



## Effect of Yoga on Postpartum Depression: A Randomized controlled trial

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### Abstract:

**Purpose:** This study was conducted to explore the impact of yoga on postpartum depression. Subjects: Forty primipara women with postpartum depression (PPD). Their ages were extended from 20-35 years old. Their body mass index was less than 30 kg/m<sup>2</sup>. Women scores within the Zung scale extended from 50-69 (moderate depression).

**Design:** Design of this study was experimental study (two groups pre-test post-test) Randomized controlled trial. Group A (Control group): It comprised of 20 women and treated by antidepressant drugs as it were for 12 weeks. Group B (Study group): It consisted of 20 women and treated by the same antidepressant drugs as in group A and yoga program.

**Methods:** BMI was surveyed with standard weight-height scale and depression was evaluated with Zung self-rating depression scale before and after treatment for both groups A & B.

**Results:** The results of this study revealed that there was noteworthy diminish within the Self Depression Scale (SDS) of both groups A & B post-treatment differentiate with pre-treatment ( $P = 0.0001$ ) with rate of diminish 9.53% and 16.68% respectively. Between groups, there was no significant distinction within the SDS between both groups A and B pre-treatment ( $P = 0.42$ ). Whereas post-treatment; there was noteworthy difference within the SDS between both groups A & B (More diminish in group B) ( $P = 0.001$ ).

**Conclusion:** It can be concluded that yoga is successful strategy in treatment of postpartum depression.

**Keywords:** Yoga - Postpartum - Depression.

### 1-Introduction:

Antenatal and postnatal (postpartum) periods are two basic interims in women's life with expanded parts and obligations. Hence, the postpartum period speaks to the time of hazard for postpartum depression (PPD) (1). PPD may be a common emotional wellbeing disorders influencing 25% of women after childbirth (2).

It could be a subtype of major depressive disorder (MDD), a mental wellbeing disorder with the taking after clinical presentation: a persistently depressed temperament and/or misfortune of interest in life and exercises, generalized anxiety, and panic disorder. PPD predominance crests around two to six months postpartum. Symptoms differ in seriousness from exceptionally gentle to serious side effects that impede their part as caregivers to their infant child (3),(4).

PPD has been appeared to have negative impacts on women's physical and mental wellbeing as well as the quality of life and the relationship with her spouse and children (1).

The most common strategies to oversee PPD are antidepressant drugs and psychotherapy, in any case, the side effects of medicines for breastfeeding ladies and the disgrace related with mental wellbeing treatment lessen take-up of these intercessions (5).

Antidepressants are an affirmed treatment for postpartum depression. Be that as it may, in a breastfeeding lady, most antidepressants can accumulate in breast drain so as it were some antidepressants with small chance of side effects for the infant can be utilized (3).

Because moderately small is known approximately the impacts of antidepressant medicine in breast drain, intrigued in complementary and elective treatments, counting mind/body approaches (yoga, physical movement), and other honed (home grown medications, vitamins), has substantively expanded among patients within the general population, and among postnatal ladies particularly (5). Ladies with sadness may lock in complementary intercessions for a few reasons: a desire for a characteristic approach with negligible side impacts, arrangement with individual convictions, and encountering challenges with conventional medicines (6).

Yoga may be a well-known integrator treatment that couples physical work out with breathing and unwinding. Over the last decade, Yoga is getting expanding significance within the therapeutic inquire about community, and various literary works has suggested yoga for different restorative applications counting cardiovascular and respiratory malady as well as torment administration, mental wellbeing, push, uneasiness, discouragement. Yoga centers on scattering the negative considerations related with misery by refocusing the mind and calming feel (7).

Yoga is one of the complementary and elective treatments that was recognized to be viable for PPD. Yoga is an antiquated mind-body practice that has been commonly utilized mind-body practices. It's thought centers on mind-body interaction to control physical working, progress indications, and advance wellbeing. It comprises of three fundamental components: physical postures (asanas), breathing direction methods (pranayama), and meditation (dhyana) (8).

A developing body of prove has undoubtedly been accumulating within the logical writing, illustrating the numerous positive impacts about yoga uses on objective and psychological wellbeing, and its upraised potential as a mutual or indeed an elective treatment to PPD. The developing intrigued within the

joining of yoga into the clinical training of brain research is credited to the association between bodily action and psychological wellbeing (9). It was really reported that bodily action is including diminishing discouragement and uneasiness indications, and increments in feature of life, self-worth, sociability, and developmental working (10).

In spite of existing prove on possibility, worthiness, and a few supports for the adequacy of yoga for treat postpartum depression, nearly all announced studies have used non-dynamic control conditions (using a wait-list control group). There's a require that more dynamic comparison conditions were included, it was found a critical diversity within the dose and frequency of different yoga interventions. Extra investigate is required to look at the ideal dosage and recurrence of yoga practice whereas emphasizing clear randomization strategies, satisfactory comparison gatherings, and portrayal of the yoga style and technique (e.g., grouping of postures, studio environment) (11). Consequently, the main objective of the present work was to investigate was the effect of yoga on postpartum depression.

## 2- Materials and methods

### Study Design

The study was designed as a randomized controlled trial. Ethical approval was obtained from the institutional review board of the faculty of physical therapy, Cairo University NO: P.T.REC/012/003240 before starting of the study and the clinical trial registration in Clinicaltrial.gov with an identifier number NCT04923698. The study was followed the Guidelines of Declaration of Helsinki on the conduct of human research.

### Participants:

Forty primipara women with postpartum depression (PPD) chosen arbitrarily from Kasr El Ainy University in Cairo complaining of postpartum depression at least one month after childbirth shared in this study about. The study kept going for 6 months from June 2019 to March 2020. Their ages existed between 20-35 years old. Their BMI recorded less than 30 kg/m<sup>2</sup>. Women scores within the Zung scale extended from 50-69 (mild and moderate depression) (12), (13).

Their body mass index was less than 30 kg/m<sup>2</sup>. Women scores within the Zung scale extended from 50-69 (moderate depression). Women with recent or past determination of bipolar clutter, schizophrenia or other insane confusion, liquor or sedate misuse/addiction and eating disorder inside previous year, acute self-destructive or murderous chance and critical medical problems contraindicated use yoga for postpartum women, counting unevaluated maternal cardiovascular, arrhythmia, checked respiratory problems and ineffectively controlled Sort I diabetes,

seizure problem or high blood pressure are excluded from study (3).

#### Eligibility:

45 females were assessed for eligibility in the present study, 5 females who were not agree to the treatment program were excluded from our study, and so 40 females were randomized to the study, and finally, 40 females completed the study and their data had been investigated.

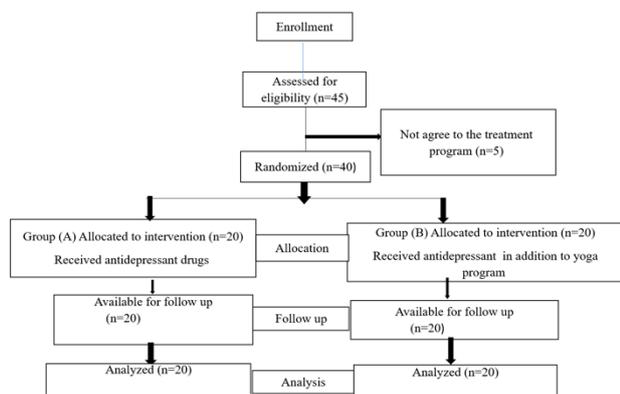


Fig.(1): CONSORT Flow chart for patients in the study.

All women were partitioned into two equal groups (A&B):

**Group A (Control group):** It consisted of 20 women and treated by antidepressant drugs only for 12 weeks.

**Group B (Study group):** It comprised of 20 women and treated by the same antidepressant drugs as in group A and yoga program, 50 minutes daily, 7 days per week for 12 weeks (Total 84 sessions).

### 3- Methods:

#### Yoga program:

The yoga program consisted of 12 movements: (14).

#### 1- Shavasana (Corpse pose).

This posture is referred to as Shavasana or Body Posture as it would appear that a dead body. It is one of the best relaxation poses and if practiced correctly and with full efforts, can loosen up each body part.

#### 2- Downward-Facing Dog.

With feet and hands set on the floor, fixing the legs and pulling the hips back and the sitting bones toward the roof, one drops their chin to the chest and feels a stretch through the hamstrings as the heaviness of the body moves into the hands.

#### 3- Triangle Pose (Utthita Trikonasana).

It implies to the three-sided shape made by the body within the full shape of the posture. It stretches the

hamstrings, upper back, abdominals, gastrocnemius and soleus. It makes a difference eases lower back pain and relief anxiety

#### 4- Cobra Pose (Upward facing dog).

woman assumed a prone position and afterward broadened her back by keeping the elbow expanded.

#### 5- Locust Pose.

Salabhasana or Grasshopper Posture viably reinforces the muscles that curve the back including erector spina, quadratus lumborum, lower trapezius, gluteus maximus, and hamstring.

#### 6- Camel Pose.

This posture could be a backbend from a kneeling position in which the shoulders expand out behind with the bases of the palms on the heels and the fingers indicating toward the toes. Woman was inquired to turn her arms apparently so the elbow creases confront forward.

#### 7- Markatasana Pose.

Markatasana is a fabulous posture for progressing flexibility of the spine and improving the work of the digestive system. From a supine lying position, lady bowed her knees, put her heels near to buttocks with her feet resting on the ground, and joined her knees together, both the feet together.

#### 8- Plank Pose.

Woman accepted a full push-up position with the arms are opposite to the floor and the shoulders straight forwardly over the wrists, middle parallel to the floor.

#### 9- Kapalbhathi (forceful exhalations).

It is an energized and filtering breath. The stomach muscles are mightily contracted which grants quick exhalations and inward breaths, increments oxygen stream all through the body, tones the stomach muscles and reinforce the diaphragm.

#### 10- Nadi Shodhan or Anuloma Viloma (Alternate Nostril Breathing).

In substitute nostril breathing, one inhales through the right and breathes out through the left at that point breathes in through the left and breathes out through the right nostril. This brings adjust to the body (physical vitality) and mind (mental vitality) as delayed breathing from one side drains vitality from the body.

#### 11- Bharamari or (Humming Bee Breath).

Bhramari pranayama method incorporates making a murmuring sound like a bee amid exhalation comparative to the one made when chanting "OM", in a loose upright sitting pose.

#### 12- Prayer Pose.

Lady was inquired to bend, abduct and rotate hip joint outward with flexing knees with bringing her hands together in front with fingers indicating up toward the roof and pushing them against each other.

#### Outcome measures:

##### BMI assessment:

The weight and height of each woman in both groups (A & B) were measured by using Standard

weight height scale while she was wearing light clothes and bare feet, to calculate BMI before and after treatment. BMI was calculated according to the formula:  $BMI = \frac{Weight}{Height^2}$  (Kg/m<sup>2</sup>) (15).

#### Zung self-rating depression scale:

It is a short-self-administered scale utilized to evaluate the level of depression for women analyzed with PPD (12), (13). There are 20 items on the scale that survey the emotional, mental, and substantial symptoms related with depression. There are ten emphatically worded and ten adversely worded questions. Each question is scored on a scale of 1 through 4 (based on these answers: "a small of the time," "a few of the time," "a great portion of the time," "most of the time. Scores on the test extend from 20 through 80. The scores drop into four ranges: (12), (13).

- 20-49 typical Range.
- 50-59 mildly Depressed.
- 60-69 Modestly Depressed.
- 70 and above more Seriously Depressed.

#### Statistical analysis

Descriptive statistics and unpaired t-test were carried for differentiation of subjects' characteristics between groups. Ordinary administration of information was checked uses the Shapiro-Wilk test for all variables. Levene's test for homogeneity of changes was conducted to test the homogeneity between groups. Unpaired t-test was carried to compare the mean values of SDS between the group A and B. Paired t-test was carried for differentiation between pre and post treatment in each group. The level of significance for all statistical tests was set at  $p < 0.05$ . All statistical analysis was carried through the statistical package for social studies (SPSS) shape 25 for windows (IBM SPSS, Chicago, IL, USA).

## 4- Results

### Physical characteristics of patients:

Comparing common characteristics of the women in two groups revealed that there was no significant distinction between two groups within the mean values of age, weight, stature, and BMI (Table 1) ( $P > 0.05$ ).

**Table 1: Mean values of physical characteristics of both groups (A and B).**

	Group A	Group B	MD	t-value	p-value	Sig
	$\bar{X} \pm SD$	$\bar{X} \pm SD$				
Age years)	24.05± 2.6	24 ± 1.94	0.05	0.06	0.94	NS
Weight (kg)	61.06±5.66	62.53±5.09	-1.47	-0.86	0.39	NS
Height (cm)	160.6±6.61	161.6±3.92	-1	-0.58	0.56	NS
BMI (kg/m <sup>2</sup> )	23.68±1.97	23.98±1.9	-0.3	-0.48	0.63	NS
$\bar{X}$ : Mean	SD: Standard deviation		MD: Mean difference			
t value: Unpaired t value	p value: Probability value		NS: Non significant			

### Self-Depression Scale (SDS):

Inside gatherings, there was significant decrease in the Self Depression Scale (SDS) of the two gatherings A and B post-treatment contrasted and pre-treatment

( $P = 0.0001$ ) with level of diminishing 9.53% and 16.68% separately (Table 1) Between gatherings, there was no significant difference in the SDS between the two gatherings A and B pre-treatment ( $P = 0.42$ ), whilst post-treatment; there was significant distinction in the SDS between the two gatherings A and B (More diminishing in gathering B) (Table 2). ( $P = 0.001$ ).

**Table 2. Comparison between pre- and post-treatment mean values of SDS of the group A and B:**

SDS	Group A	Group B	MD	t-	p-	Sig.
Pre-treatment	59.3±4.85	58.15±4.09	1.15	0.81	0.42	NS
Post-treatment	53.65±4.14	48.45±4.54	5.2	3.66	0.001	S
MD	5.65	9.7				
% Of change	9.53	16.68				
t-value	7.38	9.9				
p-value	0.0001	0.0001				
Significance	S	S				

$\bar{X}$ : Mean  
SD: Standard deviation  
MD: Mean difference  
t value: Paired t value  
p-value: Probability value  
S: Significant

## 5- Discussion

The results of this study revealed that within groups, there was significant decrease in the Self Depression Scale (SDS) of both groups A and B post-treatment compared with pre-treatment ( $P = 0.0001$ ) with percentage of decrease 9.53% and 16.68% respectively. Between groups, there was no significant difference in the SDS between both groups A and B pre-treatment ( $P = 0.42$ ). While post-treatment; there was significant difference in the SDS between both groups A & B (More decrease in group B) ( $P = 0.001$ ).

Yoga may appeal to persons suffering from sadness and anxiety for a variety of reasons. In many regions, it is both economical and easily accessible. Yoga students can practice at home using instructional DVDs and books, in addition to the various yoga classes available in the community. Modified classes are available for those with specific needs. Yoga may also help with physical discomfort, which is a common comorbidity among persons who suffer from depression or anxiety. Finally, Yoga works well in conjunction with traditional mental health treatments (9).

Nearly all techniques of yoga include activity through practicing various postures, which have anti-depressant and anxiolytic effects through the release of endorphins, improve mental and active working by neutralizing inertia and disturbance related with depression, give people more energy over the body (16).

Mindfulness meditation which centers on existing-moment contemplations, sentiments, and body sensations in a non-judgmental way, makes a difference one to center on current involvement instead of ruminating on the past or worrying around the long, run diminishes side effects of misery and the

number of scenes of major misery by coordinating consideration to present-moment considerations, sentiments, and body sensations in a non-judgmental way, makes a difference one to center on current involvement instead of ruminating on the past or stressing approximately.

Furthermore, emphasizing a nonjudgmental approach may aid in the reduction of self-criticism. Learning to pay attention to one's current experience, counting current contemplations and sentiments, might educate one that considerations and sentiments are transient mental occasions, which repulsive (and positive) sensations vary and change. Mindfulness-based treatments have been shown to help people with depression and anxiety (3). A diminish in cortisol levels with a diminished metabolic rate, an increment in neurotrophic components, and changes in neurotransmitters, such as increments in gamma aminobutyric acid (GABA), glutamate, and serotonin and diminishes in dopamine, are all conceivable clarifications for the adequacy of yoga practice. (10).

Yoga moreover makes strides autonomic flexibility (in heart rate changeability) with lower seen stress levels, coming about in made strides wellbeing and interpersonal connections, indicating to the autonomic nervous system's (ANS) versatility and capacity to rapidly reestablish the basal state of unwinding taking after a stress reaction (17). Autonomic anxious system dysfunction is related with depression and anxiety. Yoga reduces the irregular movement of the maternal sympathetic adrenal medullary (SAM) and hypothalamic-pituitary-adrenocortical hub (HPA-axis) and modifies underactivity of the parasympathetic anxious system (PNS) and gamma aminobutyric acid (GABA) frameworks in portion through incitement of the vagus nerves, which are the primary peripheral pathway of the peripheral nervous system (PNS). Superior autonomic steadiness with decreased sympathetic excitement and expanded parasympathetic tone has been illustrated (18).

The results of this study agreed with (3) who concluded that an 8-week Vinyasa yoga program practiced twice weekly was effective in reducing sadness, uneasiness, welfare, and healthy quality of life in postpartum women when compared to a waitlist control group.

The results of this study supported by (19). Who demonstrated that a 10-week pre-birth yoga mediation, 75 minutes for pregnant ladies with either a minor or major depressive scene was compelling for decreases in depressive side effects, as estimated by both self-report measures and questioner appraised measures.

The results of this study supported by (20) who watched a noteworthy diminishment in pre-birth depressive side effects after twenty minutes, week by

week yoga/tai chi classes versus those within the waitlist condition.

The results of this study supported by (21) who conducted a program for comparing a 12-week twice/week yoga to the parent's instruction control. There were through and through more critical depression diminishments among women inside the yoga condition versus those inside the child raising instruction condition.

The results of this study supported by (17) who found more prominent advancements in negative influence and on sentiments of satisfaction, as well as in general benefits on cortisol and positive influence amid pregnancy in reaction to a yoga session relative to a control bunch, were watched. Positive influence was inflated on days that yoga members locked in a yoga classes measured to days of regular movement. They too recognized that standard yoga hone amid pregnancy, whereas not related with concurrent depressive indications, is related with less PPD indications experienced a few months afterward.

The results of this study also supported by (22) who recommend that yoga support against negative influence, maybe by diminishing mental illness and alternating emotional examinations and adapting with stressful situation.

The results of this study also supported by (18) who found a more noteworthy diminish in anxiety score within the yoga (29.12%) assemble contrasted with the control gathering (1.69%); reducing in Depression score in yoga (30.67%) than the control gathering (3.57%)., more serious level of upgrade inside the yoga (26.86%) gathering when contrasted with control gathering (13.55%).

The consequences of this investigation came in consistence (23) who considered the effects of a 12–14 weeks yoga program and showed up inside and out less bother inside the 38–40th seven days stretch of brooding with higher self-adequacy expectation and result trust in both the dynamic and second phases of work than the ladies inside the control group. The results of this study also came in consistence with (24) reported that side effects of discouragement and/or anxiety and negative influence diminished in reaction to an 8-weekly 75-min yoga lesson instructed by a pre-birth yoga educator, depend on Ashtanga Vinyasa yoga altered for gestation, and included an arrangement of stances, sharp inhalation, and relax. Members in two conditions detailed noteworthy changes. Be that as it may, in terms of assessing yoga as a treatment for sadness, these comes about ought to be translated with attention to think about measures permitted for the consideration of members who practiced indications of uneasiness yet not despondency.

The results of this study also came in consistence with (25) discovered huge diminishments burdensome signs from pre-post mediation taking after a 10- week mindfulness program 90 minutes week by week yoga program. Sessions including dynamic center on care and included updates to observe actual sensations and be cautious about the child. Individuals besides itemized an important augmentation in mindfulness.

Cramer et al. (8) tracked down that, later meta-examination of 12 trails randomized controlled of yoga for clinical depression. upheld our revelations and detailed yoga was altogether way better than regular care, relaxation works out, or high-impact work out .

Studies have additionally shown that hatha yoga can push ahead personality signs occurring inside the setting of clinical issues. Meta-examinations of RCTs randomized control trail studies (RCTs) have detailed that yoga is related with expansive diminishments in depression and nervousness in cancer patients, and includes a noteworthy effect on sadness, (and torment) related with fibromyalgia (26), (27).

The outcomes about of this study oppose this idea with (28) who have showed up that yoga treatment through not diminish the scores of tensions and sadness. This can be regularly plain, particularly after beginning yoga therapy, whilst is taken after by a high level organize that shows up to skirt on no anxiety/depression scores. Founded yoga impacts lead to a basic assembly between the self-assessment (Zung Self-Rating Scale).

The consequences of this examination moreover disagree with (29) who analyzed the impacts of a 24-week yoga program with strong treatment in 98 breast cancer outpatients going through a therapeutic method, radiological therapy (RT) and chemotherapy (CT). The results propose a by and expansive no reducing in depressive scores with time in both the groups. Yoga intercession reduced burdensome side impacts more than the control from their benchmark suggests by 42% after a therapeutic method, 28.1 and 28.5% amid and taking after radiological therapy, independently, and 39.5 and 29.2% amid and taking after CT, independently. Our results are consistent with other studies utilizing relaxation strategies and adjuvant mental treatment.

## 6- Conclusion

It can be concluded that yoga is effective method in treatment of postpartum depression and can be used as an adjunctive method in the intervention program for women with PPD.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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