

# Effects of Yoga Therapy on Pain and Depression during the Second Trimester of Pregnancy

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**Abstract:** *This quasi - experimental study investigates the effects of prenatal yoga on pelvic girdle pain PGP and depression in pregnant women during their second trimester. The study involved 10 participants aged 23 - 28 years with a gestational age of 14 - 27 weeks, all experiencing significant pain and depression. Over three weeks, participants practiced prenatal yoga for 30 minutes a day, three times a week. Pain and depression levels were measured using the Visual Analog Scale VAS and Hamilton Depression Rating Scale HDRS before and after the intervention. The results showed a significant reduction in both pain and depression, with calculated t values of 7.236 and 6.678, respectively  $p < 0.05$ . This study supports the effectiveness of prenatal yoga as a non - pharmacological approach to alleviate pain and depression.*

**Keywords:** Prenatal yoga, pelvic girdle pain, depression, pregnancy, non - pharmacological therapy

## 1. Introduction

Pregnancy is a unique state of physiological stress, which necessitates physical, mental, and social adaptation. Pregnant women respond differently to identical stressful stimuli, depending on genetic factors, personality traits, previous experience, and social support. Depression responses to stressfully demanding situations may affect the healthy progression of pregnancy as observed by many researchers. Depressed women had higher symptom frequency, more discomfort, flatulence, and fatigue. Pelvic girdle pain is a specific lower back pain that existed between the iliac crests and the gluteal fold and around the sacroiliac joints. The incidence of pelvic girdle pain is 24 - 50% in pregnant women (Engeset et al., 2014) and around 50% worldwide (Levac et al., 2012). Meanwhile, based on data from the Cochrane library about 1/5 of pregnant women have experienced pelvic pain (Liddle & Pennick 2015).

Many factors contribute to the cause of pelvic pain during pregnancy, including hormonal, biomechanical, genetic, metabolic, as well as degenerative factors (Dong et al., 2020; Hinobayashi et al., 2013). Yoga is a mind and body practice that encompasses a system of stretching exercises and postures (asana) combined with deep breathing (pranayama) and meditation. Yoga requires mindful coordination of body movement and breath with a focus on self - awareness. The evidence suggests that the benefits of yoga continue to rise. Pregnant women with PGP will more easily develop complications in the delivery process and have difficulty in performing the mother's role because they always feel uncomfortable in their pelvis. The management of PGP is carried out with several suggestions for exercising during pregnancy, getting various kinds of information on how to prevent severe pain, and understanding the cause of PGP to be able to avoid it. Yoga as an exercise is known to reduce pain, depression, and discomfort during pregnancy. It is

useful in alleviating pain during pregnancy and safe for pregnant women.

## 2. Materials and Methodology

This is a Quasi Experimental study that includes 10 pregnant women in the second trimester who were selected in to the study based on the selection criteria. This study includes pregnant women between the gestational age of 14 to 27 weeks, Primi gravida, age 23 to 28 years, pain score of  $\geq 7$  in VAS, a score of  $\geq 20$  in Hamilton Depression Rating Scale. Women diagnosed of gestational diabetes mellitus, gestational hypertension, twins, High risk pregnancy were excluded from the study. The treatment was given for a period of 3 weeks. The independent and dependent variable of the study were Visual Analog Scale, Hamilton Depression Rating Scale and Pelvic girdle pain, Depression respectively.

## 3. Procedure

The treatment group consisted of 10 pregnant women who were given prenatal yoga for pain relief and depression reduction. The measurement of pelvic girdle pain scale with a visual analog scale and HDRS for depression before and after 3 weeks of intervention. The treatment group was previously trained to do prenatal yoga by explaining and demonstrating appropriate prenatal yoga therapy. Then they were asked to practice it individually at home for at least 30 minutes a day, 3 times a week, for 2 weeks. Each respondent was monitored using an online messaging application to check compliance with doing yoga at home independently according to a schedule and a checklist form was provided for yoga practice. Compliance was ensured by phone calls and maintenance of activity daily.

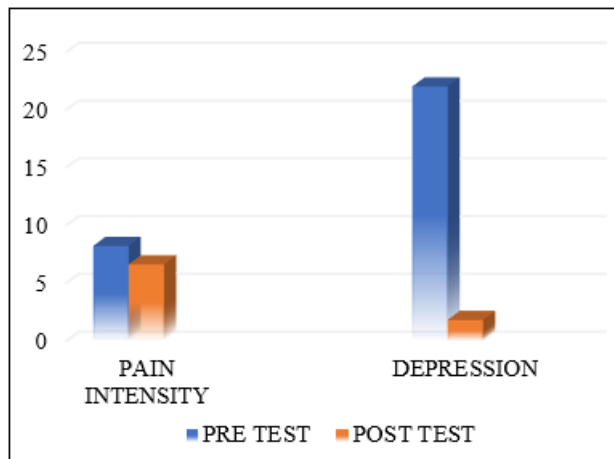
The Yoga exercises are 1. Vajrasana 2. Matsya kridasana 3. Marjariasana 4. Tadasana 5. Bhadrasana 6. Kati chakrasana.

#### 4. Data Analysis

The data analysis was done using paired 't' test. The calculated 't' value for pain and depression are 7.236 and

6.678 with  $P < 0.05$ . For 9 degrees of freedom and 5% level of significance the corresponding table 't' value is 2.26. The above results in expressive of significant chane in the pain and depression status among pregnant women after the treatment session.

Outcome Measure	Mean Value		Calculated 't' Value	Table 't' Value	Level of Significance
	Pre Test	Post Test			
Pain Intensity	8.20	6.60	7.236	2.26	$P < 0.05$ significant
Depression	21.0	19.0	6.678	2.26	$P < 0.05$ significant



#### 5. Discussion

Yoga means, to unite the mind, body, and spirit. The fundamental principle of the yoga method is that disorders have a psychosomatic origin. In the physical aspect, these disorders are triggered by an imbalance of the autonomic nervous system. Yoga intervention is aimed at regulating the psycho - neural - endocrine structures through the hypothalamus - pituitary - adrenal axis to rebalance the autonomic nervous system.

The health benefits from yoga include a reduction in perceived stress, anxiety, depression, chronic back pain, and migraine and may have a benefit in conditions such as hypertension and diabetes. Pranayama breathing, also known as deep breathing, is defined as a voluntary manipulation of breath movement and serves as the cornerstone of any yoga practice. Slow, deliberate, deep breathing activates the parasympathetic nervous system mainly by stretching lung tissue and vagal nerves. This leads to a physiological response characterized by a decrease in heart rate, blood pressure, metabolic rate, and oxygen consumption. Performing yoga will improve concentration, intelligence, and motor control.

The natural physiological adaptations that occur in pregnancy such as an increase in cardiac output, heart rate, and plasma volume could be counteracted by intentional parasympathetic activation during yoga. The results of this study are consistent with a randomized controlled trial conducted in Brazil that involved 60 pregnant women with lumbopelvic pain. This trial found that the hatha yoga exercise was effective in reducing pain after 10 time - practice (Martín - García et al., 2020).

In addition, a prospective randomized controlled pilot clinical trial involving 115 pregnant women without complications in

Israel showed that yoga was safe for pregnant women without any adverse effects and it was able to improve biomechanics (gait speed, turn time, double support 19 time, and instrumented timed - up and go) so that it has the effect of reducing bodily discomfort due to pelvic pain (Holden et al., 2019). Reports from a literature review of 10 randomized controlled trial studies that have been evaluated state that yoga exercise is safe for pregnant women who are at high risk of developing or experiencing lower back pain during pregnancy ( $p < 0.05$ ).

Yoga is a more effective exercise than walking or standard prenatal exercise. Experimental research on 92 pregnant women who experienced depression and anxiety during pregnancy showed that yoga proved to be effective in reducing depression, anxiety, leg pain, and back pain when practiced at least 20 minutes a day for 12 weeks ( $p = 0.05$ ) (Ivanova et al., 2018). The results of these studies are consistent with the results of our study that prenatal yoga for pain relief was able to significantly reduce pelvic girdle pain when performed for 30 minutes a day.

Prenatal Yoga exercise may reduce pain related to several body mechanisms in the psychoneural - endocrine regulatory system structure through the hypothalamus - pituitary - adrenal axis which rebalances the central nervous system (Campbel et al., 2014). In addition, yoga affects the biomechanics of the body by lowering plasma concentrations of stress hormones (cortisol and catecholamines) (Field et al., 2013; Kamei & Toriumi, 2000; Martins & Pinto E Silva, 2014).

Our research has several advantages. It is an experimental study using standardized yoga training techniques. The number of samples used is considered to represent the minimum number of samples for intervention research. This study, however, also has some drawbacks. For example, respondents were practicing prenatal yoga only for 2 weeks, but this drawback was overcome by the frequency of doing yoga (at least 3 times a week). Besides that, monitoring yoga that is done by pregnant women at home is only done through an online message application and a list of forms that must be filled out by pregnant women whenever they do yoga exercises at home, so pregnant women can do not according to standards that may occur. The poses act on all biomechanical axes and are actively performed by the patient, favoring the rebalance of muscles, joints, and ligaments.

#### 6. Conclusion

The study has concluded that yoga therapy was effective in reducing pain and depression in the second trimester of

pregnancy. The limitations of the study are reduced sample size, lack of follow up and the recommendations of the study are usage of other scales for pain assessment that has psychometric properties such as McGill questionnaire, Brief Pain Inventory. Use of symptom specific tool such as pelvic girdle pain questionnaire, Diet modification can be added.

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