



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2482728>Available online at: <http://www.iajps.com>

Research Article

**A CLINICAL STUDY TO EVALUATE THE IMPACT OF  
EXERCISE ON POSTPARTUM DEPRESSION AND STRESS  
IN PREGNANT WOMEN**<sup>1</sup>Dr. Abdul Rafay, <sup>2</sup>Dr. Ghulam Mujtaba Ghumman, <sup>3</sup>Dr. Faiza Younas<sup>1</sup> Medical Officer at Rural dispensary Rohra, Sheikhpura<sup>2</sup> House Officer at Services Institute of Medical Sciences, Lahore<sup>3</sup> Women Medical Officer at Rural Health Centre Satrah, Sialkot**Abstract:**

**Introduction:** Pregnancy and postpartum periods are considered as the most sensitive period in women's lives. This period is also important psychologically and socially in addition to its physical importance. Postpartum depression is one of the most common psychological disorders that are resistant and serious which affects pregnant women. The purpose of this study was to investigate the effects of exercise training on postpartum anxiety and depression in pregnant women who referred to Ganga ram hospital Lahore.

**Material and Method:** This research is a clinical trial study conducted on 102 pregnant women (51 in case group and 51 in control group). The instruments used included Edinburgh Postpartum Depression Scale and Spielberger State-Trait Anxiety Inventory. To analyse the data, T-test was used to compare the groups and the pair was used to compare the effects of the training before and after the study.

**Results:** The demographic characteristics between the two groups were not significantly different from each other. After exercise trainings, the study group showed a significant decrease in postpartum depression ( $p = 0.02$ ). Also, obvious anxiety decreased significantly from  $49.55 \pm 4.28$  to  $47.46$  ( $P < 0.0001$ ); the hidden anxiety was also decreased from  $50.21 \pm 4.34$  to  $47.46 \pm 3.57$  ( $p = 0.001$ ).

**Conclusion:** The results of 8 weeks of aerobic exercises showed an impact and decreasing effect on the levels of depression and anxiety and stress in postpartum women. Therefore, care providers of pregnant women should consider exercise as a promotion of mental and psychological health of women.

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Please cite this article in press Abdul Rafay et al., A Clinical Study to Evaluate the Impact of Exercise on Postpartum Depression and Stress in Pregnant Women., Indo Am. J. P. Sci, 2018; 05(12).

**INTRODUCTION:**

According to WHO report, mood disorders will be the second leading cause of disability worldwide by 2020 (1). Mood disorders are commonly observed in the postpartum period (2). Postpartum depression is a major public health problem and it is the most common problem for women in childbearing age. Women in their reproductive age are at high risk for depression. This disorder occurs more often during postpartum period than any other time (4). Postpartum depression is a disorder characterized by symptoms such as severe loneliness, irritability, fear, lack of confidence, changes in feelings, guilty feelings, decreased concentration, and in severe cases is accompanied with suicidal thoughts (5). Approximately 13% of women experience postpartum depression (6). Some studies have highlighted the prevalence of this disorder in the world as high as 33%. According to studies conducted in our country, the frequency of postpartum depression has been reported to be 42.13% (7). In postpartum depression, there is a risk of injury to the mother and the baby (8).

In developing countries, pregnancy and childbirth are among the main causes of death, illness and disability in women of reproductive age (9, 10). This period is associated with changes in psychological needs such as increased anxiety and depression and physical changes such as weight gain and outflow of the heart (1). Lack of knowledge and fear causes pregnant mothers to become anxious and this anxiety and fear are transmitted to the brain and causes an increase in stress hormones secretion in the mother (11). Stressing events significantly increases the prevalence of postpartum depression (12). Today, exercise and physical activity are considered not only as leisure time, but also as an indispensable necessity for health and well-being (13). Considering women's sports and exercise as a major part of society are essential along with their conditions and physiological needs (14). Research on the physiological response of the body to exercise trainings suggests that healthy pregnant mothers can cause adaptation between sport activities with their physiological and foetal needs (15). Also, exercise is one of the ways to reduce the adverse effects of pregnancy such as insomnia, fatigue, excessive weight gain, back and lower back pain, pelvic pain, constipation, inability to control urine, increased blood pressure, gestational diabetes, depression and anxiety (16). Several studies inside the country and abroad have shown that exercise can reduce the intensity of anxiety and, after stopping exercise, anxiety reappears. According to the results by Isard, regular exercise reduces anxiety and, once the exercise is stopped, symptoms of anxiety reappear (17). DeLorenz et al.

have examined the long-term effects of aerobic exercises on anxiety, depression, and emotional states in their study. Their research showed that there is a correlation between the improvement of physical fitness of participants in aerobic exercises and reduction of anxiety (18). There is still no comprehensive and precise understanding of the effects of exercise with different intensities and different times during pregnancy on the mother and the foetus, and on the other hand, the researches show contradictory results (19). The current study aims to investigate the effects of exercise training on postpartum anxiety and depression in pregnant women who referred to women's clinic.

**MATERIAL AND METHOD:**

This study was a clinical trial study conducted on 102 women (an intervention group and a control group) who had childbirth and who were referred to gynaecological clinic for postpartum care. According to Edinburgh questionnaire, women who were diagnosed with depression and had the inclusion criteria entered the study. These individuals had randomly divided into two study and control groups. The members of the study group entered the training stages, but the control group had been evaluated only in the final stage of the study along with the case group. All mothers in the case group received training at the first session, so that they could practice the exercises correctly and completely. Classes lasted for 8 weeks with 2 sessions per week and each session was 30 minutes. In each class 10 to 12 pregnant mothers had participated and classes conducted in 5 courses. The training program included 5 minutes of general warm-up, stretching; walking slowly for a maximum of 5 minutes, or 10 times and 5 minutes of rehearsed exercises similar to initial warm-ups for cooling down. These exercises included 10 types of exercise that promotes muscle strength and flexibility.

Questionnaire No. 1 contains demographic characteristics and questionnaire No. 2, Spielberg reevaluates hidden and obvious anxiety and questionnaire No. 3, the Beck Depression Inventory, had been completed before and after the intervention and under the opinions of experts and recorded for both groups.

To measure anxiety, Spielberg questionnaire was used. Hidden and obvious anxiety questionnaire, which has been standardized and used on general population many times, has an acceptable validity; it's evaluated based on 4-point Likert scale from a general score of 20 to 80. In this questionnaire, score of 20-44 show mild anxiety, scores of 43-53 show moderate anxiety and scores >53 show severe anxiety (20).

The second part included a standard depression questionnaire of Edinburgh; based on this questionnaire, participants are divided into two groups of depressed (EPAD  $\leq 12$ ) and non-depressed (EPDS  $> 12$ ). This questionnaire was first arranged by Cox et al. In 1987 and it is a valid and reliable questionnaire [21, 22, 23].

### STATISTICAL ANALYSIS

The findings were analysed by statistical software. Descriptive statistics was used to show the absolute and relative frequencies and performance and demographic characteristics of the samples; inferential statistics such as Chi square test and paired t-test used.

### RESULTS:

**Table 1: The demographics of the infertile women in the control and experimental groups.**

| Group                | Case group n=37        | Control Group n=37 | P value |
|----------------------|------------------------|--------------------|---------|
| Characteristics      | Mean $\pm$ SD or n (%) |                    |         |
| Woman's age          | 27.94 $\pm$ 5.28       | 27.68 $\pm$ 3.53   | 0.7     |
| Husband's age        | 32.54 $\pm$ 5.62       | 32.78 $\pm$ 5.64   | 0.8     |
| Educational level    |                        |                    |         |
| Primary school       | 14(27.5)               | 9(17.7)            | 0.27    |
| Secondary school     | 19(37.3)               | 26(51)             |         |
| Academic             | 18(35.3)               | 16(31.4)           |         |
| Employment status    |                        |                    |         |
| Housewife            | 42(82.4)               | 46(90.2)           | 0.19    |
| Employed             | 9(17.6)                | 5(9.8)             |         |
| Husband's Education  |                        |                    |         |
| Primary school       | 19(38)                 | 18(35.3)           | 0.36    |
| Secondary school     | 19(38)                 | 25(49)             |         |
| Academic             | 21(24)                 | 8(15.7)            |         |
| Husband's Occupation |                        |                    |         |
| Employed             | 40(78.4)               | 45(88.2)           | 0.14    |
| Unemployed           | 11(21.6)               | 6(11.8)            |         |

P\* value: chi-square test

**Table 2. Comparison of the mean differences Anxiety and depression between two groups.**

| Variable              | Group   | Pre-test<br>Mean $\pm$ SD | Post-test<br>Mean $\pm$ SD | *p-value |
|-----------------------|---------|---------------------------|----------------------------|----------|
| State Anxiety         | Control | 49.17 $\pm$ 4.50          | 49.90 $\pm$ 4.43           | P=0.3    |
|                       | Case    | 49.55 $\pm$ 4.28          | 47.46 $\pm$ 3.57           | P=0.0001 |
| Trait Anxiety         | Control | 48.67 $\pm$ 5.00          | 48.03 $\pm$ 5.31           | P=0.08   |
|                       | Case    | 50.21 $\pm$ 4.34          | 47.46 $\pm$ 3.57           | P=0.001  |
| Post partumdepression | Case    | 17.69 $\pm$ 3.78          | 16.09 $\pm$ 3.05           | P=0.02   |
|                       | Control | 17.63 $\pm$ 3.28          | 17.73 $\pm$ 3.79           | P=0.8    |
| Total Anxiety         | Case    | 99.76 $\pm$ 5.94          | 95.32 $\pm$ 5.54           | P<0.0001 |
|                       | Control | 97.84 $\pm$ 6.53          | 97.94 $\pm$ 8.58           | 0.9      |

p- value: paired t-test between the two groups

### DISCUSSION:

The results of this study showed that the mean of hidden and obvious anxiety scores had significantly decrease after aerobic training in

The demographic findings in the present study show that there is no significant difference in characteristics of the units studied between the study and control groups (Table 1).

The results of the tests for comparing the effects of training on postpartum depression showed that there was a significant reduction in the studied group and the depression score decreased from 17.69  $\pm$  3.78 to 16.09  $\pm$  3.05 (p = 0.02).

Also, the results showed that there was a significant decrease in hidden and obvious anxiety in the study group after exercise (p <0.05), while there was no changes in the control group (Table 2).

the case group, that is, exercise training reduced anxiety in the case group. Based on the results of Isard, regular exercise reduces anxiety and, with the stop of such exercises, symptoms of anxiety

reappeared again (17). In another study, Berger and Owen showed that physical exercise has a significant effect on the reduction of anxiety (19). DeLorenz et al. in a study examined the long-term effects of aerobic exercises on anxiety, depression and emotional states. Their study showed that there is a correlation between improvement of Physical fitness of participants in aerobic exercises and their levels of anxiety (24).

The results of our study showed that aerobic exercise has a significant effect on postpartum depression. Some studies have suggested positive effects of exercise on general maternal health and in dealing with postpartum depression. In this regard, in the study of Armstrong et al. (2003), a 12 week exercise program during postpartum period had a significant effect on depression on 20 depressed women (25).

Also, in the study of Mardi et al. (2003), exercise had a positive effect on mild depression during postpartum period after 6 weeks (26). However, in the study of Coe et al. (2008), exercise program implemented for 6 training sessions and for one month during postpartum period, and there was no significant difference in depression between the two groups (27). In the study of Demissie et al., exercise program for 8 weeks had a significant effect on the reduction of postpartum depression in 203 individuals (28). But Mohammadi et al showed Exercise has no effect on post-partum depression and fatigue (29). These results show the effective and reducing role of exercise on the levels of postpartum depression in women; so that the depression of many women improved in the experimental group. Postpartum sports activities and exercises in addition to many physical benefits, has also many psychological benefits for women, so that most psychologists consider exercise as a way to deplete physical energies along with the vitality and cheerfulness of mind. Exercise as an appropriate, non- invasive, therapeutic intervention with low costs and low side effects comparing to drug therapy, can be used as one of the best effective interventions along with anti-depressant and psychotherapy drugs.

### CONCLUSION:

The results of the 8-week aerobic exercise show an effective and reducing impact of exercise on the levels of depression and anxiety and stress in postpartum women; so that depression improved for a number of women in the study group. Postpartum sport activities and exercises have many psychological benefits in addition to many physical benefits for women, so most psychologists consider exercise as a way to deplete physical energies along with the vitality

and cheerfulness of mind. Therefore, sport and exercise as an appropriate, non-invasive, therapeutic intervention, with low costs and low side effects comparing to drug therapies, can be used as one of the best effective interventions along with antidepressants and psychotherapy.

### Conflict of interest

It is declared by all authors that there is no conflict of interest.

### REFERENCES:

1. Murry CJL, Lopez AD. (1997). Alternative projections of mortality and disability by cause 1990-2020: Global Burden of Disease Study. *Lancet*, 349, 1498-1504.
2. Nonacs R, Cohen LS. (1998). Postpartum mood disorders: diagnosis and treatment guidelines. *Clin J Psychiatry*, 59(2), 34.
3. Varney H, Jan M, Carolyn L (2004). *Varneys Midwifery*, 5th ed. Jones and Bartlett, Sadburg- Massachusetts, 1098-1102.
4. Bondar L et al (2005) "Have we forgotten the significance of postpartum iron deficiency. *American Journal of Obstetrics and Gynecology*. 193 (1) 136-44
5. Nobel R (2005) Depression in woman. *Metabolism*. 154 (5) 48-5
6. Wisner KL, Parry B, Piontek C. Postpartum Depression. *N Engl J Med* 2002; 347: 194-199.
7. Khamseh, Feryal. The study of psychosocial factors affecting the incidence of depression in postpartum women in the hospitals of Karaj city hospital. Summary of congress articles. *Nursing newcomers on mood disorders from prevention to rehabilitation*, Tabriz, 2000, pages 178 to 182.
8. Golder M.; Medio, R.; Geddes H. *Oxford Psychiatry*, Translated by Nusratollah Pour Afkari, First Edition, Tehran, Golban Publications, 2002, Pages: 3-12.
9. Azemi-Khah, Arash,; Jalilvand Pourn. Improving the maternal mortality care system. Tehran: Ministry of Family Health and Population. Health care and medical education, 2003.
10. Azemi-Khah, Arash,; Imami- Afshar Neshzat, Radpooyan, Laleh. *Mothers Health Promotion Program*. First Edition. Tehran: Health Office. Family and population of the Ministry of Health and Medical Education, 2002.
11. London M, Ladewig P, Ball J, Bindler R. *Maternal and child nursing care*. 2th ed. Upper Saddle River: Pearson Prentice Hall; 2007.
12. Rubertsson C, Wickberg B, Gustavsson P,

- Rådestad I. Depressive symptoms in early pregnancy, two months and one year postpartum-prevalence and psychosocial risk factors in a national Swedish sample. *Arch WomensMent. Health.* 2005;8:97- 104.
13. Beck, C, Niels. Siegel, Lawrence J. "Preparation for childbirth and contemporary research on pain, Anxiety and stress reduction: A review and critique." Sigel LJ *psychosom Med.* 1980. 42: 429
  14. NematollahzadehMahani, Kazem. Treatment of depression with exercise. *Psychological Research*, 1992, Volume 1, Issue 3 & 4, pp. 25-36
  15. Hatami H, Razavi SM, Eftekhar AH, Majlesi F, SayedNozadi M, Parizadeh SMJ. [Text book of public health]. First edition. Tehran: Arjmand Publications; 2006. P. 1656 (Persian).
  16. Artal R. Exercise and pregnancy. *Clin Sports Med* 1992;11(2):363-77.
  17. MoslemiHaghighi F, Kazemi B. The relationship of low back pain with gravidae and delivery. *J Qazvin UnivMedSci* 2000;4(3):51-46. (Full Text in Persian)
  18. Izard CE. The face of emotion. New York, Appleton, 1971; P:29
  19. Berger BG, Owen DR. Mood alteration with yoga and swimming: aerobic exercise may not be necessary. *Percept Mot Skills* 1992; 75(3pt2): 1331-43.
  20. Mahram B. The normative of Spielberger anxiety test in Mashhad city. Thesis of module and evaluation in psychology. Psychology College AllamehTabatabaie University 2000. [in Persian]
  21. Karke Abadi M. [Comparison of depression in employment and unemployment women in Mashhad]. [Dissertation in Persian].Mashhad: Mashhad Univsity of Medical Science;1998:83.
  22. Ayldrabad I, Firoozkooh MR, mazloom Reza. Navidian A. Prevalence of depression Zabol Medical School in the academic year 81 - *Journal of Medical Sciences* 1383:1(2):15-21
  23. Azemi.). Comparison of antenatal and postnatal depression between mothers with normal and disable children. (Unpublished Master's thesis, Allameh Tabatabayi University(2005). (Persian).
  24. DiLorenzo TM, Bargman EP, Stucky-Ropp R, Brassington GS, Frensch PA, Lafontaine T. Long term effects of aerobic exercise on psychological outcomes. *Prev Med* 1999; 28(1): 75-85.
  25. Armstrong K, Edwards H. The effect of exercise and social support on mothers reporting depressive symptoms: a pilot randomized controlled trial. *Int J Ment Health Nurs* 2003 Jun;12(2):130-8.
  26. Mardi A, Molovi P, Tazakkori Z, Mashoufi M, Amini Sani N. [Effect of exercise on mild postpartum depression in patients referred to health centers, Care Ardabih City] [Article in Persian] *J Ardabil Univ Med Sci* 2003Winter;3(10):43-8.
  27. Ko YL, Yang CL, Fang CL, Lee MY, Lin PC. Community-based postpartum exercise program. *J ClinNurs.* 2013;22(15-16):2122-31. doi: 10.1111/jocn.12117
  28. Demissie Z, Siega-Riz AM, Evenson KR, Herring AH, Dole N, Gaynes BN. Physical activity during pregnancy and postpartum depressive symptoms. *Midwifery.* 2013;29(2):139-47. Doi:10.1016/j.midw.2011.12.006.
  29. Mohammadi F, Malakooti J, Babapoor J, Mohammad-Alizadeh-Charandabi S. The effect of a home-based exercise intervention on postnatal depression and fatigue: A randomized controlled trial. *Int J NursPract.* 2015;21(5):478-85. doi: 10.1111/ijn.12259.