually undergo undulating phases. Most individuals with depression report only a 50% decrease in symptoms with the use of the standard treatment for depression, which is generally antidepressant medications (6)

A variety of medical devices are also under consideration for treatment of depression including vagus nerve stimulation, repetitive transcranial magnetic stimulation, and cranial electrotherapy stimulation.

## **Yoga**

Yoga is a philosophy of living - an ancient system of exercises that has evolved in India (7). The goal of yoga precisely is to achieve physical health, psychological well being and spiritual peace. It enhances every facet of physical fitness.

Yoga has been found to be helpful in the prevention and cure of various diseases. Yoga practices (*asanas*) have been recommended for various diseases like Asthma, Cardiovascular diseases, diabetes, arthritis, epilepsy, anxiety and also many stress related conditions (8–12). On a physical level, yoga postures are designed to massage the internal organs, increasing and decreasing blood flow to targeted areas. This circulates the blood and lymph, thus removing stale bodily fluids from vital organs and helping flush toxins. The physical movement can also stimulate hormones and neurotransmitters, leading to positive feelings and emotions. Yoga practice affects cognitive, emotional, and behavioral systems under stress, potentially resulting in improvements in physical and psychological functioning. (13)

The objective of the study was to evaluate the role of yoga in reducing depression.

### **Methods**

This study was an open, parallel, prospective, concurrent-control group study. Individuals for the study were recruited from a prominent Yoga centre in Chennai. The study was conducted from January 2012 to February 2014 as part of doctoral research. Institutional Ethics Committee approval was obtained for this study before the commencement of recruitment. The study was explained in detail to all the prospective participants. Following this, the individual was requested to give written informed consent. All data were only identified by a unique identification number and initials to protect confidentiality.

We recruited both males and females, in the age group 25 to 35 years with evidence of depression based on Beck's Depression Inventory (BDI). Individuals who scored  $\geq 14$  points with BDI were included in the study.

Individuals were excluded if they had any other illnesses, significant memory/perceptual/behavioural disorder. Individuals who had practiced Yoga earlier were also excluded.

#### ***Study and Control group***

Individuals who took up yoga therapy for depression were included in the Study group. Others who did not take up Yoga were included in the Control group (No yoga group).

Individuals allocated to Yoga practice were commenced on an individualized Yoga practice of one hour duration. They were given yoga practice specific for depression, which they were asked to practice daily for a period of 8 weeks (2 months), from the date of enrolment. Regularity was monitored by the research personnel both by checking attendance (yoga monitoring sheet) and follow-up calls. Patients allocated to control group did not participate in the Yoga sessions. Both the groups received similar education regarding the study. The inclusion criteria and procedures for Informed Consent remained the same for both groups; however there were no follow-up calls to the 'No yoga practice' group.

#### ***Beck's Depression Inventory (BDI)***

BDI is a 21-question multiple-choice self-report inventory, one of the most widely used instruments for measuring the severity of depression. The questionnaire is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex (14). Each question has a set of at least four possible

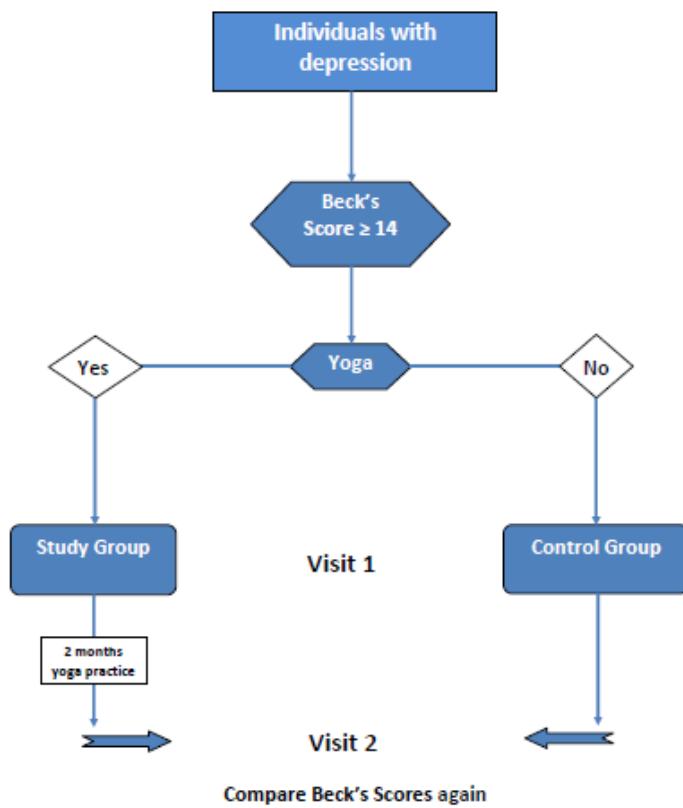
answer choices, ranging in intensity. The BDI was developed to provide a quantitative assessment of the intensity of depression. Because it is designed to reflect the depth of depression, it can monitor changes over time and provide an objective measure for judging improvement and the effectiveness of treatment methods.(15) Hence, in our study Beck's inventory was used again after yoga practice to assess the improvement from depressive states.

***Visit 2 – At the end of 2 months***

Each subject, both in the study and control group, reached Visit 2 at the end of their two months. The Yoga group completed 8 weeks of yoga classes at this time. BDI was administered to the subjects again during visit 2 (Figure 1).

Results were analyzed for changes in Depression level after yoga practice. Data were analyzed using SPSS v.17.0. The differences in pre and post-yoga scores were used for the analysis. Student's independent sample t-test was used to compare the differences in scores between two groups (yoga vs. Non-yoga group).

**Figure 1:** Study overview



There were 65 individuals recruited into the study, out of which 32 were males and 33 were females. Their mean Becks Score was  $24.65 \pm 5.69$ .

No adverse events were encountered during the study. Relative to men, women demonstrated higher depression scores, though the difference was not statistically significant ( $p=0.19$ ). The participants were not on any medicines or any other therapy. Pregnant women were not included in the study.

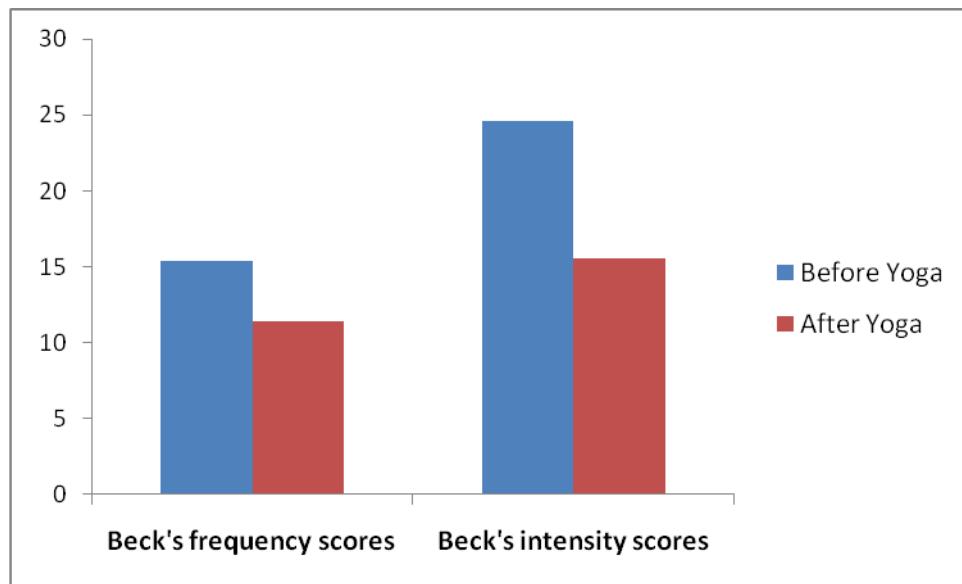
Of the 65 subjects, 34 were interested to take up yoga practice. The rest 31 were grouped as the No-Yoga or control group.

All the 34 individuals in the study group, as was the inclusion criteria, had a depression score greater than 14. Each of them was put on an individualized yoga practice for 8 weeks. Their depression scores were again measured. Depression scores were calculated based on frequency and intensity. The frequency scores denoted how frequently the individuals were depressed and the intensity scores denoted how intense the depression was.

After yoga practice, there was a very significant decrease in both the Beck's depression frequency and intensity scores. The mean depression score dropped from 24.64 to 15.52 and the frequency dropped from 15.38 to 11.41. Student's t test was performed to assess the significance between the differences. P values of  $<0.0001$  was obtained, indicating extremely significant difference in the scores.

The control group initially had a mean Beck's score of  $24.35 \pm 3.62$ . After 2 months, the mean Beck's score was  $25.16 \pm 2.58$ . The yoga group showed a significant improvement from their depression compared to the No yoga group.

**Figure 1:** Depression scores before and after yoga practice

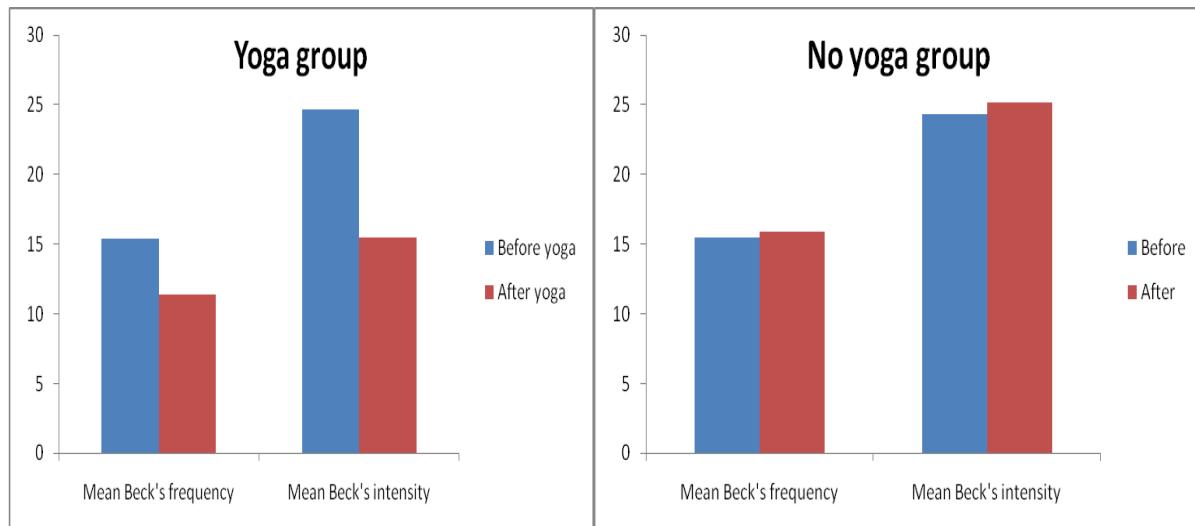


**Table 1**

**Study Group Before vs After Yoga – Depression parameters**

Parameter	Before yoga	After yoga	Statistical value	Results
Becks score frequency	15.38±2.43	11.41±4.55	p=0.00	Frequency of Depression significantly improved after yoga practice
Becks score intensity	24.64±5.69	15.52±7.31	p=0.00	Intensity of Depression significantly improved after yoga practice

Figure 2: Comparison of depression scores between Yoga and No yoga group



## Discussion

Depression is a multi-dimensional disorder. It has social components, factors that are mediated by the quality of one's relationships, including such variables as the family and the culture one is socialized into, and one's range of social skills. There appears to be a complex relationship among stressful situations, mind and body's reaction to stress, and the onset of clinical depression. It is clear that some people develop depression after a stressful event in their lives. Depression can also make medical symptoms, such as pain, feel worse—out of proportion to what objective testing would indicate. (16)

Yoga, an ancient mind-body discipline that is increasingly popular not only in India but also in the West (17), and it may represent a particularly promising nonpharmacologic therapy for depression. Studies suggest yoga can decrease muscular excitability and induce more rapid muscle relaxation (18). In the last two decades mental health professionals have started looking at yoga as a possible treatment option for various psychiatric disorders. The introduction of yoga as a complementary treatment for patients with psychological disorders could be an effective solution for the following reasons - yoga is a practical and accepted intervention for patients to practice at home and yoga is cost-effective and has no side-effects as in the case of psychiatric medications. (19). Uebelacker et al. from USA, in a qualitative study showed that practice of Vinyasa yoga over the 2-month period, exhibited significant decreases in depression symptoms and significant increases in an aspect of mindfulness and behavior activation in patients suffering with depression (20). Shapiro et al from Italy in a non-controlled study showed significant reductions in depression, anger, anxiety, neurotic

symptoms and low frequency heart rate variability in the 17 patients with depression who completed a yoga training programme (21). Sharma et al, in their randomized controlled study showed that Sahaj Yoga practice can lead to additional improvement in executive functions like manipulation of information in the verbal working memory, attention span and visuo-motor speed of patients suffering from depression (22). Sharma et al, in another of their randomized controlled study showed that the number of patients who went into remission after two months of Sahaj Yoga practice were significantly higher those of the control (23). A number of other studies have also shown that yoga is beneficial in improving depression (24,25). In studies that compared yoga treatment with control groups or other treatment modalities like bilateral electroconvulsive therapy or antidepressant or standard psychotherapy also showed that yoga was effective in improving depression (26–28).

Our results are in concordance with these studies. In our study too, there was a very significant improvement in the Beck's depression scores after yoga practice. The mean depression score dropped from 24.64 to 15.52, as against the control group.

Though most of the clinical effects of yoga are probably brought about by vagal stimulation and parasympathetic activation, the complete mechanisms underlying the reported benefits remain poorly understood (29).

Yoga techniques include the practice of meditation, regulation of respiration with a variety of breathing exercises, and the practice of a number of physical exercises and postures, in which the focus is more on isometric exercise and stretching than on aerobic fitness. (30) Asanas, pranayama and dhyana, the components of yoga therapy, seem to improve the symptom profile through several physiological and biochemical mechanisms. The improvement in physical strength and fitness caused by yoga seems to be related to several factors like muscular strength and endurance, flexibility, cardiorespiratory fitness, body composition and pulmonary function (31).

Yoga practice addresses negative bias by encouraging positive self-talk and self-acceptance. Through focusing on an individual's ability to meet the mood with a combination of self-acceptance, physical movements, useful breathing, and relaxation, it is suggested that a yoga intervention could provide individuals with an enhanced sense of control during a stressful situation or a depressive episode. The repetitive practice of yoga over sufficient number of weeks may provide a sense of accomplishment or mastery, positively reinforcing the healthy coping activity (32).

It is also proposed that lack of social support may be an important factor in the development of depression.(33). Thus, a factor in the effectiveness of yoga for depression may be the social support

provided during group classes that could enhance coping in some individuals. For some individuals, the yoga practice could become a self-reinforcing behavior with a personal and group effect on mood. These behavioral modulations from yoga may assist the individual to have a healthier physical and psychological response to stress (32). Studies have found that increased satisfaction with social support is significantly correlated with enhanced coping and inversely correlated with degree of depression (34).

Techniques learned in yoga may help an individual change the perception and appraisal of a stressor, altering his or her affective and physiological reactions to the situation. Yoga intervention can be considered to assist depressed individuals to cope with their depressive symptoms.

### **Conclusions**

Results of our study have shown that there is a significant decrease in depression scores after yoga practice. Yoga can significantly improve depression, and thus may offer a treatment modality for depression.

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