

## Pregnancy-Induced Post-Natal Back Pain

Sushmita Neog\*

### Abstract

*Pregnancy-induced post-natal back pain (PNBP) is a common condition that affects many women following childbirth, significantly impacting their quality of life and physical functioning. The physiological and anatomical changes during pregnancy, such as weight gain, altered posture, and hormonal changes, contribute to the onset of back pain. As the body prepares for delivery, the pelvis and spine undergo structural shifts that can strain the muscles and ligaments supporting the lower back. After delivery, the recovery process may be complicated by the demands of infant care, leading to persistent discomfort. This article explores the underlying causes, risk factors, and treatment options for pregnancy-induced post-natal back pain. It reviews the role of hormonal changes, muscle imbalances, and postural adjustments that contribute to the development of back pain in the post-natal period. The review also examines the impact of factors such as previous back problems, prolonged labor, and the use of epidural anesthesia, which can exacerbate post-natal back pain. Additionally, the article highlights effective management strategies, including physical therapy, core strengthening exercises, and ergonomic modifications, aimed at relieving pain and improving functional recovery. Psychological support, rest, and proper posture while breastfeeding or lifting the infant are also essential components of treatment. The role of healthcare providers in educating new mothers on post-natal back care is emphasized to prevent long-term complications. In conclusion, while pregnancy-induced post-natal back pain is common, it is often manageable with a multidisciplinary approach. Early intervention and tailored physical therapy programs are crucial in ensuring proper recovery, minimizing pain, and restoring overall well-being for new mothers.*

**Keywords:** Pregnancy-induced back pain, post-natal recovery, back pain management, core strengthening, physical therapy, postural adjustments

### INTRODUCTION

Becoming a mother is a beautiful experience for a woman. Pregnancy spans 40 weeks from conception to delivery, and it brings about lots of changes in a mother's body like increased body weight, rise in abdominal pressure, hyper-lordosis which leads to postural deviation, heaviness in the lower limbs, incontinence, low and upper back pain, obesity, depression, etc. [1].

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Low back pain (LBP) is a common and costly health problem with high prevalence and incidence rates. Women seem to be more prone to LBP and pregnancy is one of the conditions that predisposes women to LBP. Many pregnant women consider LBP to be a normal part of pregnancy and it is expected to spontaneously disappear after delivery but this condition should be considered as a serious problem in pregnancy. For some women, LBP in pregnancy may be the beginning of lifelong chronic back pain and others may live with considerable impairment and disability [2].

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**Objectives**

1. To diagnose and treat a case of pregnancy induced post-natal back pain in an effective and ideal way.
2. To find out the effect of treatment without using any electrotherapeutic modalities.
3. To compare different treatment approaches.
4. To find out the best treatment approach considering patient's comfort.

**CASE STUDY****Patient Details and History**

Mrs. XYZ, a 27-year-old primipara, presented with severe lower back pain at 6 weeks postpartum, rated 7 out of 10 on the Visual Analog Scale (VAS). She had undergone a cesarean section on January 10, 2024, due to fetal distress. Mrs. XYZ reported experiencing significant difficulty in lifting and carrying her baby, which further exacerbated her pain. Additionally, she described painful ambulation and persistent low back pain that radiated to her buttocks, hindering her daily activities and mobility. This combination of symptoms indicated that her postpartum recovery was significantly impaired, particularly concerning her core strength and lumbar function.

**Physical Examination**

Upon physical examination, the patient exhibited tenderness at the L4-L5 level, indicating possible musculoskeletal strain in the lumbar spine. The assessment revealed limited lumbar flexion, with only 40% of the normal range of motion, reflecting a restricted movement pattern likely due to pain, muscle stiffness, or weakness. Furthermore, core muscle weakness was observed, which contributed to poor posture and exacerbated the patient's lower back discomfort. This physical limitation was particularly impactful in her ability to perform everyday activities, such as caring for her infant and maintaining a healthy posture during routine movements.

**Intervention**

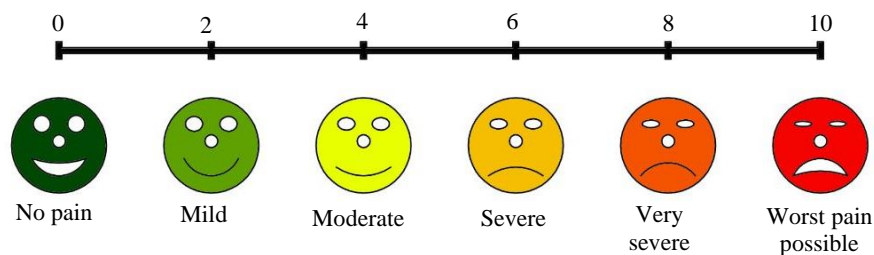
To address Mrs. XYZ's condition, a comprehensive treatment plan was implemented that focused on exercise therapy, yoga therapy, posture education, and pain management strategies. Exercise therapy was introduced to strengthen the core muscles, which were found to be weak during the examination. Core strengthening exercises aimed at improving stability and flexibility were performed daily. Yoga therapy was incorporated to enhance mobility, relieve muscle tension, and promote overall well-being. Breathing exercises from yoga helped manage pain and supported recovery by encouraging relaxation and deeper engagement of core muscles. Posture education was essential in teaching the patient how to maintain proper body alignment during daily tasks, especially when lifting or carrying her baby. Pain management strategies, including heat application, gentle stretching, and relaxation techniques, were implemented to alleviate the intensity of the pain and promote recovery.

**Outcomes**

After the intervention, significant improvements were observed. The intensity of pain, as measured on the VAS, decreased from 7/10 to 1/10, indicating a dramatic reduction in discomfort. Lumbar flexion improved from 40% to 80%, suggesting that the range of motion in the lower back had considerably increased, allowing the patient to move more freely. Additionally, there was a marked enhancement in her functional ability. She was able to perform daily activities, including lifting and carrying her baby, with less pain and more confidence. The combination of targeted exercises, yoga therapy, and education on proper posture played a crucial role in her successful recovery.

**METHODOLOGY****Visual Analog Scale Score**

The pain intensity was initially assessed using the VAS, with a score of 7/10 indicating severe discomfort [3]. This scale was used as a baseline measurement to track improvements in pain levels over the course of the intervention. The VAS score was regularly reassessed to evaluate the effectiveness of the treatment plan, and by the end of the treatment period, the patient's pain had reduced to a score of 1/10, confirming the success of the therapeutic interventions (Table 1 and Figure 1).



**Figure 1.** Ovako Working Posture Analysis System [4].

**Table 1.** The Visual Analog Scale score.

Body Parts	Score	Interpretation
Back	5	Limited flexion indicates strained posture
Arms	2	Neutral, no arm issue
Legs	2	Neutral, no leg issue
Weight	3	Moderate weight, lifting baby, household items
Total score	12	Action level: investigate and improve, low moderate risk

### Tenderness Grade

Tenderness is a critical component in assessing musculoskeletal conditions, especially when evaluating patients with lower back pain or post-operative discomfort. In the case of Mrs. XYZ, the tenderness was assessed based on palpation techniques at specific points along the lumbar spine. The tenderness was graded using a standard scale to help gauge the severity of the pain and to track changes throughout the course of treatment [4].

#### *Tenderness Grade: Grade II*

The tenderness was classified as Grade II, which signifies mild tenderness upon palpation. This grade indicates that when pressure was applied to the lumbar spine area, particularly at the L4-L5 vertebrae, the patient experienced discomfort. However, it was not intense or excruciating. During palpation, Mrs. XYZ exhibited a grimace and a slight flinch, indicating a moderate response to the applied pressure. This type of response is typical in cases where there is some inflammation, muscle tightness, or slight damage to the underlying structures such as muscles, ligaments, or intervertebral discs.

Grade II tenderness is significant because it suggests the presence of localized pain or discomfort that could affect the patient's function, particularly with movements that engage the lower back, such as lifting, bending, or walking. It also indicates that while there is pain, it is manageable and not indicative of severe injury or acute inflammation, which might warrant immediate medical intervention. This level of tenderness often correlates with muscle strains or ligament sprains, both of which can result from prolonged postures, poor body mechanics, or post-surgical recovery. Throughout the course of Mrs. XYZ's treatment plan, which included core strengthening exercises, yoga therapy, and posture education, the tenderness grade was monitored. By the end of the intervention period, the tenderness had significantly reduced, as reflected in the improvement of her pain levels and the overall progress in her range of motion. This gradual decrease in tenderness is a positive sign of healing and recovery, indicating that the treatment was effective in reducing inflammation and muscle strain in the lumbar region [5–7].

### Muscle Weakness

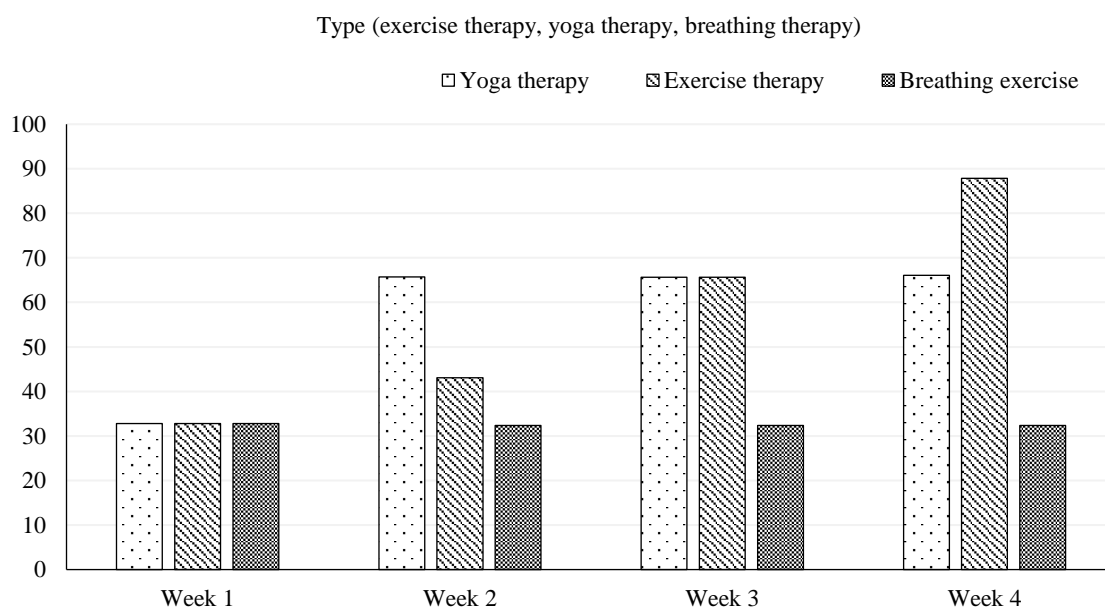
Muscle weakness, particularly in the core and lumbar regions, is a common issue for postpartum women, especially following cesarean delivery. In the case of Mrs. XYZ, a 27-year-old primipara, the weakness in her core muscles contributed significantly to her lower back pain and functional limitations. During her assessment, it was observed that she had difficulty stabilizing her trunk during everyday activities like lifting and carrying her baby. This weakness was compounded by post-surgical recovery,

which left her abdominal and lumbar muscles underdeveloped. As a result, her ability to engage in basic movements, including sitting up or bending over, was severely restricted. To address this, a comprehensive intervention plan was implemented, which included core strengthening exercises, yoga therapy, and posture education. These interventions focused on strengthening the deep abdominal muscles, improving flexibility, and correcting her posture to reduce strain on her lower back. Over the course of the treatment, Mrs. XYZ showed significant improvement in her muscle strength, with an increase in lumbar flexion and a reduction in pain intensity. By enhancing her core stability, she was able to regain functional ability and perform daily tasks with minimal discomfort, demonstrating the importance of targeted rehabilitation to recover from postpartum muscle weakness (Table 2) [6].

Exercise therapy, yoga therapy, and breathing exercises each focus on improving physical and mental well-being, but through different approaches. Exercise therapy emphasizes physical rehabilitation and strength building through structured movement. Yoga therapy combines physical postures, breathing techniques, and meditation to enhance flexibility, mental clarity, and emotional balance. Breathing exercises primarily focus on regulating the breath to reduce stress, improve lung capacity, and support overall relaxation and mindfulness. Each method offers unique benefits depending on the individual's needs and goals (Figure 2).

**Table 2.** Muscle weakness interpretation.

Type	Muscle name	Grades	Interpretation
Core	Transverse abdominal	2/5	Weak core Weak pelvic floor Relative strength in latissimus torsi and trapezius $Zx/n = 3.1/5$ $=3+/5$ (fair)
	Rectus abdominal	3/5	
	Abdominal oblique	3/5	
	Erector spinal	3+/5	
	Latissimus dorsi	4/5	
Back	Trapezius	4/5	
	Rhomboid	3+/5	
	Levator scapulae	3/5	
Pelvic	Levator ant	2+/5	
floor	Pubococcygeus	2+/5	



**Figure 2.** Comparison between exercise therapy, yoga therapy, breathing exercise.

A pie chart comparing strengthening exercise, stretching exercise, yoga, and breathing exercise would visually represent the relative focus of each activity in terms of benefits. Strengthening exercises would likely occupy a significant portion for muscle building, while stretching exercises would highlight flexibility and range of motion. Yoga, with its holistic approach, would encompass both strengthening and stretching, along with mental benefits. Breathing exercises, though smaller in scope, would represent relaxation and stress relief. The chart would emphasize the balance between physical, mental, and respiratory benefits of each practice (Figure 3).

## RESULTS

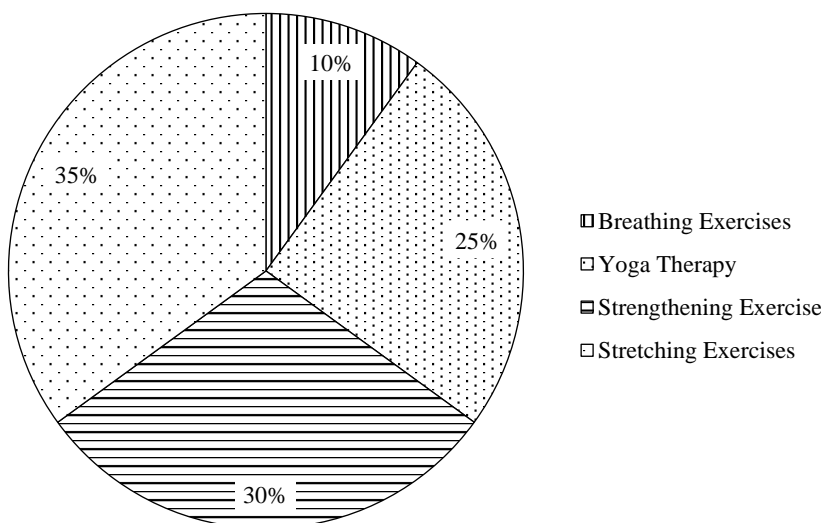
### Outcome Measures

- *Visual Analog Scale (VAS)*: Pain levels dropped significantly from 7 to 2, indicating substantial pain reduction.
- *Occupational Work Assessment Scale (OWAS)*: A decrease in the OWAS score from 12 to 9 indicated moving toward a more normal range of physical strain during work-related tasks.
- *Tenderness*: The tenderness in the affected area improved from Grade II (moderate tenderness) to Grade 0 (no tenderness), indicating a significant reduction in discomfort.
- *Manual Muscle Testing (MMT)*: The participant showed a weak core and pelvic floor at the start, but by the end of treatment, they demonstrated a good core and strong pelvic floor, signaling improved muscle strength and function.
- *Muscle Strength (Zx/n)*: The Zx/n score increased from 3.1/5 (indicating weakness) to 4/5 (indicating marked improvement in strength), further supporting the positive outcome of the intervention [8].

These results highlight a significant improvement in pain, strength, and function after the treatment period, indicating the effectiveness of the therapeutic interventions (Table 3).

**Table 3.** Outcome measures (initial versus final).

Scales and Grades	Initial (Pre-treatment)	Final (Post-treatment)
VAS (Visual Analog Scale)	7	2
OWAS (Occupational Work Assessment Scale)	12	9 (Normal)
Tenderness	Grade II (Moderate)	Grade 0 (No Tenderness)
MMT (Manual Muscle Testing)	Weak core, weak pelvic floor	Good core, strong pelvic floor
Muscle Strength (Zx/n)	Zx/n = 3.1/5 (Weak)	Zx/n = 4/5 (Improved)



**Figure 3.** Pie chart showing comparison between strengthening exercise, stretching exercise, yoga, breathing exercise.

**Table 4.** Intervention results (4 weeks' duration, 4 days per week + home exercise program).

Interventions	Description	Frequency	Duration
Exercise therapy	Strengthening, stretching, flexibility, mobility, balance, and coordination training	4 days per week + home exercises	4 weeks
Yoga therapy	Combination of physical postures, breathing exercises, and meditation for flexibility, strength, and mental clarity	4 days per week + home exercises	4 weeks
Breathing training	Focus on controlled breathwork to improve lung capacity, relaxation, and stress reduction	4 days per week + home exercises	4 weeks

**Table 5.** Adherence and improvement.

Percentage of Adherence	Improvement Type	Associated Intervention
80%	Exponential improvement	With yoga
60%	Saturation improvement	With exercise therapy
30%	Uniform improvement	With breathing training

## Symptomatic Changes

### Intervention Results

Over a 4-week period with 4 days of training per week (plus a home exercise program), various therapies were implemented (Table 4):

- Exercise therapy focused on strengthening, flexibility, mobility, balance, and coordination.
- Yoga therapy combined postures, breathing, and mindfulness for a holistic approach.
- Breathing training targeted controlled breathwork for relaxation and lung function [9].

### Adherence and Improvement

- Yoga therapy saw the highest improvement at 80%, showing exponential benefits due to its combination of physical and mental approaches.
- Exercise therapy resulted in a 60% improvement, with a focus on physical strength and mobility.
- Breathing training provided a more uniform improvement at 30%, largely benefiting relaxation and stress reduction.

Table 5 outlines the interventions and improvements over the 4-week program, showing clear trends in how different therapies impacted the participant [10].

## CONCLUSION

The improvement achieved through exercise therapy has proven to be exponentially significant, with maximum results observed through consistent physical activity. Remarkably, this progress has been accomplished without the need for any electromagnetic or advanced equipment. The focus on manual and self-regulated exercises demonstrates that substantial therapeutic benefits can be attained through natural movement, strength-building, and flexibility-enhancing techniques. The results highlight the power of the human body's innate ability to heal and strengthen when properly guided through exercise.

In particular, yoga and breathing exercises have played a pivotal role in this process of improvement. Yoga, with its emphasis on controlled movements, flexibility, and mindfulness, has provided an effective means of addressing muscle imbalances, improving posture, and promoting overall physical and mental well-being. The holistic nature of yoga not only enhances physical strength but also fosters a sense of mental calmness, which is critical in the recovery process. By focusing on breathing techniques, yoga helps regulate the autonomic nervous system, thereby reducing stress and supporting recovery.

Breathing exercises, in conjunction with yoga, offer a unique advantage by improving oxygen intake, promoting relaxation, and enhancing core stability. These exercises enable better control over bodily movements, leading to more effective rehabilitation and pain management. Through conscious breathing, patients can also activate deep core muscles that stabilize the spine and improve overall posture, directly impacting functional outcomes.

In conclusion, the combination of exercise therapy, particularly yoga and breathing techniques, has yielded impressive results. The emphasis on natural, non-invasive methods proves that significant improvements in health and function can be achieved without relying on external equipment. This holistic approach to recovery has demonstrated its effectiveness in enhancing strength, flexibility, and overall well-being.

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