# Comparing of Yoga combination with drug intervention versus Cognitive behavior therapy combination with drug therapy, and drug therapy alone on major Depression and General Anxiety disorders[1]


## Abstract

**Background:** The aim of this research was to compare three clinical interventions such as drug therapy alone, with drug therapy combination to Cognitive behavior therapy, and drug therapy with yoga therapy intervention, on Major depression and general anxiety disorder.

**Methods:** This study has been done with semi-experimental method by pre-test post-test, and follow up design. The statistical sample include of ۷۹ patients with major depression plus general anxiety disorder from Taleghany hospital of Ilam city--Iran were selected through available method. These patients were divided into ۳ intervention groups (۲۲ patients were exposed to drug therapy only. ۲۹ patients were exposed to drug therapy plus cognitive-behavior therapy group, and finally ۲۸ patients were exposed to drug therapy plus Yoga). Patients were evaluated in three pre-posttest and follow-up phases by psychiatric interview, Beck depressive inventory (BDI), and Beck Anxiety Inventory (BAI). collected data was analyzed with repeated measure test in SPSS.

**Results:** Symptom scores decreased across assessment occasions in all three groups. The reported between-group tests were significant for depression ($F[۲, ۷۶] = ۸,۸۱۲$, $p < .۰۰۱$) and anxiety ($F[۲, ۷۶] = ۵,۲۷۹$, $p = .۰۰۷$). Pairwise results favored medication plus yoga over medication alone and medication plus CBT on depression scores; both adjunctive conditions differed from medication alone on anxiety scores. An inconsistent p value in the direct yoga–CBT anxiety comparison precludes a reliable inference for that contrast.

**Conclusion:** The findings suggest that a yoga-based program may be a useful adjunct to medication for some outpatients with depressive and generalized anxiety symptoms. Nonrandomized allocation, unmatched treatment contact, and inconsistencies in the statistical report prevent a definitive claim of superiority or durable causal benefit; the results require verification and replication.



**Keywords:** Major-depression, general anxiety disorder, Yoga, Cognitive behavior Therapy, drug Therapy.



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[1]. This article was extracted from PHD thesis

## Introduction

Major depressive disorder (MDD) and generalized anxiety disorder (GAD) frequently co-occur in clinical practice and can involve overlapping difficulties in mood regulation, persistent negative thinking, sleep, concentration, and everyday functioning. Although these disorders have distinguishable diagnostic features, their co-occurrence complicates treatment planning because improvement in one symptom domain does not necessarily imply recovery in the other. For patients presenting with both depressive and generalized anxiety symptoms, interventions must therefore be evaluated across both outcomes rather than on the assumption that a treatment effective for one disorder will be equally effective for the other (American Psychiatric Association, ۲۰۲۲).

Cognitive behavioral therapy (CBT) and pharmacotherapy are established treatment options for depression and GAD, but they target partially different processes. CBT addresses patterns such as avoidance, behavioral withdrawal, unhelpful appraisals, and repetitive worry through structured cognitive and behavioral exercises. Its efficacy in anxiety disorders is supported by randomized-trial meta-analysis (Carpenter et al., ۲۰۱۸), while a network meta-analysis supports several CBT delivery formats for adult depression (Cuijpers et al., ۲۰۱۹). Medication may also reduce symptom burden; nevertheless, tolerability, treatment preference, incomplete response, and barriers to accessing regular psychological care can complicate routine management. These considerations justify investigating adjunctive approaches without presuming that they can replace established treatments.

Yoga is one such candidate. Depending on the protocol, yoga-based interventions combine physical postures (asana), regulated breathing (pranayama), attentional exercises, relaxation, and meditation. These components might support symptom management through changes in physiological arousal, attentional engagement, and the experience of distress. However, these pathways should be treated as plausible explanations, not demonstrated mechanisms, unless they are measured directly. The content and intensity of yoga programs also vary considerably, creating an important distinction between evaluating a particular multicomponent program and establishing an effect attributable specifically to yoga (More et al., ۲۰۲۱; O'Shea et al., ۲۰۲۲).

The existing evidence is encouraging but not uniform. In a systematic review and meta-analysis, Martínez-Calderon et al. (۲۰۲۳) reported reductions in anxiety symptoms in anxiety disorders and, in sensitivity analyses, depressive symptoms in depressive disorders following yoga-based interventions. Crucially, the authors rated the certainty of evidence as very low across outcomes because of methodological limitations, heterogeneity, and imprecision. Thus, a favorable average finding should not be interpreted as proof that yoga is superior to evidence-based psychotherapy or medication for patients with diagnosed disorders.

Direct comparisons with CBT offer a similarly qualified picture. In a randomized clinical trial among adults with GAD, Simon et al. (۲۰۲۱) found that both Kundalini yoga and CBT outperformed stress education on short-term treatment response, but yoga did not meet the prespecified criterion for noninferiority to CBT. In a randomized preference trial involving older adults with elevated worry, Brenes et al. (۲۰۲۰) observed improvements in worry and anxiety with both interventions, without a statistically significant difference on those outcomes; CBT nevertheless showed a greater benefit for sleep. Differences in population, outcome definition, yoga style, and comparator make it inappropriate to generalize a single trial's ranking of treatments to all clinical contexts.

Research on yoga used alongside psychological care provides a different, complementary line of evidence. An evidence map by O'Shea et al. (۲۰۲۲) identified promising but methodologically limited studies integrating yoga with established psychological treatments. A subsequent mixed-methods follow-

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up study reported better longer-term depression and anxiety outcomes for a combined CBT–yoga program than for CBT alone among the participants assessed at ١٢ months (O'Shea et al., ٢٠٢٣). Because that study examined yoga added to CBT, rather than yoga added to pharmacotherapy, it does not establish that yoga plus medication should outperform CBT plus medication. The findings nevertheless suggest that treatment combinations warrant more explicit comparative investigation.

An unresolved clinical question is how two different nonpharmacological additions to usual medication—structured CBT and a multicomponent yoga program—compare with medication alone when depressive and generalized anxiety symptoms are both present. Much of the cited literature includes participants selected for one principal disorder, older adults with worry, or heterogeneous anxiety and depressive presentations. Evidence from those samples may not transfer directly to patients receiving concurrent treatment for MDD and GAD in a psychiatric outpatient service. Moreover, comparing adjunctive interventions requires attention to differences in contact time, intervention components, concomitant medication, and follow-up duration.

The present quasi-experimental study therefore examined symptom scores in patients receiving medication alone, medication plus CBT, or medication plus a yoga-based program at a psychiatric outpatient clinic in Ilam, Iran. Depressive symptoms were assessed with the Beck Depression Inventory and anxiety symptoms with the Beck Anxiety Inventory at baseline, after treatment, and at follow-up. The study addressed two questions: (١) how did depression and anxiety scores change across the three treatment conditions; and (٢) what between-group differences were observed for each symptom outcome? Given the nonrandomized design and the differences between adjunctive interventions, the comparisons are interpreted as associations with treatment condition rather than definitive estimates of comparative causal efficacy.

## Research Methodology

This research was conducted in a semi- experimental method by pre-post-follow up between-group design, including three conditions (Drug therapy alone), CBT + Drug therapy) and (Yoga + Drug therapy). This study aimed at assessing the effectiveness of C.B.T plus to drug therapy, in compare yoga plus to drug therapy, versus drug therapy alone. Patients who have been studied in this research were among those who had been daily referred to the Taleghany Hospital psychiatric clinic. Between them ٧٩ patients who were suffering from major depression plus general anxiety disorder that were under treatment with drug therapy, were selected as research sample. These patients were divided into ٣ intervention groups (٢٢ patients were exposed to drug therapy group, only. ٢٩ patients were exposed to drug therapy plus cognitive-behavioral therapy group, and finally ٢٨ patients were exposed to drug therapy plus Yoga). All participants of first group received drug therapy only during research period. But in the other two groups of Yoga and cognitive behavior therapy, Patients were undergone by psychologist every week. For example, in the cognitive-behavioral therapy group patients in addition to drug therapy, received ١٥ sessions of cognitive behavioral treatment, weekly for ٤٥ minutes**.** In these sessions techniques were then conducted in a more spaced manner. The methods of behavior therapy, in the form of process and skills training with cognitive behavior therapy were used for patients. while in third group, patients received ١٥ Yogic training sessions as collaborative in addition to drug. The Yogic techniques, which were used in this research, were mainly based on Asana (physical exercise) pranayama

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(breathing exercise) mind-full-ness based meditation, weekly ١٢٠ minutes. Some of the Yogic techniques which have been used for patients, were simple Asana techniques, such as Shavasana, simple Pranayama (breathing exercise), gardening, recreational activities such as cooking, going to the park etc.

**Instruments**: To diagnosis MDD and GAD disorder in research subjects, it was used the unstructured clinical interviews on the basis of DSM III R by psychiatrists. In addition to clinical interview, it was used the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) in three phases of pretest, post-test, and follow-up.

Beck depression Inventory (BDI): BDI consists of items, that measures characteristic attitudes and symptoms of depression. The BDI test is the valid and reliable test (Beck, ٢٠٢٠).

**Beck Anxiety Inventory (BAI):** In this research we used the (BAI) ٢١ items inventory. Validity and reliability of BAI-٢١ has been established in many studies (Beck, Epstein, Brown, ١٩٩٣).

**Intervention Protocols:**

**Drug (Antidepressants):** In this study, drugs, which are prescribed by psychiatrist for the Patients, are all from the group of T.C.A. (Tricycle -Antidepressants) other than these drugs, M.A.O.I. (Monoamine oxides inhibitors) were also used by the Patients, but symptoms type had not been used

The effort was to increase dosage of anti – depressants drug in therapeutic continuation slowly till the level of response was adequate If therapeutic response was not observed, then with a dosage equivalent of ٢٠٠ milligram (m.g.). Imipramine (Anti- depressant) for outpatients, from combination drugs with lithium or thyroid hormones was used. All drugs, which were prescribed in this study, are on the basis of textbooks of pharmacology and psychiatry. Regular speed of increase of druge was subject to variable likes, drug side effects; lack of Patient's tendency to increase the dosage, consumption of less dosage was because of Patient's own predisposition, lack of consultation with psychiatrist at the appointed time.

**Yoga therapy:** Yogic techniques based on Ashtanga Yoga of Sage patanjali, Some of the Yogic techniques which have been used for major- depression were simple Asana such as Shavasana, simple Pranayama (observation of breathing), some sort of Kriyas, such as gazing, bathing, gardening, recreational activities such as cooking, going to the park etc. which were explained and illustrated earlier in this chapter.

All the Patients use both vegetarian and non-vegetarian diets. But they were advised to avoid the spicy food as much as possible.

Asana such as Sukhasan, Virasana, Talasana, Parvat-Asana, Savasana, Nishpandabhava, Makarasana, and kriyas such as Jalameti, Kaphalrandradruti, Trataka, as relaxation technique "Pranayama No. ١, ٢, ٣, ٤ and Ouraka Pranayama" and as simple breathing involved with these activitiesin the present reerch

Pranayama, which was explained as simple breathing awareness was introduced to patient with respiratory awareness, which is believed to help in developing emotional steadiness. Relaxation techniques such as Savasana, Makarasana and concentration method such as observing a candle light or any other object helps patient to overcome his own restlessness and anxiety which disturbs

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depressed patients  In the way of daily habits, patients were encouraged cleanliness such as daily bath, and fixed timing for practicing asana, and activates such as walking, gardening cooking (for ladies) etc.

When gradual progress is obtained, then there will be enhancement of neuro-musculas-co-ordination. Once the patient progressed to the normal level of activity or improvement, then the role of yogic way of life such as Yama and Niyama is explained in a simple way.

Relaxation techniques such as Savasana the patient was instructed to tense each muscle as little as possible, so that he could learn to recognize very low level of muscle tension.

The first session was primarily devoted to a general introduction to the techniques and to the instruction of the muscles of the hand and arm.

The second session was devoted to the muscles of the hand, arm, face and neck.

The third session was devoted to revies the above and to the instructions in differential relaxation and every day application of the above.

The fourth session was devoted to muscles of the hand, arm, face, neck and trunk.

Fifth session was devoted to muscles of the legs and feet, finally sixth session was used to include the various groups of muscles of entire body and clarify the doubts concerned with practical difficulties faced by the individual concerned.

While anxiety is accompanying depression, then Yoga relaxation techniques have been shown to be helpful in reducing such anxiety in depressed patients.

During Savasana the power of one's mind is used to relax one's muscles, therefore it may help depressed patients to have a positive attitude towards them.

This may be more difficult for some people than using a physical exercise to achieve relaxation. It directs suggestions of relaxation to each muscles group in turn.

**Cognitive behavior therapy:** In this technique only a minimum motivation and an ability to have therapeutic alliance is enough. Sessions were then conducted in a more spaced manner. The methods of behavior therapy, in the form of social skills training with cognitive behavior therapy were used for Patients. But in this research if any behavioral advice had been given to the Patient it was only in the form of homework assignment, which had not been done in the clinic or by the therapist for the said Patients. However, in any session we used process such as beginning of the session, Mood check, Agenda setting, Reviewing homework, Discussion of agenda items/problems, Description of occurrence of specific problem, Elicitation and confirmation of elements of the cognitive model, Collaborative discussion regarding how to approach a problem, Rationale for the introduction of intervention, Assessment of the efficacy of intervention, Summary by patient, Collaborative action plan in writing, Planning and discussing a homework and how to approach it and Feedback to the therapist.

Data analysis method: For study and analysis of the effects of the three therapeutic methods (drug therapy, drug therapy+ CBT, and drug therapy+ Yoga) on the MDD and GAD symptom, we have used statistical Co-variance method such as analysis of co-variance and repeated measures analysis of variance. The statistical method in this research was quantities method and variance analysis. So collected data were analyzed with repeated measure test in SPSS ٢٠.

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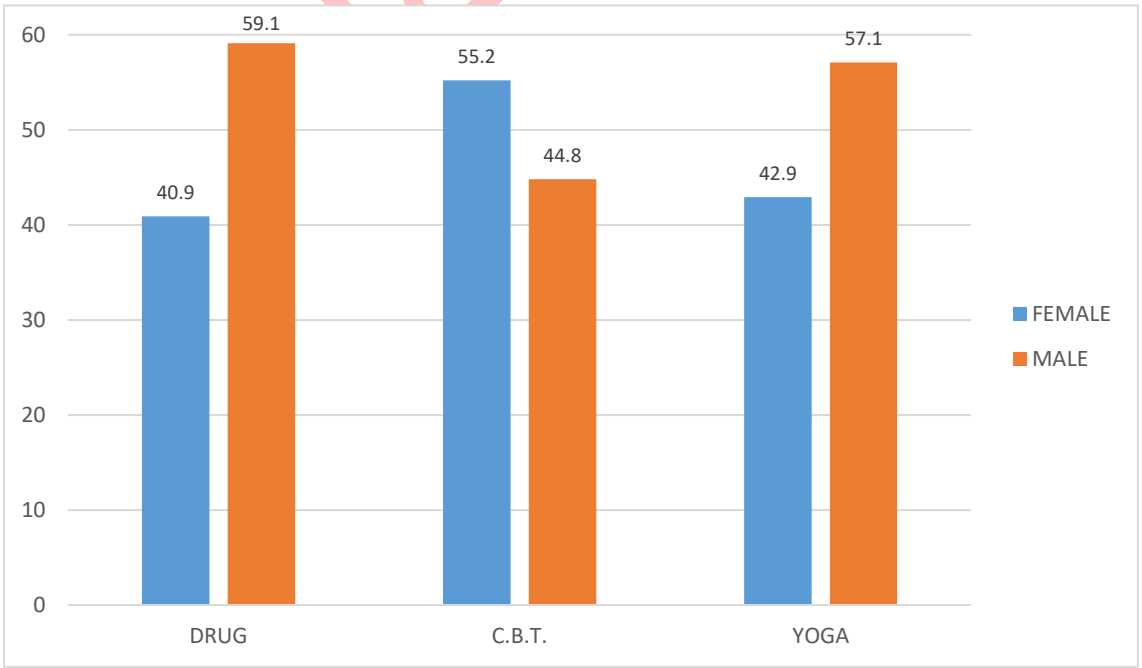
## Results

Descriptive demographic results of this research subjects showed that the most patients in the drug therapy group (%٣١,٨) were in the range of ٤٠ to ٤٩ age. But in the cognitive-behavioral therapy group it is (%١٣,٨), and in the yoga group patients this range were (%٤). Also gender different results showed that out of ٧٩ participants, ٣٧ (٤٦,٨٪) were women and ٤٢ (٥٣,٢٪) were men, as indicated by the frequencies in Table ١. Comparatively, the most patients in the drug therapy group were male (١٣ patients which is %٥٩,١), also in the yoga therapy group (١٦ patients which is %٥٧,١) were male. But in the cognitive-behavioral therapy group, only %٤٥ percent of patients were male. Also, marital statues comparative results showed that the more patients in the group of drug therapy (%٧٧), and in CBT group (%٥٨) and yoga group (%٥٠) were married. In educational view, more patients of drug therapy group (%٣٦,٤), ١٤ patients or (%٤٨,٣) in CBT group, and ١٧ patients or (%٦٠,٧) in yoga group had high school education. Thus, the most patients had high school education.

**Table ١:** patient's frequency on the basis of gender

| **Gender** | **DRUG** | | **Cognitive behavior therapy** | | **YOGA** | |
|---|---|---|---|---|---|---|
| SEX | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| Female | ٩ | ٤٠,٩ | ١٦ | ٥٥,٢ | ١٢ | ٤٢,٩ |
| Male | ١٣ | ٥٩,١ | ١٣ | ٤٤,٨ | ١٦ | ٥٧,١ |
| Total | ٢٢ | ١٠٠,٠ | ٢٩ | ١٠٠ | ٢٨ | ١٠٠ |

As it shows in the table (١) the most patients in the drug therapy are (١٣ patients which is %٥٩,١) in the group of yoga they are male.



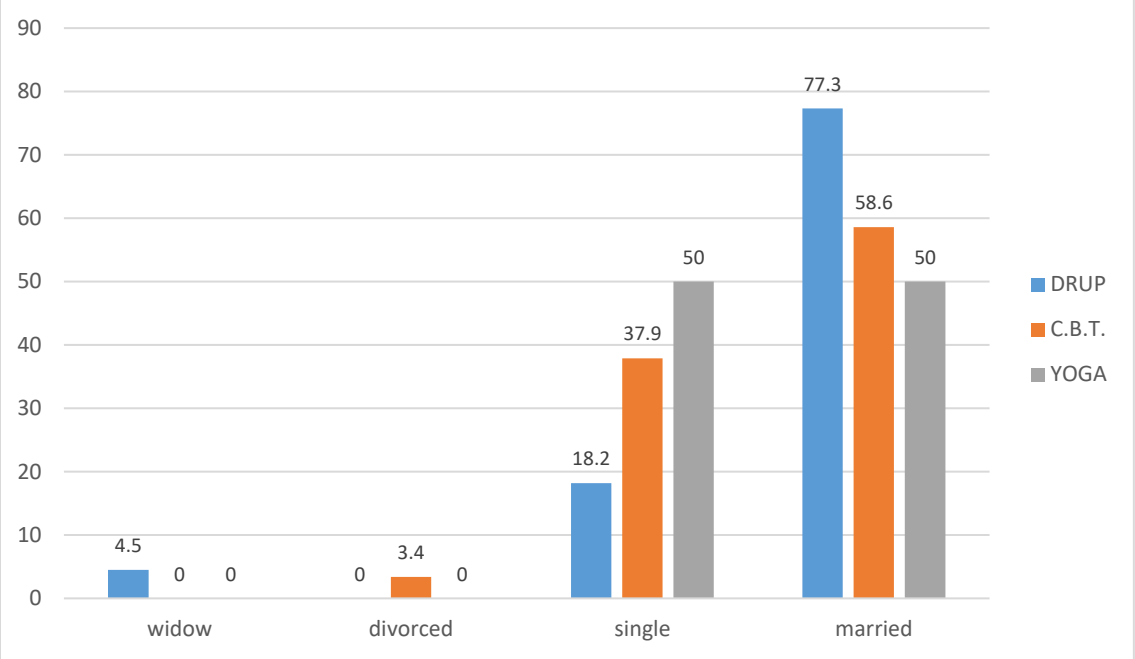

**Patient's frequency on the basis of marital status**

According to the above table and diagram (٢) the more patients in the group of drug therapy ١٧ patients (٧٧٠,٣) C.B.T group ١٧ patients (٥٨٠,٦) and yoga group ١٤ patients (٥٠٪) are married.

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**Table ۲:** Patient's frequency on the basis of marital status

| | DRUG | | PSYCHOTHERAPY | | YOGA | |
|---|---|---|---|---|---|---|
| | **Frequency** | **Percent** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| Widow | ۱ | ٤,٥ | - | - | - | - |
| Divorced | - | - | ۱ | ۳,٤ | - | - |
| Single | ٤ | ۱۸,۲ | ۱۱ | ۳۷,۹ | ۱٤ | ٥۰ |
| Married | ۱۷ | ۷۷,۳ | ۱۷ | ٥۸,٦ | ۱٤ | ٥۰ |
| Total | ۲۲ | ۱۰۰,۰ | ۲۹ | ۱۰۰ | ۲۸ | ۱۰۰ |




To normalization of depression and anxiety means in this research, we used of Shapiro-Wilk tests, that the results has described in table ۳.

**Table ۳:** Normality test and levin test for co-variance equivalent in the three phases

| | Variables | Shapiro-Wilk, df=۷۹ | | levin test | |
|---|---|---|---|---|---|
| | | Statistic | Sig. | F | Sig. |
| Depression | Pretest | .۹٦۲ | .۹٦۸ | .۹٦۸ | .۳۸٤ |
| | Posttest | .۹۷۸ | .۱۹۷ | .۱۹۷ | .۸۲۱ |
| | Follow-up | .۹٦۱ | ۱,٤٥٥ | ۱,٤٥٥ | .۲٤۰ |
| Anxiety | Pretest | .۹۷۰ | .۰٦۰ | ۲,٤۹۳ | .۰۸۹ |
| | Posttest | .۹۷۷ | .۱٦۲ | ۱,۳۷۸ | .۲٥۸ |
| | Follow-up | .۹۷٦ | .۱٤٥ | ۱,٥۱٦ | .۲۲٦ |

According to Shapiro Wilks test results in Table ۳, we can say that depression and anxiety means have been in normal distribution and there wasn't significant difference between theses

means and normal curve. In addition, the investigation of co-variance analysis assumptions by Levin test showed that the linear relationship between the dependent variable and the pretest for each group, in three phases, were established. Because according to the Levin test results in above table, there is not significant correlation between dependent variables in three phases, and we can conclude that there was not significance different between variances in three phases, and relationship in both depression and anxiety variables were confirmed. Thus, based on the results of this hypothesis, the covariance test can be used to compare the three groups. Now we can imply statistical analysis to compare three groups means in three phases which are as follows.

**Table ٤:** Descriptive means of research variables in three groups and in three phases.

| Phases | | Depression | | General Anxiety | | N |
|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Mean | Std. Deviation | |
| Pretest | Drug | ٢٩,٠٧٤ | ٣,٧٣١ | ٣٣,٣٥٧ | ٣,٧٥٣ | ٢٨ |
| | CBT | ٢٩,١٧٩ | ٤,٧٠٣ | ٣٢,١٧٤ | ٣,٤٩٥ | ٢٩ |
| | Yoga | ٢٨,٨١٨ | ٥,٤١٢ | ٣٤,٠٤٥ | ٥,١٩٥ | ٢٢ |
| | Total | ٢٩,٠٢٥ | ٤,٥٤٩ | ٣٣,١٣٩ | ٤,١٣٨ | ٧٩ |
| Posttest | Drug | ٢٤,٩٢٨ | ٣,٨٧٧ | ٢٨,١٧٨ | ٣,٧١٢ | ٢٨ |
| | CBT | ٢٣,٨٦٢ | ٣,٤٦١ | ٢٦,٠٠٠ | ٤,٩٩٢ | ٢٩ |
| | Yoga | ٢١,٥٤٥ | ٣,٩٦٠ | ٢٤,٦٣٦ | ٥,٠٥٧ | ٢٢ |
| | Total | ٢٣,٥٩٩ | ٣,٩٤٦ | ٢٦,٣٩٤ | ٤,٧٦٢ | ٧٩ |
| Follow-up | Drug | ٢٣,٧٥٠ | ٥,٠٣٠ | ٢٦,٨٥٧ | ٤,٣٣٥ | ٢٨ |
| | CBT | ٢٠,٧٢٤ | ٥,٥٠٢ | ٢٣,٧٢٤ | ٣,٤١١ | ٢٩ |
| | Yoga | ١٦,٧٧٧ | ٣,٥١٧ | ٢٢,٢٢٧ | ٥,١٦١ | ٢٢ |
| | Total | ٢٠,٦٩٦ | ٥,٥٣٦ | ٢٤,٤١٧ | ٤,٦٣٩ | ٧٩ |

According to descriptive results of depression and anxiety mean in Table ٤, can be seen the mean of depression in the pretest and posttest with follow-up phases such as (٢٩,٠٧, ٢٤,٩٢ and ٢٣,٧٥) for drug therapy group. But in the group of Drug therapy with cognitive therapy in the variable of depression (٢٩,١٧, ٢٣,٨٣ and ٢٠,٧٢), Finally depression mean in the yoga plus drug therapy group, is (٢٨,٨٢, ٢١,٥٤, ١٦,٧). While anxiety mean in the pretest, posttest and follow-up phases of drug therapy patients were such as (٣٣,٣٥, ٢٨,١٧ and ٢٦,٧٥). In the drug therapy group with CBT, it is in the variable of Anxiety (٣٢,١٧, ٢٦, ٢٣,٧٢). In the drug therapy group with yoga for anxiety, it is including of (٣٤,٠٤, ٢٤,٦٣ and ٢٢,٢٢).

In order to investigate the difference between groups in dependent variable covariance repeated measure analysis test was used between three phases.

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**Table ٥:** Repeated measure test of Between-Subjects Effects of three interventions in three groups.

| | Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Depression | Intercept | ١٣٧٧٤٢,٨٨٦ | ١ | ١٣٧٧٤٢,٨٨٦ | ٥٢١٨,٨٩ | .٠٠٠ |
| | group | ٤٦٥,١٥٢ | ٢ | ٢٣٢,٥٧٦ | ٨,٨١٢ | .٠٠٠ |
| | Error | ٢٠٠٥,٨٧٨ | ٧٦ | ٢٦,٣٩٣ | | |
| Anxiety | Intercept | ١٨١٨٧٠,٠٦٥ | ١ | ١٨١٨٧٠,٠٦٥ | ٦٥٥٨,٣٨ | .٠٠٠ |
| | group | ٢٩٢,٧٨٦ | ٢ | ١٤٦,٣٩٣ | ٥,٢٧٩ | .٠٠٧ |
| | Error | ٢١٠٧,٥٦٢ | ٧٦ | ٢٧,٧٣١ | | |

Table ٥ shows the results of repeated measure analysis to study, the effectiveness of the three interventions on depression and general anxiety. The results indicated that the F (٨,٨١٢), Mean Square =٢٣٢,٥٧, P <٠,٠٠١ after eliminating the effect of the pretest are significantly different for depression. Also, the results of F (٥,٢٧), and Mean Square =٢٩٢,٧٨, in P <٠,٠٠٧ showed that after eliminating the effect of the pretest are significantly different for general anxiety. the effectiveness of group intervention for general anxiety reduction, is significant at the level of ٠,٠٠٧. Therefor we conclude that at least one of the interventions have significant effect on depression and general anxiety. In the basis of the above finding, to determine any of the intervention effectiveness, we have done Pairwise Comparisons, which those results had reported in table ٦.

**Table ٦:** The results of Pairwise Comparisons between three groups

| Groups | | Depression | | | General Anxiety disorder | | |
|---|---|---|---|---|---|---|---|
| Criterion group | depended group | Mean Difference | Std. Error | Sig. | Mean Difference | Std. Error | Sig. |
| Yoga | Drug | -٣,٥٣٨* | .٨٤٥ | .٠٠٠ | -٢,١٦٥* | .٨٠٦ | .٠٢٦ |
| | CBT | -٢,١٩٦* | .٨٣٩ | .٠٣٢ | .٣٢٩ | .٨٦٠ | .٠٠٠١ |
| CBT | Drug | -١,٣٤٢ | .٧٨٦ | .٢٧٥ | -٢,٤٩٥* | .٨٦٦ | .٠١٥ |
| | Yoga | ٢,١٩٦* | .٨٣٩ | .٠٣٢ | -.٣٢٩ | .٨٦٠ | .٠٠٠١ |

The group comparisons reported in Table ٦ suggest lower depressive symptom scores in the medication-plus-yoga group than in either comparator (yoga versus medication only: mean difference = -٣,٥٣٨, reported p < .٠٠١; yoga versus medication plus CBT: mean difference = -٢,١٩٦, p = .٠٣٢). The difference between medication plus CBT and medication alone was not statistically significant for depression (p = .٢٧٥). For anxiety, the reported comparisons of yoga plus medication versus medication alone (p = .٠٢٦) and CBT plus medication versus medication alone (p = .٠١٥) were statistically significant. The direct yoga–CBT anxiety comparison should not be interpreted until its reported mean difference, standard error, and p value have been reconciled with the original output.

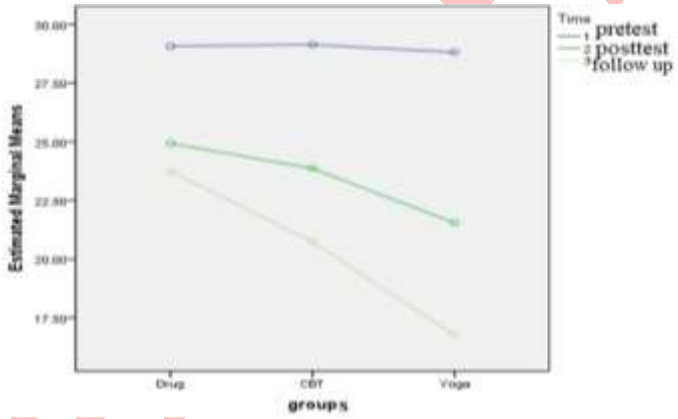
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**Table ٧:** Pairwise Comparisons depression between three phases

| Phases | | Major Depression | | | General Anxiety disorder | | |
|---|---|---|---|---|---|---|---|
| Criterion | depended | Mean Difference | Std. Error | Sig. | Mean Difference | Std. Error | Sig. |
| Pretest | Posttest | ٥,٥٦٤* | .٦٢٨ | .٠٠٠ | ٦,٩٢٠* | .٥٩٦ | .٠٠٠ |
| | Follow-up | ٨,٥٩٤* | .٦٨٤ | .٠٠٠ | ٨,٩٢٢* | .٦٥٠ | .٠٠٠ |
| Posttest | Follow-up | ٣,٠٣٠* | .٦٢٤ | .٠٠٠ | ٢,٠٠٢* | .٥٧٣ | .٠٠٢ |

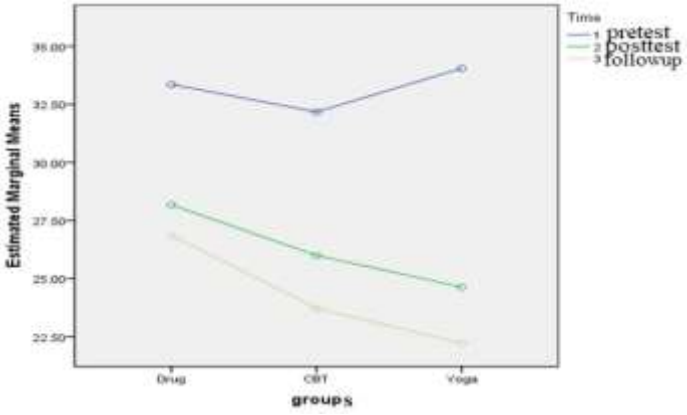
Table ٧ reports statistically significant overall mean differences between baseline and posttest, baseline and follow-up, and posttest and follow-up for both depression (mean differences = ٥,٥٦٤, ٨,٥٩٤, and ٣,٠٣٠, respectively) and anxiety scores (٦,٩٢٠, ٨,٩٢٢, and ٢,٠٠٢, respectively). These contrasts are not separated by intervention group and cannot, on their own, establish different rates or durability of improvement among the three treatments. The assessment intervals should also be checked against the stated intervention schedule.

**Graph ٣:** Results of major depression comparing between three groups in three phases (pre -posttest-follow-up*)*




The graph ٣ is shown, depression mean difference between three groups in three phases.

**Graph ٤:** results of general anxiety disorder comparing between three groups in three phases (pre -posttest-follow-up)




The graph ٤, shows the general anxiety mean difference between three groups in three phases

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## Discussion

This study compared three outpatient treatment conditions—medication alone, medication plus cognitive behavioral therapy (CBT), and medication plus a yoga-based program—among patients described as presenting with both major depression and generalized anxiety disorder. Across the three assessment occasions, the reported mean Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) scores declined in all conditions. The more informative question, however, is whether differences between conditions were sufficiently consistent to support claims about the comparative value of the two adjunctive interventions. The interpretation must distinguish the depression and anxiety results and must not treat an overall group effect as evidence that every pair of treatments differed significantly.

For depressive symptoms, the reported between-group test was statistically significant, F(٢, ٧٦) = ٨,٨١٢, p < .٠٠١ (Table ٥). The pairwise comparisons in Table ٦ favored medication plus yoga over medication alone (mean difference = -٣,٥٣٨, reported p < .٠٠١) and over medication plus CBT (mean difference = -٢,١٩٦, p = .٠٣٢). The medication-plus-CBT versus medication-only contrast was not statistically significant in the same table (mean difference = -١,٣٤٢, p = .٢٧٥). These findings are compatible with a greater average reduction in reported depressive symptom scores in the yoga-adjunct condition during the observed study period. They do not establish that CBT is ineffective for depression: the null contrast is specific to this sample, the analysis and the treatment conditions studied, and cannot exclude benefits in other settings or with more comparable intervention exposure.

Anxiety findings require a different interpretation. The reported overall group difference was statistically significant, F(٢, ٧٦) = ٥,٢٧٩, p = .٠٠٧ (Table ٥). Table ٦ reports lower anxiety scores for medication plus yoga than for medication alone (mean difference = -٢,١٦٥, p = .٠٢٦) and for medication plus CBT than for medication alone (mean difference = -٢,٤٩٥, p = .٠١٥). However, the direct yoga-versus-CBT anxiety comparison is internally inconsistent: the reported mean difference of ٠,٣٢٩ and standard error of ٠,٨٦٠ do not correspond to the stated p value of .٠٠٠١. Until that entry is checked against the statistical output, no defensible claim can be made that either adjunctive intervention was statistically superior to the other for anxiety. This qualification is important because the apparent ranking of treatments changes according to whether the outcome is depression or anxiety.

The depression pattern can be considered in the context of previous syntheses, although the evidence is not directly interchangeable. Martínez-Calderon et al. (٢٠٢٣) found that yoga-based interventions may reduce anxiety symptoms and, under specific sensitivity analyses, depressive symptoms; at the same time, they judged confidence in those estimates to be very low. The present findings are broadly compatible with the possibility that yoga could contribute to symptom relief when added to medication, but the study cannot resolve the methodological uncertainties identified by the review. In particular, the present comparison does not isolate the specific contribution of yoga from the additional therapeutic contact and associated activities provided to that group.

Evidence from direct yoga–CBT trials is especially relevant when interpreting the apparent depressive advantage of yoga in this sample. Simon et al. (٢٠٢١) found short-term benefit from both CBT and Kundalini yoga relative to stress education in GAD but did not establish noninferiority of yoga to CBT. Brenes et al. (٢٠٢٠) found no clear yoga–CBT difference in worry or anxiety among older adults, although CBT was more beneficial for sleep. These studies do not replicate the current clinical context or treatment combinations, and they caution against describing yoga as generally more effective than CBT. Conversely, O'Shea et al. (٢٠٢٣) reported favorable longer-term findings when yoga was combined with CBT. Taken together, the studies support further examination of yoga as a potential adjunct; they do not justify a simple hierarchy in which yoga replaces CBT or pharmacotherapy.

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Several mechanisms could plausibly contribute to symptom change during a yoga-based program. Regulated breathing and relaxation may reduce perceived arousal, and repeated practice with body sensations and attentional focus may support tolerance of distress or disengagement from repetitive thinking. The program described in the present study also included meditation, walking, gardening, cooking, and other recreational activities, any of which might influence daily structure, behavioral activation, social interaction, or expectations about improvement. Since the study did not measure these candidate mediators or compare individual components, such explanations remain hypotheses rather than demonstrated pathways. Similarly, a reduction in BAI or BDI scores cannot by itself be interpreted as evidence of diagnostic remission, improved functional recovery, or a specific neurobiological mechanism.

The longitudinal results should also be interpreted carefully. Table ٧ reports significant average differences between baseline and posttreatment, baseline and follow-up, and posttreatment and follow-up for both symptom outcomes. This suggests that scores continued to change over the recorded observation period, rather than simply returning to their pretreatment levels. Nevertheless, those time contrasts are pooled across groups, and the presented tables do not clearly report a treatment-by-time interaction or group-specific tests of change. They therefore cannot establish that one condition produced a more durable treatment effect than the others. In addition, the stated timing of the posttest and follow-up should be reconciled with the ١٥-session intervention schedules before claims about the duration of benefit are finalized.

Interpretation is further constrained by several design characteristics. Participants were recruited by convenience sampling from one hospital, with no random-assignment procedure described, leaving open selection effects and baseline differences that were not fully assessed. The adjunctive conditions were not matched for contact time: the methods describe approximately ٤٥ minutes of CBT per week and ١٢٠ minutes of yoga-based training per week. Accordingly, any observed between-group contrast may partly reflect intervention intensity or nonspecific therapeutic factors. Medication class and dosage were not standardized or analyzed across conditions; prior depressive episodes, comorbidity severity, adherence, attendance, and concurrent treatment were not sufficiently characterized in the available report. The use of unstructured diagnostic interviews also limits confidence in diagnostic comparability between groups.

Finally, the available tables contain reporting inconsistencies that must be resolved before the numerical interpretation is considered final. In particular, the group sizes given in the methods and demographic tables do not match the group sizes assigned to the corresponding rows in Table ٤; the direct anxiety comparison between yoga and CBT contains incompatible inferential statistics; and the analysis is described as both repeated-measures analysis and covariance adjustment without a fully specified model. These discrepancies do not justify discarding the observed symptom trends, but they prevent a stronger inference regarding effect magnitude or comparative superiority. A recheck of the original statistical output and a transparent report of the analytic model, allocation, missing data, and exact assessment intervals are essential to substantiate the final claims.

Within these constraints, the clinical implication is limited but useful: a structured yoga-based program may be a feasible adjunct to medication for some outpatients who experience both depressive and generalized anxiety symptoms, while CBT remains an established evidence-based psychotherapy. Decisions about either adjunct should continue to consider patient preference, clinical severity, treatment access, medical suitability, and availability of appropriately delivered care. Future studies should use randomized or otherwise well-controlled allocation, comparable contact time across adjunctive arms, prespecified outcomes, standardized medication reporting, treatment-fidelity assessments, and adequately reported group-by-time models to test whether the symptom differences seen here are reproducible.

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## Conclusion

In this single-center, quasi-experimental comparison, depressive and anxiety symptom scores decreased over time in all three treatment conditions. Reported pairwise results favored medication plus yoga over medication alone and medication plus CBT for depressive symptoms, whereas both adjunctive conditions differed from medication alone for anxiety symptoms. The anxiety comparison between yoga and CBT cannot be interpreted reliably until an inconsistent statistical entry is corrected. Because treatment allocation, contact time, medication exposure, and the longitudinal analysis were not adequately controlled or documented, these findings support further investigation of yoga as an adjunct to usual care rather than a claim that it is generally superior to CBT or medication. Confirmation requires a rigorously controlled trial with transparent reporting and clinically meaningful outcomes.

## Limitations

Several limitations affect interpretation. The sample was relatively small (N = ۷۹), recruited by convenience from a single psychiatric service, and group assignment was not described as randomized. There was no documented control for differences in medication type or dosage, illness history, baseline severity, intervention adherence, or other concurrent care. Adjunctive treatment intensity differed substantially between conditions (approximately ٤٥ minutes of CBT versus ١٢٠ minutes of yoga-based activities per week), and the yoga program included recreational and behavioral-activation components; consequently, yoga-specific effects cannot be isolated. Diagnostic assessment was described as unstructured, while the BDI and BAI measure symptoms rather than diagnostic recovery. The reported analytic model and treatment-by-time effects are insufficiently specified, and discrepancies in group sizes, one pairwise anxiety p value, and assessment timing must be resolved against the original data and statistical output. These limitations restrict causal inference and generalizability.

## Research suggestions

Future research should compare medication alone with medication plus manualized CBT and medication plus a clearly specified yoga protocol using random allocation where feasible. Treatment arms should be matched for therapist contact and monitored for adherence, co-interventions, medication class and dosage, and adverse events. Studies should report a flow diagram, baseline comparability, attrition, effect sizes with confidence intervals, and prespecified treatment-by-time contrasts. Longer follow-up, clinician-rated diagnostic status, functional outcomes, and patient-reported acceptability would help determine whether observed symptom changes are clinically meaningful and sustained. A dismantling or factorial design could examine whether breathing, postures, meditation, or accompanying recreational activities contribute independently to any benefit.

## Ethical considerations

All research ethical principles were considered in this study. For example, the participants were selected voluntarily and informed about the purpose of the research and its implementation steps. They were also assured of the confidentiality of their information. In general, ethical principles, including the participants' full knowledge of the research implementation process and the confidentiality of their information, were secretly.

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