



Effectiveness of Functional Integration Exercises On Functional Outcome in Females with Postpartum Low Back Pain – An Experimental Study

¹Tanushree Shailesh Gujar, ²Dr. Sheetal Bamhane

¹Intern PES Modern College of Physiotherapy, Shivajinagar, Pune, Maharashtra, India

²Assistant Professor, Department of Community Physiotherapy, PES Modern College of Physiotherapist, Shivajinagr, Pune, Maharashtra, India

Citation of this Article: Tanushree Shailesh Gujar, Dr. Sheetal Bamhane, “Effectiveness of Functional Integration Exercises on Functional Outcome in Females with Postpartum Low Back Pain – An Experimental Study,” IJMSAR – August – 2022, Vol. – 5, Issue - 4, Page No. 33-39.

Copyright: © 2022, Dr. Sheetal Bamhane, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. This allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Corresponding Author: Dr. Sheetal Bamhane, Assistant Professor, Department of Community Physiotherapy, PES Modern College of Physiotherapist, Shivajinagr, Pune, Maharashtra, India

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Objectives

The objective of the study was to find out the effectiveness of functional integration exercises on functional outcomes using Oswestry low back pain disability questionnaire and Pelvic Girdle Pain questionnaire in postpartum females over a period of 4 weeks.

Methods

30 participants were included in the study according to the study criteria by using convenient sampling method from maternity homes, obstetrics, and gynecology hospital OPDs in and around the city aged between 18-30 years. Informed consent was obtained from each participant and a prior explanation

about the procedure of the study was explained to all of them and were selected. Functional integration exercises focusing on muscles of slings were given to each participant for 3 days a week with 10 repetitions of each exercise in sets of 3 and a rest time of 30 seconds between each set for a period of 4 weeks. Pre and post-treatment assessment of pain was done by using functional outcome measures such as Oswestry low back pain disability questionnaire and pelvic girdle pain questionnaire.

Results

After giving functional integration exercises to all participants, the post treatment scores on both outcome measures showed significant results on pain

measurements. On Oswestry Low Back Pain Questionnaire, pain was reduced by 62% post treatment on an average and on Pelvic Girdle Pain Questionnaire, pain was reduced by 57% post treatment.

Conclusion

When pre- and post-assessment was done using both outcome measures; Pelvic Girdle Pain Questionnaire (pre mean score:32.6 and post mean score:13.7) and Oswestry Low Back Pain Questionnaire (pre mean score:15.8 and post mean score:5.8), functional integration exercises proved to be effective in reducing low back pain in females during the post-partum period. In this study, pre-treatment assessment and post-treatment assessment showed significant results on both outcome measures.

Keywords

Pelvic girdle pain, functional integration exercises, muscles of slings, post-partum period, Oswestry disability questionnaire, Pelvic girdle pain questionnaire.

Introduction

In India, 80% of women complain of lumbopelvic pain post-delivery. Weak abdominals and increased lumbar lordosis leads to lumbopelvic pain post-delivery. Due to weakness of the core muscles, there are severe postural abnormalities especially in back and in the neck.¹ Due to pregnancy-related changes in the musculoskeletal system that persist after delivery, women experience symptoms related to lumbo-pelvic pain. In addition to this pain, patients may also undergo bodily trauma related to pelvic bones and soft tissues around the pelvis. ² This pregnancy related lumbo-pelvic pain has a negative impact on daily functioning and also might affect the quality of life in women. ADLs like cleaning,

dishwashing, kitchen work, and sitting for long duration of hours to feed the baby can also be prevented. ³ Pelvic changes begin during the course of pregnancy and might resolve eventually but some women develop chronic symptoms which might last for few months to years. Primiparous women experience a continuous dull aching pain in the lower back while some may have sharp stabbing pain.²

The pelvis is stabilised with the help of four anatomical muscle slings. The connection between latissimus dorsi and gluteus maximus forms the posterior oblique sling. The anterior oblique sling contains connections between the external oblique, the anterior abdominal fascia and the contra lateral internal oblique and adductors of the thigh. Peronei, the biceps femoris and erector spinae forms the longitudinal sling and finally the lateral sling contains primary stabilizers for hip joint namely, Gluteus Medius, Gluteus minimus and TFL. With the use of these muscle slings, it is decided to strengthen the under-recruited global muscles and lengthen the shortened muscles.⁴

Slings of forces are produced by these coordinated muscular systems, which aid in the transfer of weight. Functional integration exercises will assist in keeping the spine in a neutral position while moving the arms or trunk on the hips. Exercises that focus on functional integration should be incorporated into the rehabilitation program to help reduce the automatic and tonic function of the local stabilizing muscles.⁴

Materials

Materials used were:

- Consent form
- Resistance band
- Measuring tape

- Oswestry Low Back Disability Questionnaire ⁽⁷⁾
- Pelvic Girdle Pain Questionnaire ⁽⁸⁾

Method

In this experimental study, 30 women aged between 18-30 years were selected on the basis of convenient sampling for a study duration of 6 months. Various maternity homes, obstetrics and gynecology clinics and hospitals in and around the city were visited.

The women were included in this study on the basis of following criteria

- Nulliparous females between 18-30 years of age ⁽⁴⁾
- Women having moderate lumbopelvic pain post-delivery on Oswestry and Pelvic girdle pain questionnaire (4) BMI – 18.5-25 kg / m sq ⁽⁴⁾
- Women with MMT grade 3 or above ⁽⁴⁾

Women were excluded from the study if

- They had any SI joint dysfunction ⁽⁹⁾
- History of orthopedic or neurological disorders related to spine, SIJ or hip joints ⁽¹⁰⁾
- History of any fractures or recent trauma to lower limb or spine ⁽¹⁰⁾
- Women who have had elective or emergency cesarean section ⁽¹¹⁾
- Overweight and Obese women

After approval from the ethical committee of the institution, study was begun. An informed consent was taken from all participants and pre-treatment assessment was done using Oswestry Low Back pain disability questionnaire and Pelvic Girdle Pain questionnaire. Conventional exercises like bilateral upper limb and lower limb ROM exercises, bridging, pelvic floor muscle contractions, static glutes were given before beginning with functional integration

exercises. Functional integration exercises included were

1. Wall Squats
2. Step forward and step back
3. Lunges with resistance band
4. Step up and step down

(The exercises should be done for 10 repetitions in 3 sets with rest time of 30 secs)

1. Wall Squats

Patient position – Standing in neutral spine against the wall. The feet are approx. 15 CMS away from the wall. The hips should be in approx. 20 degrees flexion so that the pelvis and spine are inclined forward on the hips and the upper thorax and head is away from the wall. The hips should be in neutral rotation, the knees under the hips, the second toe of each foot in line with the middle of patella, with equal body weight distributed over each foot. Exercise Instruction – The patient is asked to contract local muscles then to squat as if sitting in a chair, flexing at the hips, knees and ankles, while maintaining the neutral spine position and sliding the buttocks equally down the wall.

2. Step Up

Patient position – Standing in neutral spine in front of a step. Exercise Instruction – Cue a co contraction of the lumbopelvic local stabilisers. The patient steps with one foot, landing heel first and then transfer the body weight forward to perform the full step up. The other leg lifts from the ground and is then brought forward into hip and knee flexion to stimulate stepping up onto another step.

3. Step Down

Patient position – Standing in neutral spine.
Exercise Instruction – Cue a co contraction of lumbopelvic local stabilisers. The patient lifts one foot off the step and then bends the weight bearing hip, knee and ankle to lower the foot to the up on the step. The exercise is repeated on other leg.

4. Step Forward and Step Backward

Patient position – Stride standing
Exercise instruction – Patient palpates the key muscles to focus on and contracts local core muscles. Ask patient to shift weight from front to back. Exercise is repeated with other leg.

5. Lunges with Resistance

Patient position – Standing in neutral spine
Exercise instruction – Cue a contraction of the

lumbopelvic local stabilizers. The patient steps forward with one foot landing heel first and allowing the heel of the back foot to come off the ground so that weight bearing is performed through the ball of the back foot. Ask patient to bend both knees so that the body drops down between the legs, while keeping the weight equally distributed between both legs. The front knee should be vertically in line with the ankle joint as the knee bends

Result

Total 30 women of age group 18-30 years, with post-partum low back pain volunteered to participate in the study and have completed the 4 weeks of program.

Table No I: Demographic Data
Age wise distribution of subjects in the study

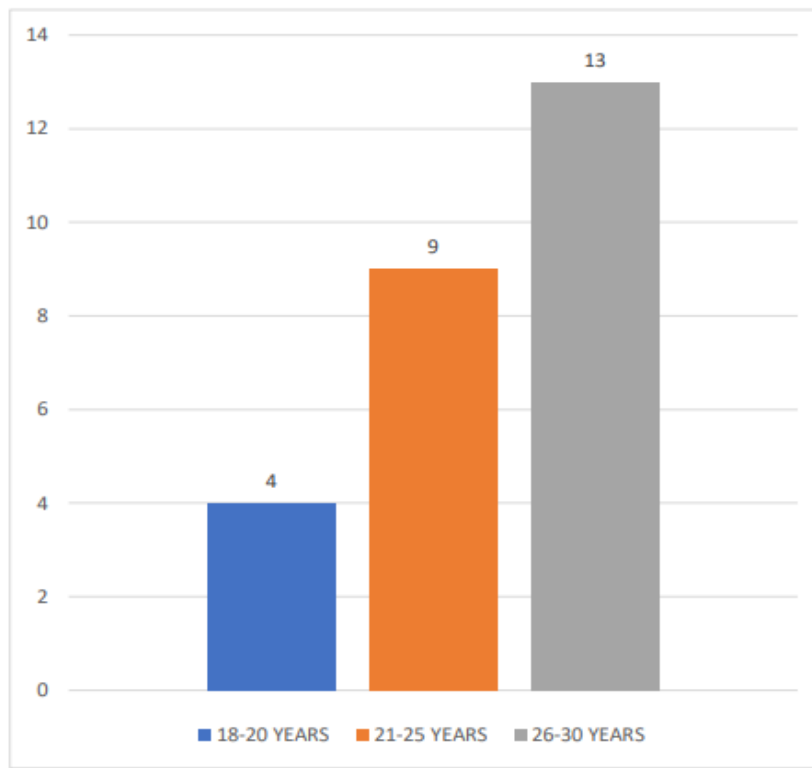


Fig 1: Demographic Data

Table No 2: Pre and Post treatment scores on Oswestry Low Back Pain Questionnaire

Comparing pre and post treatment scores on outcome measure – Oswestry Low Back Pain Questionnaire

PARAMETERS	PRE TEST		POST TEST		T VALUE	P VALUE	RESULT
	MEAN	SD	MEAN	SD			
OSWESTRY	15.8	2.4	5.8	1.9	15.4	<0.0001	EXTREMELY SIGNIFICANT

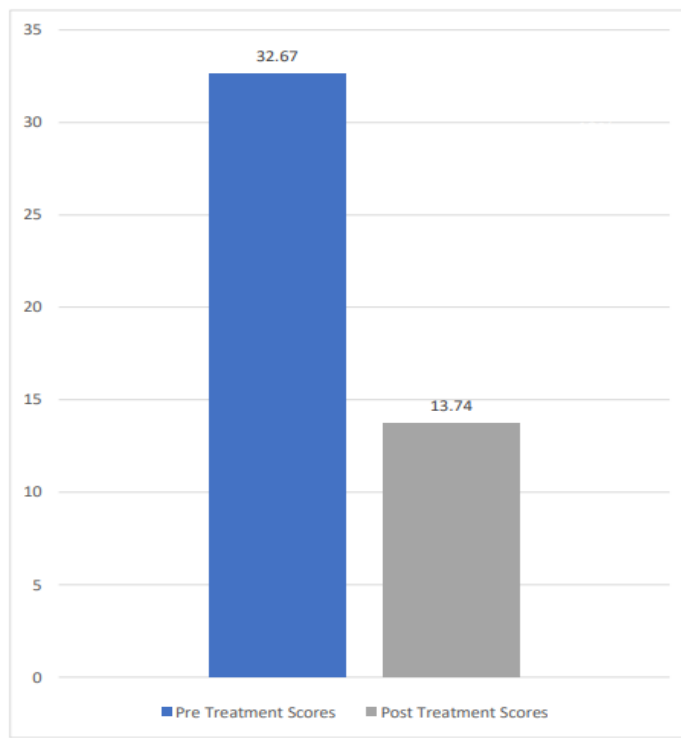


Fig 3: PGP Pre and Post Treatment Score

Discussion

Low back pain is common in post-partum females and can be treated with a variety of physiotherapy methods. The purpose of this study was to compare the effectiveness of Functional Integration exercises after pretreatment and post treatment assessments using Functional outcome measures (Oswestry disability questionnaire, pelvic girdle pain questionnaire) In this study, 30 females with an average age of 24 years were included.³

We chose an appropriate activity to modify based on the patient's level of control; for example, for a patient who is practicing neutral spine and exercises in sitting position, education of breast-feeding position can be initiated. The patient is taught to sit evenly on both pelvic bones, to relax the buttocks, and to lightly contract the deep stabilizing muscles.⁵

Functional Integration exercises require the ability to maintain a neutral spine while moving the trunk on the hips (squatting to sit down), moving the arms on the trunk (driving), or both of these

movements at the same time (lifting). Certain activities, such as sitting to breastfeed the baby or leaning forward to change nappy, may necessitate prolonged positions. These various functional conditions demonstrate the importance of training both dynamic and static spinal control in both neutral and non-neutral positions. I included Functional Integration exercises like wall squats, step forward, step backward, lunges, step up, step down in this study. Functional integration exercises will assist in keeping the spine in a neutral position. Exercises that focus on functional integration should be incorporated into the rehabilitation program to help reduce the automatic and tonic function of the local stabilizing muscles.⁵

Conclusion

In this study, pre-treatment assessment and post treatment assessment showed significant results on both outcome measures (Pelvic Girdle Pain Questionnaire and Oswestry Low Back Pain Questionnaire) while treating females with low back/pelvic girdle pain in post-partum period.

The functional integration exercises proved to be effective while treating females with low back/pelvic girdle pain in post-partum period over a period of 4 weeks.

References

1. Ashok Kumar Saxena, Geetanjali T. Chikoti, Anshul Singh, and Gaurav Yadav(2015) Pregnancy-induced Low Back Pain in Indian Women: Prevalence, Risk Factors, and Correlation with Serum Calcium Levels. *Anesth Essays Res.* Apr-Jun; 13(2): 395–402.
2. Sabino J, Grauer JN. Pregnancy and low back pain. *Curr Rev Musculoskelet Med.* 2008;1(2):137-141
3. Annelie Gutke , Carola Betten, Kristina Degerskär, Sara Pousette, Monika Fagevik Olsén(2015) Treatments for pregnancy-related lumbopelvic pain: a systematic review of physiotherapy modalities. *Acta Obstet Gynecol Scand.* Nov;94(11):1156-6
4. Sheetal Bamhane, Abhijit Satralkar, Gauri Afle (2017) Functional integration and stability of Hypermobile Sacroiliac joint. ISBN: 978-613-9-88117-8
5. Diane lee and Paul Hodges the Pelvic girdle – An approach to the examination and treatment of the lumbopelvic hip region, edition 2004
6. Sue Barton, Teresa Cook and Jill Mantle (2004) *Physiotherapy in Obstetrics and Gynecology*, ISBN: 0- 7506-2265-2
7. J C Fairbank , P B Pynsent(2000) The Oswestry Disability Index. *Spine (Phila Pa 1976)* Nov 15;25(22):2940-52
8. Britt Stuge , Andrew Garratt, Hanne Krogstad Jenssen, Margreth Grotle(2011) The pelvic girdle questionnaire: a condition-specific instrument for assessing activity limitations and symptoms in people with pelvic girdle pain. *Phys Ther.* Jul;91(7):1096-108
9. A Vleeming, M D Schuenke, A T Masi, J E Carreiro, L Danneels, and F H Willard(2012). The sacroiliac joint: an overview of its anatomy, function and potential clinical implications. *J Anat.* Dec;221(6):537- 67
10. R L Smith, B A Sebastian, R L Gajdosik (1988) Effect of sacroiliac joint mobilization on the standing position of the pelvis in healthy men. *J Orthop Sports Phys Ther ;*10(3):77-84
11. Ingrid M. Mogren(2007) Does caesarean section negatively influence the post-partum prognosis of

low back pain and pelvic pain during pregnancy?

Eur Spine J. Jan; 16(1): 115–121.