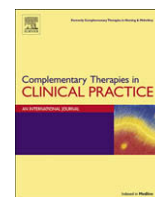




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Effects of yoga on depression and anxiety of women

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A B S T R A C T

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Yoga has often been perceived as a method of stress management tool that can assist in alleviating depression and anxiety disorders.

This study sought to evaluate the influence of yoga in relieving symptoms of depression and anxiety in women who were referred to a yoga clinic.

Methods: The study involved a convenience sample of women who were referred to a yoga clinic from July 2006 to July 2007.

All new cases were evaluated on admission using a personal information questionnaire well as Beck and Spielberger tests. Participants were randomly assigned into an experimental and a control group.

The experimental group ($n = 34$) participated in twice weekly yoga classes of 90 min duration for two months. The control group ($n = 31$) was assigned to a waiting list and did not receive yoga. Both groups were evaluated again after the two-month study period.

Results: The average prevalence of depression in the experimental group pre and post Yoga intervention was 12.82 ± 7.9 and 10.79 ± 6.04 respectively, a statistically insignificant decrease ($p = 0.13$). However, when the experimental group was compared to the control group, women who participated in yoga classes showed a significant decrease in state anxiety ($p = 0.03$) and trait anxiety ($p < 0.001$).

Conclusions: Participation in a two-month yoga class can lead to significant reduction in perceived levels of anxiety in women who suffer from anxiety disorders. This study suggests that yoga can be considered as a complementary therapy or an alternative method for medical therapy in the treatment of anxiety disorders.

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1. Introduction

Yoga is commonly perceived as an alternative medicine. In Sanskrit, Yoga means union or unification. Yoga techniques aim to develop and retain a healthy balance between all aspects of body and mind.¹

Yoga can be divided into four main branches which are: Bhakti yoga, Karma yoga, Gyana yoga, and Ashtanga yoga² these variations fundamentally offer a means by which individuals are able to enhance their control and development of body and mind.³

Ashtanga Yoga can also be divided into two branches. Firstly, Hatha yoga, involving exercises (Asana), deep relaxation, control of breathing (Pranayama), and meditation.² Secondly, Raja yoga which

generally focuses on the mind, which may promote mind skills, such as accuracy, concentration, determination and memory.³

Yoga can offer an effective method of managing or reducing stress⁴ and there are several studies, which have demonstrated the efficacy of yoga on stress related disorders.

Taherkhani¹¹ showed that yoga can be used as a treatment for Obsessive Compulsive Disorder (OCD), so that, when used as an adjuvant to drugs, yoga led to better improvement of symptoms.

In 2004, Woolery indicated that yoga could reduce symptoms in mildly depressed young adults.⁸ The value of Yoga on depressive disorders was also supported by Pilkington¹⁰ in the same year, Khalsa's review of papers over the past three decades concluded that Yoga demonstrated efficacy for psychopathological (e.g. depression, anxiety), cardiovascular (e.g. hypertension, heart disease), respiratory (e.g. Asthma) diseases and diabetes.⁹

Michalsen⁶ studied distressed women in Germany and also demonstrated a significant improvement in anxiety and depression after 3 months of yoga practice. Lavey⁷ evaluated 13 psychiatric inpatients at New Hampshire Hospital and reported a significant

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Table 1
Frequency of different levels of depression (Beck test) in experimental group pre and post Yoga.

	Before yoga				After yoga				
	Frequency	Percentage	Mean	Standard deviation	Frequency	Percentage	Mean	Standard deviation	P value
Normal	19	55.88	12.82	7.9	23	67.65	10.79	6.04	0.13
Mild	10	29.41			8	23.53			
Moderate	4	11.76			3	8.82			
Severe	1	2.94			0	0.00			
Total	34	100.00			34	100.00			

improvement in anxiety, depression, anger, fatigue confusion of patients as a result of yoga practices.

A year later in 2006, Gupta studied the impact of yoga on reducing anxiety associated with a number of disorders such as coronary disease, diabetes, obesity and anxiety and depression, suggesting that Yoga decreased anxiety levels significantly after ten days of yoga practice.⁵

2. Method and materials

This study involved a convenience sample of women referred to a yoga clinic from July 2006 to July 2007.

The sample included new female patient referrals who decided to have yoga experience without any documented psychological disorders or specialist recommendation for taking this therapy. All new cases were evaluated on admission using a personal information questionnaire, the Beck (Beck Depression Inventory) and Spielberger (State-Trait Anxiety Inventory) tests.

The 21-item Beck depression inventory (BDI) is one of the most widely used and reliable questionnaires for detecting depression in normal populations and in assessing its intensity. The 21-item BDI self-report questionnaire assesses any depressive patient symptoms in the previous week and rates their intensity on a scale from 0 to 3 (total score range 0–63). The higher the BDI score, the greater the indication of a depressed mood. Thus, 0–9, no depressed mood; 10–18, low depressed mood; 19–29, moderate depressed mood, and 30–63, severely depressed. Most items describe clinical symptoms of depression, specifically the presence and intensity of emotional, cognitive, and somatic aspects.¹²

The State-Trait anxiety inventory (Spielberger questionnaire) is also widely used as a method of assessing symptoms of anxiety and consists of 20 items for state anxiety and 20 items for trait anxiety.¹³

Participants were randomly divided into an experimental and a control group. The experimental group (n = 34) participated twice weekly 90 min classes of Ashtanga yoga exercises (Iyengar method) over a two-month period. The control group (n = 31) was assigned to a waiting list and did not receive any yoga. Both groups were evaluated again after two months.

According to the personal information questionnaire, cases with history of psychiatric disorders, drug abuse and experience of yoga practices in past were excluded and all cases signed consent forms.

Data was analyzed by T-test and Wilcoxon statistical tests using SPSS 13.0 software. The two groups were compared and the results of statistical analysis were interrelated on confidence levels of 95%, with P value less than 0.05 considered significant.

3. Results

In this study, we examined effects of yoga on anxiety and depression in women referred to yoga clinic. Symptoms of anxiety and depression in both groups were assessed and compared pre and post intervention and between the experimental and control groups.

As the study was done in women's yoga clinic, all subjects were female. Experimental and control groups consisted of 34 and 31 women respectively. The age average in experimental group was 31.44 ± 9.10 years and 31.31 ± 10.5 years in the control group representing no statistically significant age difference (P value = 0.958).

Comparison of educational states in both groups did not show any statistically significant difference between the groups (P value = 0.074) and university education was noted in 18 and 15 cases respectively in the experimental and control groups.

Mean depressive scores in the experimental group before yoga was 12.82. This decreased to 10.79 after yoga intervention. Depression was observed in 44.1% of cases before yoga and 32.3% post treatment. However this decrease was not statistically significant (P value = 0.13) (Table 1). Mean depressive scores in the control group was 11.2 at the beginning and 11 after two months, these were also not significantly different (P value = 0.25).

When comparing the average prevalence of depression between the experimental and control groups did not show any significant difference (P value = 0.564). Therefore both groups were almost similar in depression scores prevalence at the beginning of the study.

Mean state anxiety score before yoga was 2.29 in the experimental group. This decreased to 1.85 post yoga intervention. State anxiety was observed in 41.2% of cases before yoga but only in 20.6% of cases after yoga, which represented a statistically significant difference (P value = 0.03). [Table 2]

Mean state anxiety score in control group was 1.13 at the beginning and 1.13 after two months representing no significant difference (P value = 0.97) (Table 2).

3.1. State anxiety

Comparison of state anxiety levels in the experimental and control groups at the beginning of study did not show any statistically significant difference (P value = 0.567). Therefore two groups were almost similar in state anxiety prevalence at the beginning.

As Fig. 1 shows, trait anxiety scores in the experimental group existed in 65.3% and 20.6% of cases respectively pre and post yoga intervention; this represented a statistically significant difference (P value = 0.001).

As demonstrated in Table 2, mean trait anxiety score in the experimental group changed from 2.35 at the beginning, to 2.45 post intervention and was not statistically significant difference (P value = 0.72).

Table 2
Comparing mean state and trait anxiety scores according to Spielberger test in experimental and control groups.

Anxiety	Case group			Control group		
	Before yoga	After yoga	P value	At the beginning	After 2 months	P value
State	2.29 ± 1.27	1.85 ± 1.08	0.03	1.13 ± 1.29	1.13 ± 1.01	0.97
Trait	2.47 ± 1.09	1.19 ± 0.7	<0.001	2.35 ± 1.06	2.45 ± 1.16	0.72

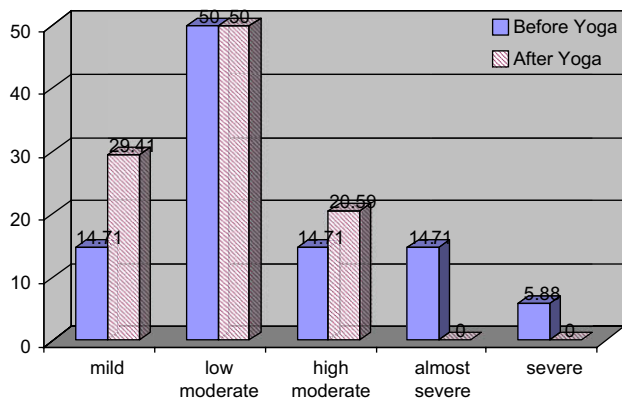


Fig. 1. Comparison of trait anxiety prevalence on basis of Spielberger test in experimental groups before and after yoga.

Comparison of trait anxiety levels between case and control groups at the beginning of study also did not show any significant difference (P value = 0.643), which means that trait anxiety was matched in two groups at the beginning of the study.

4. Discussion & conclusion

This study compared depression and anxiety scores in experimental and control groups pre and post yoga intervention.

Experimental and control groups were matched for gender, age and educational state and both groups were similar in depression and state-trait anxiety scores.

The results indicate that yoga can effectively decrease state and trait anxiety. These findings support those of the previous studies by Gupta and Michalsen who observed a decrease in both types of anxiety from yoga intervention.^{5,6} It also confirms Lavey's study results regarding the efficacy of yoga.⁷ Taherkhani¹¹ also demonstrated beneficial effects of yoga for the treatment of Obsessive Compulsive Disorder (OCD).

The effectiveness of yoga as a tool for reducing anxiety levels should be considered. Yoga classes encourage individuals to become aware of their bodies, and thus tension through specific body postures (Asana). By raising awareness of body tension and in learning a method by which this can be reduced, may serve to increase self-confidence by promoting a personal sense of control. Additionally, by focusing on and developing personal concentration and meditation could also help to facilitate self control and self efficacy.

As with general exercise, yoga can reduce anxiety and neurosis.¹⁴

Physical practices of yoga include stretching postures and Mueck Weyman has suggested that by undertaking stretching postures for only 15 min each day improve autonomic activity.¹⁵

The findings of the study described here are similar to the results shown in Gupta's study.⁵ Michalsen's⁶ results also demonstrated the efficacy of yoga on reducing depression despite differences in duration and methods of practice. Their practice period was three months versus two months described in the present study.

The treatment of depression clearly may require a greater therapeutic time period when compared to general anxiety and this could explain the apparent insignificant improvement of depression in this study. It would therefore, be interesting to undertake a longitudinal study looking at both depression and anxiety.

Our results differed from Woolery's findings who selected patients with only mild depressive disorder whilst this study described here included depressed patients with different levels of severity.⁸

There were some limitations in this study. Firstly, this study was performed only on a female population and so it would be inappropriate to generalize the results to males or the general population.

The sample sizes of both groups were not large and the length of time of the study could be extended in order to allow for any therapeutic effects of treatment to emerge due to the range and level of anxiety and depression recorded in the subjects.

Future studies into this area should be encouraged with larger sample groups and mixed gender in order for findings to be more representative of the general population.

Although the control group was not included in any special practice, the apparent positive results may just be because of participation in a new communal group and as such this could be a confounding variable.

This study has shown that yoga could be an effective treatment of anxiety in women and that it has the potential to play an important therapeutic role in addition to or indeed, instead of medication. It may also be useful for treatment of patients affected by anxiety who would never accept drug therapy.

It would also be useful to consider studies that focus upon the measurement of yoga by monitoring a range of physiological issues such as heart rate, blood pressure, hormonal secretions and neurotransmitter levels. This may lead to new therapeutic insights into the efficacy of yoga as a treatment for some physical disorders.

Acknowledgments

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