

Immediate Effect Of Musical Low-Intensity Aerobic Exercises Vs Conventional Care In Reducing Postpartum Depression And Insomnia In Young Aged Primi Gravidae Of Rural Area

Mishra Ruchi¹, Jha Sanjeev²

¹Associate professor, Ujjain Institute of Paramedical Sciences, R.D.G.M.C.; ²Principal and Professor, Ujjain institute of paramedical sciences, R.D.G.M.C, MP, India.

Background: Research studies have ascertained postpartum depression and sleep disorder as risk factors, chronically affecting women's health in rural area after childbirth producing deleterious impact on family life and development of infant. Although proper exercises plan with nutrition seems to have positive impact on mental health. Thus the present study has been carried out. **Aim:** The present study aims to assess the comparative effect of musical aerobic exercises and conventional care to reduced PND and sleep problems. **Methods:** In present experimental study, around 20 rural women (malwa region) of post-partum period, for upto 2 week, were randomly selected on the basis of inclusion criteria. First reading on Edinburgh post-natal depression scale (EPDS) and Athens insomnia scale is taken on 2nd day of delivery with reassessment after 10 sittings in hospital admitted patients. **Data analysis** was performed using paired t- test via SPSS 17.0 significance level of the test was also considered $p \leq 0.05$ the results showed that both post natal depression and insomnia decreases significantly after two weeks ($p = 0.001$). **Conclusion:** The study concluded that musical aerobic exercise can improve mental health and insomnia in young aged primi gravidae of rural area.

INTRODUCTION

Post-natal period is the period beginning immediately after the birth of a child & extending for about six weeks¹ Pregnancy and post-natal period are considered as most delicate period for a women's life, when she is more susceptible to become mentally

unwell, the most frequent form of maternal morbidity following delivery¹⁵. After child birth, dramatic drop in hormones (estrogen & progesterone) in body is responsible for post natal depression and sleep disorders¹⁶. Post-partum depressive symptoms negatively affect the quality of life and have a detrimental

effect on mother- infant relationship contributing towards child's cognitive and emotional lacking/deprivation.¹⁴

Recent studies epitomized that Post natal depression rates have increased significantly over the past 50 years up from 8% in 1950s to 27% in 21st century.² These studies were more or less were conducted on urban educated population whereas in indian scenario with rural area population this may affect on broad level which may be left undocumented and untreated. Maternal mental ill health and its cure is one of the untouched part of post-natal rehabilitation ¹⁵. Providing psychological support is one of the most important need of the time in order to prevent the mother from this mental depressed state. Thus this study is designed to investigate the postpartum depression (PPD) and sleep problem among primi gravida mothers after 2nd day of delivery.

Simultaneously few studies were conducted to prove the effect of regular exercises and physical activity on decreasing mental disorders in women^{2,4} Aerobic exercise is known to enhance mood & cognitive function in women. Music intervention, listening to playing a instrument, has also been show to improve depression & cognitive function. Music

havevaried effect on the auditory & endocrine system. Music melody & rhythm can simulate nerve impulses through the limbic system the thalamus & reticular activating system (RAS) thereby affecting the neuroendocrine system in humans, recently exercise has been shown to increase brain-derived neurotrophic factors. An exercise program with rhythmic music that stimulates increased brain-derived neurotrophic factor & immune parameters resulting in a reduction in depression symptom. In this study, the researcher develop a moderate exercise program that integrates rhythmic music, called MAE with a maximal heart rate (HRmax) .HR(max) is calculated by karnoven formula of $(220 - \text{age})^{11}$.

Therefore in the present study, we intend to investigate the effects of two weeks of musical aerobics exercises on depression and sleep disorders in women with post-natal period

Literature Review

The search of the literature was made in MEDLINE database for up to recent studies. Original articles, reviews, surveys, clinical trials and investigations pertinent to the research were considered for this study.

Shokri et al (2014) investigated the effects of 8 weeks of aerobics exercise on depression anxiety and sleep disorder. The study was conducted over 16 middle aged women who voluntarily participated and underwent regular walking for 8 weeks, 3 sessions per week, each session lasting for 60 minutes with 60% of max heart rate. This concluded that aerobic exercise can improve mental health and enhance life quality in middle aged women.

Zagade and Deshpande, 2013 assessed the level of depression in postnatal mothers using Edinburgh scale over 60 mothers in post natal period. This was concluded that prevalence of post natal depression is more in age group 21-25 years.

Glavin K, Smith L, Sørnum R (2009) conducted the study to identify Prevalence of postpartum depression in two municipalities in Norway. The objectives of this study were to describe the prevalence of postpartum depression (PPD) in two Norwegian municipalities and (ii) to investigate whether mothers' age and parity are related to the development of PPD. A total of 2227 women, 437 from M1 and 1790 from M2 participated in the study where The Edinburgh Postnatal Depression Scale (EPDS) at well baby

clinics 6 weeks after delivery has been completed. However, there was a significant difference between the municipalities, with a prevalence of 14.4% in M1 and 9% in M2. Primiparous mothers showed a higher prevalence than multiparous mothers did, and the oldest mothers (36 years and over) showed the highest prevalence of PPD

Savarimuthu, 2009, conducted a qualitative study from rural south India where 137 women in the post-partum period were assessed using the Edinburgh Postnatal Depression Scale and a semi-structured interview to diagnose ICD 10 depression. This study proves that few social and cultural factors including age less than 20 or over 30 years, schooling less than five years, thoughts of aborting current pregnancy, unhappy marriage, physical abuse during current pregnancy and after childbirth, husband's use of alcohol, girl child delivered in the absence of living boys and a preference for a boy and low birth weight have a major impact on post-partum depression.

J.R.W Fisher conducted the study to To examine depressive symptomatology in women after childbirth at Setting Hung Vuong

Obstetrics and Gynaecology Hospital and the Maternal, Child Health and Family Planning Centre of Ho Chi Minh City, Vietnam. Total of 506 women who participated, out of which 166 (33%) had EPDS scores in the clinical range of >12 and 99 (19%) acknowledged suicidal ideation. In a forward stepwise logistic regression analysis, 77% of cases with EPDS scores >12 were came with Depressive symptoms.

Anoop S, 2004, conducted the study to determine whether current and postpartum maternal depression and low maternal intelligence are risk factors for malnutrition in children. The interactions between current maternal depression and low birth weight and between postpartum depression and low maternal intelligence were statistically significant. This study concluded that there is evidence for an association between postpartum maternal depression, low maternal intelligence, and low birth weight with malnutrition in children aged 6-12 months.

Aims and Objective

Aims:-

- To assess the effect of music aerobic exercise to reduced PND and sleep problems.
- To assess effect of usual care & active exercises to reduced PND and sleep problems.

Objective:-

- To reduce PND and sleep problems.
- To improve quality of life of females.

Methodology

The present experimental design study aimed at assessing the effect of musical aerobic exercise in comparison to conventional care to reduced PND

Source of data :-

R.D.Gardi medical college & Hospital Ujjain(m.p.)

Duration of study :-

The total duration of treatment programmed was 2 week with regular sitting per week. The first assesment after 2ndday of delivery & reassessment done at end of

last week. Normally delivered females were asked for longer stay for upto 2 weeks in IPD with permission of respective department.

Sample size:-

Total number of patient is 20 out of which 10 females were randomly selected in each group on the basis of inclusion & exclusion criteria.

Outcome measures:-

- Edinburgh post-natal depression scale (EPDS).
- Athens insomnia scale .

Inclusion criteria :-

- Patient with age 20 to 25 year females.
- primi gravida .
- EPDS scoring must be... and athens insomnia scale
- Post-natal period between 2nd day- 2 weeks (immediate post-natal period).
- Husband income must be up to 10,000 monthly
- Mother education 1st-10th class.
- Normal delivery

Exclusion criteria :-

- Caesarian section.
- Multigravida.
- Any psychotic disorders or any other medical problems.
- Women whose babies died.
- Patient having drug dependency.

Procedure

In the present study 20 normally delivered primi gravidae were

selected from Gynae IPD, R.D. Gardi medical college and hospital, Ujjain. Which are recruited in 2 groups by cluster random sampling used in different group.

In this study patients with PND is selected. selection of patients according EPDS and Athens scales. The written consent was signed by the participants. The patient divided into two groups according to inclusion criteria. Participants were assigned randomly into experimental & comparison group, The participants were also informed that MAE exercise was specifically for the experimental group & active exercise for the control group, along with usual care was required during the study course. Group A (experimental group) consist of 10 patients & group B (control group) consist of 10 patients.

Pre & post-exercise test included depression scores on EPDS, and sleep problems scores on ATHENS, are measured before beginning of treatment & after ending of treatment, re-assessment done to detect changes in the outcome indicators.

Scale conducted questionnaire interview.

Treatment process took about 30 minutes for each participant. The experimental group received a regular schedule of musical aerobics exercises (30 minutes, for two weeks), whereas the control group received a regular schedule of musical active exercises (30 min, for two weeks) & usual care.

After this the depression was recorded by EPDS the participants were asked to mark their intensity of depression on EPDS in data collection sheet with 0 to 30.

Where 0- 10 symbolized minor depression 10- 20 - symbolized moderate depression, 20 - 30 symbolized severe depression.

Treatment regime for group A: -

Warm-up stage 10 reps each with two quiet music song followed by :-	Active exercise 20 reps each with fast rhythm followed by :-	Cool-down stage active stretching exercise 3 reps with 30 sec hold with two quiet music followed by :-
<ul style="list-style-type: none"> • pelvic rotation in standing • Leg curl • Knee extension • Ankle movements • Neck rotation • Shoulder • Elbow movements • Wrist movements • Waist rotations 	<p>March stepping</p> <p>V- shape stepping</p> <p>3 Δ - shape</p> <p>Step touch :-</p> <p>(Note :- 5 second rest between two exercise)</p>	<ul style="list-style-type: none"> • Hamstring stretching . • Quadriceps stretching • Calf stretching :-. • (Note:- 5 second rest between every repetition). <p><i>Meditation.</i></p> <ul style="list-style-type: none"> • . Based on the psychological analysis during study period (during session of exercises), psychological counselling was done at the time of discharge to make process more effective. • <i>Deep breathing exercises :- 10 repetition</i>

Treatment regime for group B: -

Conventional Care	Active Exercise 10 Reps Each
<ul style="list-style-type: none"> ○ Eat confinement food , avoid cooling stuff such as cold drinks ,fruits. 	<ul style="list-style-type: none"> • shoulder joints movements

<ul style="list-style-type: none"> ○ Do not diet. ○ Have ample rest , catch up on short naps throughout the day. ○ Have a post-natal massage for relaxation, reduced stress & also to relive from body aches. ○ Maintain proper hygiene especially on your cesarean incision. ○ Take a quick hot bath once a day. ○ Do not shy to ask for help. ○ Have some personal time, ○ Talk other mums. ○ Live in joyful environment. ○ Try to avoid more stress. ○ Talking with baby & making bonding. Find someone ,you can talk to. 	<ul style="list-style-type: none"> ● Neck movements ● Elbow movements ● Wrist movements. ● Finger exercises. ● Hip movements. ● Knee movements. ● Ankle movements. ● Toes movements. ● Slow walking :- 5 minutes. ● Deep breathing exercises :- 2 minutes. ● Meditation with music :- 5 minutes.
---	---

STATICAL ANALYSIS

Analysis of data collected with Athens score and EPDS of 20 subjects. Suitable statistical analysis test was used in order to verify the investigation of the study. Statistics was performed using the software package SPSS 17.0. The characteristics of the data are represented through tables. Pre and post test scores of ATHENS SCORE and EPDS were analyzed using paired t-test within the group. Independent t- test was used to find out any significant difference between groups A and B. Significance level was defined at $P < 0.05$.

RESULT

Thenaftertheinterventions,i.e.afterthe 14 sessions ,thepatients sleep is measured through ATHENS SCORE and depression level measured by EPDS SCORE .

Pre- and post-treatment comparison had been done by Paired t-test for both the parameters. Comparison between the groups had been done by unpaired t-test.

TABLE NO. 1

BASELINE CHARACTERISTIC OF PARTICIPANTS		
Variable	GroupA(Exp)	GroupB(Con)
Female	10	10
Age/YearMean	21.80	21.30

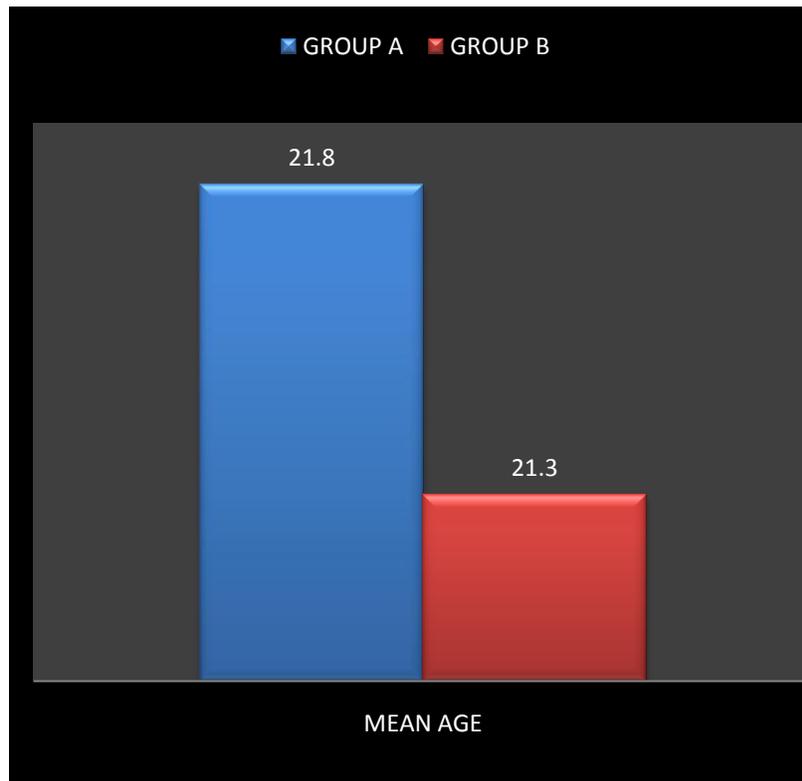


TABLE NO. 2
BOTH GROUP PRE VALUE

	GROUP A MEAN	GROUP B MEAN	SD	T- VALUE	p- value
ATHENS SCORE	8.50	10.80	2.83	-2.570	.626
EPDS SCORE	12.90	13.90	4.71	.671	.519

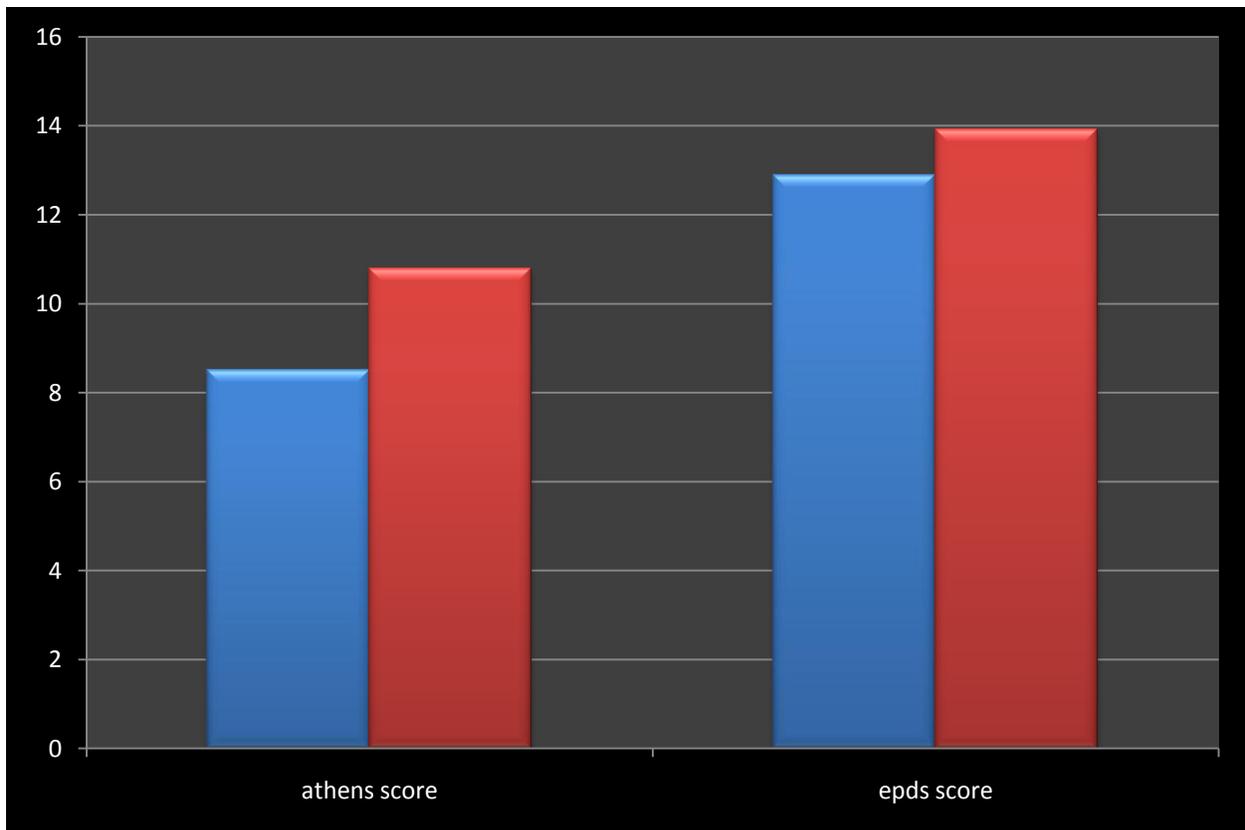


TABLE NO.3

BOTH GROUP PRE AND POST VALUE

	GROUP A		GROUP B		SD		T-VALUE		p-value
	MEAN		MEAN						
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	
ATHENS SCORE	8.50	0.40	10.80	4.20	2.83	2.65	15.3999	7.071	.000
EPDS SCORE	12.90	2.80	13.90	9.30	4.71	4.11	13.50	9.36	.000

ATHENS SCORE

EPDS SCORE

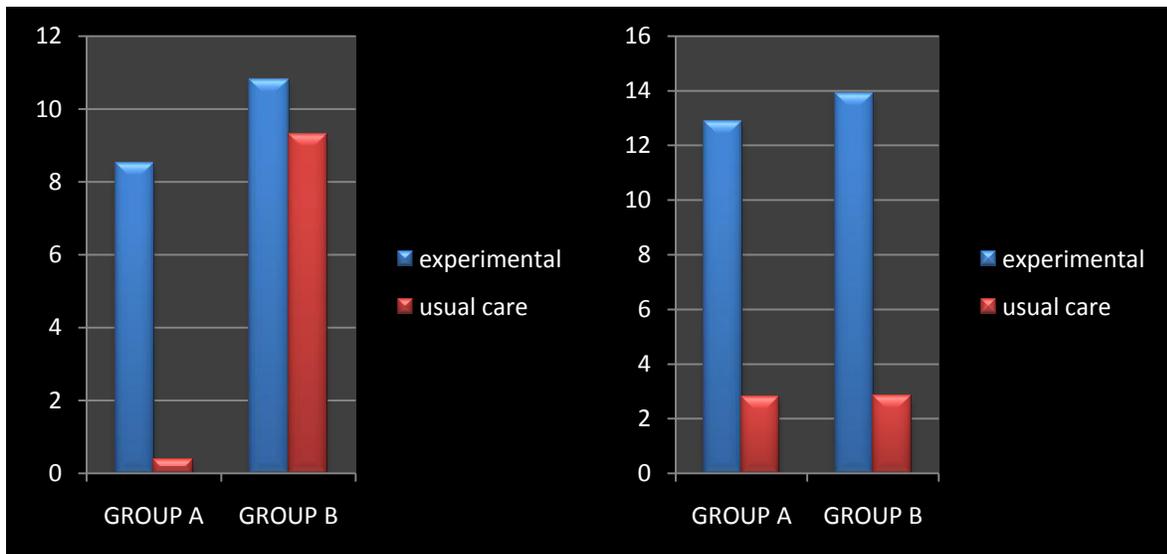
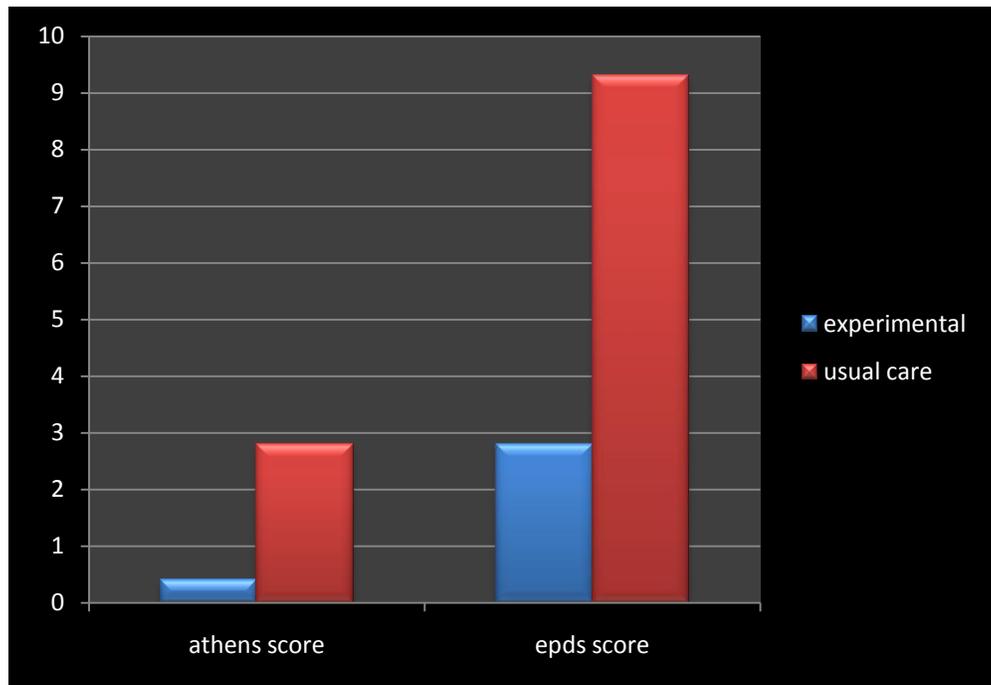


TABLE NO.4

BOTH GROUP POST VALUE

	GROUP A MEAN	GROUP B MEAN	SD	T- VALUE	p- value
ATHENS SCORE	0.40	4.20	2.65	-4.520	.001
EPDS SCORE	2.80	9.30	4.11	-4.993	.001



DISCUSSION

The study was performed for 2 weeks. MAE & conventional care results reduction in PND and sleep problems. We developed a moderate exercise program with music called music aerobic exercise (MAE), which is easy to follow exercise. Study conducted among depressed women participants in intervention study ,which show that exercise has a significant impact in lowering the depression. It is associated with an increased level of certain chemicals in the brain through brain neurotransmitters called endorphin which interact with brain receptors to reduce pain & stabilized body temperature.¹² Thus, we combined music with moderate aerobic exercise to benefit human immunity & mental functioning. Music can influence the physiological & psychological response of its listeners. Some kind of music can even relieve pain, reduced anxiety & promote sleep quality. We also found that the combination of music & exercise enhanced immunity, induced the release of beneficial hormones such as brain - derived neurotransmitters factors (BDNF) & decreased depression symptoms¹¹.

Exercise training reduces stress and depression. One of the most effective mechanism in reducing depression due to exercise training can be increased levels of serotonin and norepinephrine, which results in endorphin release and cortisol reduced secretion. Probably increased levels of endorphin, nor epinephrine and serotonin followed by a decrease in cortisol secretion were one of the reasons of reduced depression³.

Effect of aerobics exercise on psychological and physiological mechanisms such as increased feeling of self - efficiency, perceived self-control, reduced stress and physiological responses to stress and useful effects on brain's neurotransmitter are assumed to affect psychological health. Some also believe that regular exercise participation keeps mind away from negative thoughts. Exercise helps people feel better about their appearance and this can be an effective means of psychotherapy and counseling in decreasing sleep problems and depression^{3,8}.

CONCLUSION

While conducting the study more significant changes were seen in GROUP A and less changes in GROUP B. Thus, this study established that musical aerobic exercises are more effective than active exercises with conventional care.

References :

1. Smith, L., & Sørnum, R. (2009). Prevalence of postpartum depression in two municipalities in Norway. *Scandinavian journal of caring sciences*, 23(4), 705-710.
2. Zagade, T. B., & Deshpande, P. (2015). A study to assess the level of postnatal depression among postnatal mothers admitted in the Krishna Hospital, Karad. *International Journal of Science and Research (IJSR)*, 4(4), 85-90.
3. Fisher, J. R. W., Morrow, M. M., Ngoc, N. N., & Anh, L. H. (2004). Prevalence, nature, severity and correlates of postpartum depressive symptoms in Vietnam. *BJOG: An International Journal of Obstetrics & Gynaecology*, 111(12), 1353-1360.
4. Shokri, F., Khoshnam, E., & Nikseresht, A. (2014). The effect of eight weeks of aerobic exercise on depression, anxiety and sleep disorders in middle-aged women. *Eur J Exp Biol*, 4(1), 557-559.
5. Ramesha Rukh ,Huda Kafeel,safila naveed ghulam sarwar .2014 prevalence of post partum depression in primigravida and multigravida with normal
6. Daley, A. (2008). Exercise and depression: a review of reviews. *Journal of clinical psychology in medical settings*, 15(2), 140.
7. Daley, A. J., MacArthur, C., & Winter, H. (2007). The role of exercise in treating postpartum depression: a review of the literature. *Journal of midwifery & women's health*, 52(1), 56-62.
8. Glavin K, Smith L, Sørnum R (2009) Prevalence of postpartum depression in two municipalities in Norway
9. Savarimuthu, (2009), Assessed 137 women in the post-partum period Rural south India using the Edinburgh Postnatal Depression Scale and a semi-structured interview to diagnose ICD 10 depression.
10. J.R.W Fisher, examined depressive symptomatology in women after childbirth at Setting Hung Vuong Obstetrics and Gynaecology Hospital and the Maternal, Child Health and Family Planning Centre of Ho Chi Minh City,
11. Anoop S, (2004), determine whether current and postpartum maternal depression and low maternal intelligence are risk factors for malnutrition in children.
12. Yeh, S. H., Lin, L. W., Chuang, Y. K., Liu, C. L., Tsai, L. J., Tsuei, F. S., ... & Yang, K. D. (2015). Effects of music aerobic exercise on depression and brain-derived neurotrophic factor levels in community dwelling women. *BioMed research international*, 2015.
13. Poerwanto et al (2017). the out come of post natal exercise on depressed women 6-16 weeks after delivery sukha bumi city, 2014 : pre and post intervention study journal of health and medical informatics.

14. Desai nimisha ,Mehta ritambhara Y ganjiwale Jaishree (2012).study of prevalence and risk factors of postpartum depression .*national journal of medical research* volume 2 issue 2 ,194-198.
15. Kruthika, K., Udayar, S. E., & Mallapur, M. D. (2017). An epidemiological study of postnatal depression among women availing maternal health services in rural areas of Belagavi, Karnataka, India. *International Journal Of Community Medicine And Public Health*, 4(3), 759-763.
16. Bei, B., Coo, S., & Trinder, J. (2015). Sleep and mood during pregnancy and the postpartum period. *Sleep medicine clinics*, 10(1), 25-