

Effect of Relaxation Exercises on Postpartum Depression

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Abstract: This study was conducted to determine the effect of relaxation exercises on postpartum depression. Thirty postpartum female aged 20-35 years were selected from outpatient clinic of obstetrics and gynecology Ain Shams University, the study was conducted between May 2015 and October 2015, they were distributed into two groups equal in numbers: group (A) received relaxation exercises sessions in the form of meditation and physical relaxation for 45 minutes/ sessions, 3 times /week for 3 months in addition to home instructions and advice about controlling stressful conditions by practicing deep breathing exercise. And group (B) received home instructions for doing deep breathing exercise during stressful conditions. The result showed statistically significant decrease in depression symptoms in group (A) with the percentage of improvement of depression scale index (26.63%) and statistically significant decrease in depression symptoms in group B with percentage of improvement (4.67%). It can be concluded that relaxation exercises are easy to perform, safe, have no side effect on reducing postpartum depression, and elevate female mood and enhancing coping skills for stressful conditions.

Key word : Relaxation techniques, postpartum depression.

Introduction

The postpartum period, is the 6 to 8 week time period beginning an hour following the birth of the fetus and expulsion of the placenta and reflects the approximate time required for uterine involution and return of most maternal body systems to a non-pregnant state, it is divided into the early postpartum period, the first three weeks after childbirth, and the late postpartum period, four to six weeks after childbirth¹.

Despite the normality of childbirth, complications may arise that will have detrimental effects on the postpartum woman. These include postpartum hemorrhage, thrombophlebitis, infections (including mastitis, endometritis, and urinary tract infections, wound Infection), endocrine disorders as postpartum thyroiditis, and psychiatric disorders, three psychiatric disorders may arise in the postpartum period such as postpartum blues, postpartum depression (PPD), and postpartum psychosis².

Postpartum depression usually begins between two weeks to a month after delivery. PPD may last several months or even a year. Postpartum blues, commonly known as "baby blues" is a transient postpartum mood disorder characterized by milder depressive symptoms than postpartum depression. This type of depression accounts for about 80% of all postpartum depression. Symptoms typically resolve within two weeks. Symptoms lasting longer than two weeks are a sign of more serious depression³.

The criteria required for the diagnosis of postpartum depression are include at least five of the following nine symptoms, within a two week period: feelings of sadness, emptiness, or hopelessness, nearly

every day, for most of the day or the observation of a depressed mood made by others, loss of interest or pleasure in activities, weight loss or decreased appetite, changes in sleep patterns, feelings of restlessness, loss of energy, feelings of worthlessness or guilt, loss of concentration or increased indecisiveness, recurrent thoughts of death, with or without plans of suicide⁴.

Untreated depression is not without its own risks since mothers affected by depression have a negative impact on the emotional development of their children and major depression, especially when complicated by a delusional component, may lead to the mother attempting suicide and infanticide. Consequently, clinicians need to help mothers weigh the risks of prenatal exposure to drugs for their babies against the potential risks of untreated depression and abrupt discontinuation of pharmacological treatment⁵.

An increasing number of new antidepressants have been introduced onto the market in the last 5 years. The data available in the literature seem to be quite reassuring as to their safety profile during pregnancy and breastfeeding, since several pharmacological treatments appear to be safe and well tolerated by mother and infant alike. Nevertheless, the teratogenic risks, perinatal toxicity and effect on the newborn's neurobehavioural development as a result of exposure to medication through- out lactation should be carefully evaluated before starting a psychopharmacological treatment during pregnancy or breast feeding⁶.

Treatment with antidepressants should be strongly considered for all women with moderate to severe depression. In spite of the limitations of some of the studies reviewed, fluoxetine, as well as the other older selective serotonin reuptake inhibitors (SSRIs) and venlafaxine, seem to be relatively devoid of structural teratogenic risks⁷.

A relaxation technique (also known as relaxation training) is any method, process, procedure, or activity that helps a person to relax; to attain a state of increased calmness; or otherwise reduce levels of anxiety, stress or anger. Relaxation techniques are often employed as one element of a wider stress management program and can decrease muscle tension, lower the blood pressure and slow heart and breath rates, among other health benefits. People respond to stress in different ways, namely, by becoming overwhelmed, depressed or both, other techniques that include deep breathing tend to calm people who are overwhelmed by stress, while rhythmic exercise improves the mental and physical health of those who are depressed. Meditation was among the first relaxation techniques shown to have a measurable effect on stress reduction. Meditating for ten minutes per day can significantly reduce stress and anxiety⁸.

Meditation, a form of mental training that has been shown to increase mental focus and reduce stress, has become an increasingly used tool in both the medical and clinical psychology arena. It is considered a family of techniques, which have in common a conscious attempt to focus attention, e.g., by observing the breath and avoiding every day thoughts⁹.

Meditation defined as a family of self-regulation practices that focus on training attention and awareness to bring mental processes under greater voluntary control and thereby foster general mental well-being and development and/or specific capacities such as calm, clarity, and concentration¹⁰.

Progressive Muscle Relaxation (PMR) therapy involves sequential tensing and relaxation of major skeletal muscle groups and aims to reduce feelings of tension, to lower perceived stress, and to induce relaxation. PMR is purported to decrease the arousal of the autonomic and central nervous system and to increase parasympathetic activity. PMR sessions commonly last for 20 to 30 minutes, but are not standardized and may therefore vary in duration, frequency and the number of involved muscle groups, and may also include deep breathing techniques¹¹.

Diaphragmatic breathing, or abdominal or belly or deep breathing is marked by expansion of the abdomen rather than the chest when breathing is defined as a manipulation of breath movement, contributing to a physiologic response characterized by (a) the presence of decreased oxygen consumption, decreased heart rate and blood pressure, and (b) increased theta wave amplitude in EEG recordings, increased parasympathetic activity accompanied by the experience of alertness and invigorating¹².

I-SUBJECTS

Thirty primipara women, in postpartum period after at least 1 month of vaginal delivery, complained from depression (diagnosed by obstetrician / psychologist and confirmed by zung self-rating depression scale) shared in the study they had the criteria represented in table (1):

Table (1): General characteristics of the two groups.

	Group A (n= 15)	Group B (n= 15)	t value	P value
Age (yrs.)	28.73 ± 2.92	27.00 ± 2.98	1.612	0.118
Weight (kg)	68.33 ± 10.13	67.40 ± 7.60	0.286	0.777 (NS)
Height (cm)	161.73 ± 8.01	163.60 ± 7.27	-0.668	0.509 (NS)
BMI (kg/m ²)	25.66 ± 2.58	24.75 ± 1.89	1.097	0.282 (NS)

Data are expressed as mean ± SD. NS= $p > 0.05$ = not significant.

The starting level of zung scale questionnaire was ranged from 50-69. Informed consent form had been signed by each patient before practicing in the study, women complain from at least five of nine symptoms of depression such as increased or decreased appetite, sleep disturbance, low energy and suicidal ideation.

Any female having the following criteria was excluded:

Any psychological trauma, Death of the baby, history of psychological trauma in the last six months, also female with thyroid dysfunctions and anemia was excluded.

They were divided randomly by using closed envelop into two groups equal in number, Group (A) received relaxation exercises sessions for 45 minutes, 3 times/ week for 3 months in addition to home instructions and advice about controlling stressful conditions by practicing deep breathing exercise, Group (B) were given home instructions for doing deep breathing exercise during stressful conditions

II-Instrumentations

Evaluative Material:

Weight height scale:

Weight height scale was used to measure weight and height for each female to calculate body mass index according to the following formula $BMI = \text{weight k. g} / \text{height m}^2$

Zung self- rating depression scale.

This scale was used to evaluate depression grades of postpartum females before and after 3 months of treatment. Zung Self-Rating Depression Scale was designed by Duke University psychiatrist Dr. William W.K. Zung to assess the level of depression for patients diagnosed with depressive disorder¹³.

The Zung Self-Rating Depression Scale is a short self-administered survey to quantify the depressed status of a patient. There are 20 items on the scale that rate the rating affective, psychological and somatic symptoms associated with depression.

Zung self- rating depression scale

There are ten positively worded and ten negatively worded questions. Each question is scored on a scale of 1 through 4 (based on these replies: "a little of the time," "some of the time," "good part of the time," "most of the time, Scores on the test range from 20 through 80. The scores fall into four ranges:

- 20-44 Normal Range
- 45-59 Mildly Depressed
- 60-69 Moderately Depressed

- 70 and above Severely Depressed

The Zung Self-Rating Depression Scale has been translated into many languages, including Arabic¹⁴, Azerbaijani, Dutch, German, Portuguese¹⁵ and Spanish¹⁶.

Scoring

Items are structured in terms of positive and negative statements. Responses are scored 1, 2, 3 or 4 according to the severity of the symptom. Items marked with an (*) are reverse scored (i.e., 4, 3, 2,1). The items are totaled to give an overall score.

$$\text{index} = \frac{\text{raw score total} \times 100}{\text{maximum score of 80}}$$

(I) Procedure:

For group (A): (study group) before starting the first treatment session, each patient was instructed briefly about the treatment procedure and how to make it as a home routine, which was explained carefully to her to gain her confidence and cooperation. The woman was asked to evacuate her bladder before treatment session to be relaxed, restricted clothing was removed, she was sitting in a relaxed fully supported half lying position in a quite warm comfortable place with her hands supported beside her body.

The session was divided into two parts:

1) Meditation:

Meditation was applied for 15 minutes as the following:

- The woman was asked to bring her attention to her breathing, notice if it's shallow breathing, or short and quick breaths. Then, begin to picture an object in her mind for 5 minutes. This object should be simple and pleasurable to her. It could be her newborn, the sky or the moon etc. Some people prefer a favorite sound, such as music. Whichever you choose, try to visualize the object, word, or something to represent the sound.
- Then the woman was asked to close her eyes and take a deep breath from her nose and makes her abdomen as a balloon fully and slowly to a count of four and fills her abdomen, expire the air from her mouth then contract her abdomen.
- If there is any interruption occurs to the woman she was asked to bring her attention back to her breathing as the mind interruption is normal.
- This procedure was repeated four times deep breaths to a count of four and expires to a count of four for 5 minutes.
- Then the woman was asked to take a 4 count deep breath. Hold it for a count of four. And expire for a count of four.
- Then repeat four times the pattern of deep breath, holding, and expire to a count of four each, bring your breaths down to a calm and rhythmic pattern for 5 minutes.

She can take herself through imagination somewhere she feels most relaxed. A beach in the summer, or the river where she sits and watch the beautiful scene, hear the soothing sound of the running water and smell the fresh breath of mountain air and she can come back to this place any time she needs to.

Then the woman was given herself self-affirmations such as: I am calm and collected. I love to do my tasks in a calm and relaxed manner.

N.B: Self affirmations were a great way to bring purpose to female meditation session. Meditation connected female conscious with her unconscious, and self-affirmations in a meditative state helped communicate and connected the conscious desires into the deeper unconscious self. The self-affirmations during the meditative were an excellent tool to communicate with female unconscious and tell it the positive things the female want in life so, Let the female unconscious self-do the rest of the work.

2) Physical relaxation:

Step 1:

Tense-relax:

This technique involves testing a set of muscles, noting the tension and then releasing the muscle work and noting the absence of tension.

- Each movement will be repeated for three times and relax for five counts for about 12 minutes.
- The woman was positioned in a fully supported half lying position, she was asked to flex her toes and feel tension and it's site , then she switches off activity and feels the difference or feels the absence of tension, then extend her toes and feel tension and it's site , then she switches off activity and feels the absence of tension for 2 minutes.
- The same movement was repeated with the ankle, she was asked to dorsiflex her ankle and feel the tension then relax, then plantar flex her ankle and feel the tension then relax for 2 minutes.
- Then the woman was asked to make inversion to the subtalar joint and feel the tension and it's site, then relax for five counts then make eversion to the subtalar joint and feels the tension then relax for 2 minutes.
- For the upper limb, the woman was asked to flex the fingers and feels tension and it's site then she switches off and extend her fingers and feel the tension for 2 minutes.
- Then she was asked to flex her wrist and feels tension then relax and extend her wrist and feels the tension then relax for 2 minutes.
- Finally she was asked to make ulnar deviation her wrist and feel the tension then switches off and radial deviation and feel the tension then switches off for 2 minutes.

Step 2: Relaxation training (contrast method)

- It is a form of relaxation training with breathing control where the contraction or increasing tension in one group of muscle is accompanied by inspiration and the release of contraction and absence of tension is accompanied by expiration, It was started at 2nd week of treatment for about 8 minutes.
- The woman was asked to bend her toes up with inspiration and down slowly and feel the tension, with expiration let the toes go loose and feel the absence of tension for 1 minute.
- With inspiration she abducted her toes and then adducted her toes and feels the tension, with expiration let them relax for 1 minute.
- With inspiration she was asked to dorsiflex her ankle and plantar flex her ankle and feel the tension , with expiration let them slack and feel absence of tension for 1 minute.
- With inspiration she was asked to invert the subtalar joint and evert the subtalar joint, with expiration let their feet relax for 1 minute.
- With inspiration, she was asked to flex her fingers and extend her fingers, with expiration let them relax for 1 minute.
- With inspiration she was asked to abduct her fingers and adduct them, with expiration relax them for 1 minute.
- With inspiration she was asked to flex her wrist and extend her wrist, with expiration relax her wrist and feel absence of tension for 1 minute.
- With inspiration she was asked to make ulnar deviation to her wrist and make radial deviation, with expiration relax her wrist for 1 minute.

Step 3: Relaxation training (No bending – No stretching)

- At this stage of training, the woman will be able to be aware of tension even without apparent movement. She has passed the initial stage of relaxation training and can appreciate the difference between a contracted and relaxed muscle, this technique was started at the 3rd week of the treatment program for 10 minutes.
- The woman was asked to do regular, easy, low level breathing, then she was asked to listen to the natural rhythm of her breathing for 2 minutes.
- She was asked to concentrate on her toes, but do not move them and feel if there is tension, with expiration let them go loose and feel the absence of tension for 2 minutes.

- Then she was asked to think and concentrate at the site of her ankles with inspiration then relax and feel the absence of tension with expiration for 2 minutes.
- With inspiration she was asked to concentrate on her fingers but don't move them and feel if there is tension then let them go loose and feel absence of tension with expiration for 2 minutes.
- With inspiration she was asked to concentrate at the site of her wrists and feel absence of tension with expiration for 2 minutes.

Diaphragmatic breathing exercise:

- This technique was performed for group (A and B) as a home routine during stressful conditions for 5 minutes about 5 repetitions and relax in between.
- The woman was asked to assume a relaxed comfortable position e.g crock lying, sitting or standing position.
- She should breathe in slowly and deeply, keeping her shoulders relaxed and upper chest quite.
- She was asked to take deep inspiration from her nose, make her abdomen like a balloon then expire the air from her mouth with a sigh.

Statistical analysis

- Results are expressed as mean ± standard deviation (SD).
- Comparison between values of different variables in the two studied groups was performed using either unpaired t test or Mann-Whitney test whenever it was appropriate,
- Comparison between pre- and post-treatment within the same group was performed using Wilcoxon Signed Ranks test.
- Statistical Package for Social Sciences (SPSS) computer program (version 19 windows) was used for data analysis. P value ≤ 0.05 was considered significant and < 0.01 was considered highly significant

Results:

In group A there was a statistical significant decrease in the mean values of depression scale index measured at post-treatment (50.37 ± 4.35) when compared with its corresponding value at pre-treatment (68.65 ± 5.68) with Z value= -3.410 and p value= 0.001.

Also in group B there was a statistical significant decrease in the mean values of depression scale index measured at post-treatment (66.38 ± 4.94) when compared with its corresponding value at pre-treatment (69.63 ± 4.98) with Z value= -2.978 and p value= 0.003. The percentage of improvement of depression scale index was higher in group A (26.63%) than in group B (4.67 %) (Table 2).

Table (2): Comparison between mean values of depression scale index measured pre- and post-treatment in the two studied groups.

	Group A (n= 15)	Group B (n= 15)
Pre-treatment	68.65 ± 5.68	69.63 ± 4.98
Post-treatment	50.37 ± 4.35	66.38 ± 4.94
Difference	18.28	3.25
Percentage of improvement	26.63%	4.67%
Z value	-3.410	-2.978
P value	0.001**	0.003**

Data are expressed as mean ± SD. Z value= Wilcoxon Signed Ranks Test

**p< 0.01= highly significant.

Pre-treatment, there was no statistical significant difference between the mean values of depression scale index in group A (68.65 ± 5.68) and its corresponding value in group B (69.63 ± 4.98) with Z value= -0.708 and p value=0.479 At the other hand at post-treatment, there was a statistical significant decrease in the mean values of depression scale index in group A (50.37 ± 4.35) when compared with its corresponding value in group B (66.38 ± 4.94) with Z value= -4.679 and p value= 0.001 (Table 3).

Table (3): Comparison between mean values of depression scale index in the two studied groups measured pre- and post-treatment.

	Group A (n= 15)	Group B (n= 15)	Z value	p value
Pre-treatment	68.65 ± 5.68	69.63 ± 4.98	-0.708	0.479 (NS)
Post-treatment	50.37 ± 4.35	66.38 ± 4.94	-4.679	0.001**

Data are expressed as mean ± SD. Z value= Mann-Whitney U test. NS= $p > 0.05$ = not significant; ** $p < 0.01$ = highly significant

Discussion

A postpartum period is the period beginning immediately after the birth of a child and extending for about six weeks. Less frequently used are the terms puerperium or puerperal period. The World Health Organization (WHO) describes the postnatal period as the most critical and yet the most neglected phase in the lives of mothers and babies. It is the time after birth, a time in which the mother's body, including hormone levels and uterus size, returns to a non-pregnant state¹⁷.

The results of this study found that, there was a statistically highly significant decrease ($p < 0.01$) in depression after the performance of the selected relaxation techniques sessions on postpartum women.

The results of this study agreed with Vieten and Astin (2008)¹⁸ who found that Participation in an eight weeks mindfulness meditation in the latter half of pregnancy resulted in significantly reduced antenatal anxiety compared to a control group, large effect size were noted for these reductions.

The results also agreed with those of Dunn et al., (2012)¹⁹ who found 75% of participants in a mindfulness treatment group experienced a decrease in stress symptoms and 67% showed positive change in levels of stress and self-compassion at three month follow up.

The results of the current study are also supported by Greeson, (2009)²⁰ who found that cultivation of greater attention, awareness, and acceptance through meditation practices is associated with lower levels of psychological distress, including decreased symptoms of depression, anxiety, worry, and anger. Research has also demonstrated promise for the role of MBIs in treating clinical depression.

The results of this study also agreed with Goyal et al., (2014)²¹ who found that meditation programs can result in small to moderate reductions in multiple negative dimensions of psychological stress. Thus, clinicians should be prepared to talk with their patients about the role that a meditation program could have in addressing psychological stress.

The results of this study supported with those of Lolak et al., (2008)²², who found that relaxation training is effective in reducing anxiety and depression level in chronic lung patients, there was an overall significant improvement within each group over time.

The results of this study also confirmed with those of Kim and Sang (2005)²³ who indicate that a relaxation breathing exercise would improve anxiety and depression levels in patients undergo allogeneic hemopoietic stem cell transplantation.

The results of this study disagreed with the results those of Ernst et al., (2010)²⁴ who found that meditation based stress reduction (MBSR) has little effects on depression, anxiety and psychological distress in people with chronic somatic diseases.

The results of this study also disagreed with Lomas et al ., (2015)²⁵ who found that meditation was a difficult skill to learn and practice; participants encountered troubling thoughts and feelings which were hard to manage; meditation reportedly exacerbated mental health issues, such as depression and anxiety; and in a few cases, meditation was associated with psychotic episodes.

Conclusion:

Accordingly, it could be concluded that the relaxation exercises are very effective on reducing postpartum depression.

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