

EFFECTS OF PELVIC STRENGTHENING EXERCISES WITH AND WITHOUT LUMBOPELVIC BELT ON POSTPARTUM FEMALES WITH PELVIC GIRDLE PAIN

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ABSTRACT

Objective: Pelvic girdle pain abbreviated as PGP. Pelvic girdle pain is the pain which is felt around the pelvic joints lower back hip and thighs. Pelvic girdle discomfort causes pain instability as well as limitation of mobility and functioning in the pelvic joints. A new intervention is used to treat this condition and check the efficacy of both groups. To determine the effects of pelvic strengthening exercises with or without the lumbopelvic belt on postpartum females with pelvic girdle pain.

Methodology: It was a randomized controlled trial and the sample size was 16. The sampling technique used was the convenient sampling among the patients of the pelvic girdle pain after post-partum period. Data was collected from those who fulfill the inclusion criteria. Group was randomly allocated into Group-A & Group-B. In the Group-A patients received lumbopelvic strengthening exercises with belt and Group-B received strengthening exercises without belt. VAS was used to measure the pain intensity and ODI was used to measure the pain related to the lower back region. The data was analyzed through SPSS version 25.

Results: Statistically significant difference in both groups in terms of VAS and ODI with p-value less than 0.05.

Conclusion: It was concluded that the lumbopelvic belt was the valuable intervention to reduce the pelvic girdle pain.

Indexed Terms_ Strengthening Exercises, Lumbopelvic Belt, Postpartum Females, Pelvic Girdle-Pain

I. Introduction:

PGP is described as "pain between the posterior iliac crest and the gluteal fold, particularly in the neighborhood of the sacroiliac joints, and discomfort may radiate to the posterior thigh and can also occur in conjunction with/or separately in the symphysis" (National Institutes of Health).(1) PGP is a complex illness that can be physically and mentally detrimental during and following pregnancy.(2) Pregnancy-related low back pain (PLBP) and pelvic girdle pain (PGP) are frequent issues with serious economical, psychological, and physical repercussions. Approximately 45% of pregnant

women and 25% of postpartum women experience PGP and/or PLBP, making both diseases quite prevalent. 1 The quality of life (QOL) for women may be negatively impacted by this pain.(3) Depending on how it is assessed and described, between 23% and 65% of women report experiencing pelvic girdle pain during pregnancy. Despite the fact that the majority of women heal after giving birth, over a third of them still experience symptoms three months later and 8.5% still experience them significantly two years later.(4) Weight gain, ligamentous joint laxity, and a change in the center of gravity brought on by hormonal changes can result in lumbar spine hyper lordosis and anterior pelvic tilting. A reduced metabolic supply in the low back may also result from vascular alterations. Low back pain and/or pelvic girdle pain are the two musculoskeletal symptoms that occur during pregnancy most frequently.(5) Women with PGP have spoken of a lack of awareness, understanding, and knowledge about the disorder. Treatment is not frequently provided to women, and they frequently receive inconsistent diagnoses and recommendations from various healthcare providers.(6) Particularly for first-time mothers, the postpartum period is a time of significant transformation. Infant care is a rigorous activity that can coincide with other difficulties like weariness, relational changes brought on by becoming a parent, and financial obligations. When PGP lasts after childbirth, the care of the kid is included in the context of the woman's pain experience.(7) Increased shear forces across the pelvic joints have been suggested to be one factor for pain in women with PGP.(8) According to biomechanical research, this diminished joint stability may be made up for by increased deep local muscle activation. It has been shown that the transversus abdominis, the innermost abdominal muscle, makes the sacroiliac joint stiffer.(9) While most women with persistent pelvic girdle pain (PPGP) describe a constant dull discomfort, some women also report more severe pain sensations as acute and stabbing pain.(10) Several risk factors for developing PGP during pregnancy have been identified, such as work load, previous PGP, and previous trauma to the pelvis.(11) In comparison to women without PGP,

those with Diastasis Recti Abdominis (DRA) have weaker abdominal muscles, a higher prevalence of pelvic floor disorders (PFD), low back, pelvic girdle, and abdominal pain.(12) Women with risk factors for persistent PGP should be identified while pregnant, and offered a follow-up examination 3 months after delivery.(13) In postpartum women, pelvic girdle pain (PGP) is a serious issue that interferes with daily activities. Training the pelvic floor muscles (PFM) should be a crucial component of PGP postpartum rehabilitation regimens.(14) Exercises must be meaningful to the patient, applicable to daily activities, tailored to the patient's preferences, supervised, and led to ensure quality and performance.(15) Before their first pregnancy, women who frequently work out and do high-impact activities may experience less pelvic girdle pain.(16) Studies represented effect of Strengthening Exercises with and without belt in different studies among post-partum females; my studies will fill this gap

II. Materials & Methods:

This research was a randomized clinical trial (RCT) and trail no. is IRCT No: IRCT20210108049966N3. Prior to being included in the trial, all patients signed an informed consent agreement.

Non- probability convenient sampling approach was accustomed to recruit the individuals for the study and after that randomization process was done by sealed envelope to divide the subjects into Group-A and Group-B. The study area was Pakistan Society for MEDLANE MEDICAL COMPLEX Lahore Pakistan. Sample size was calculated by epi-tool. In this study, 16 participants were selected as per criterion for inclusion and exclusion. 11 participants were in group-1 and 11 participants in group-2.

Age 25-35, diagnosed cases of pelvic girdle pain, first post-partum period and willing to participate in research were included. EXCLUSION CRITERIA was history of previous pelvic surgery, history of pelvis fracture, any neurological problem, patients using the pain killers and patients with depression

Group A: Group, 08 participants received Conventional physiotherapy treatment in addition to pelvic strengthening exercises with lumbopelvic belt in which include the pelvic floor training as well as Kegel exercises such as bird dog, dead bug(try to maintain the table top position , assisted heel drops bridges(with the knee together with lift hips up while squeezing the pelvic floor muscles , bridges with core ball (squeeze ball between knees to activate pelvic floor muscles) and foam rolls (restorative tool to improve the alignment from overstretched ligaments and added weight) (17)

- Ultrasound up to 10 minutes
- Strengthening exercises up to 10 repetitions maximum.

- Lumbo pelvic belt for support up to 4 weeks and almost 12 hours a day.
- Treatment time for each session was approximately 20-30 minutes.

Group B: Group B 08 participants received Conventional physiotherapy treatment in addition to pelvic strengthening exercises in which include the bird dog ,dead bugs , assisted heel drops bridges, bridges with core balls and foam rolls without lumbopelvic belt.

- Ultrasound up to 10 minutes.
- Treatment time was 20-30 minutes.
- Pre-interventional readings were taken at baseline & post interventional readings at 4th week.
- Visual Analogue Scale for pain and Oswestry Low Back Pain Disability Index for low back pain were used as a data collection tools.

III. RESULTS:

SPSS version 25 was used to interpret the data. The feature frequency %, mean, and standard deviation were utilized to show categorical and demographic data. The level of significance accepted as $P < .05$. Numeric variables were defined as mean \pm standard deviation. The data's normality was evaluated using the Shapiro-Wilk test of normality and uniformity. If Value of the Shapiro-Wilk Test > 0.05 , the data would be normal and parametric tests of analysis would be used. A significant difference was defined as one with a p-value < 0.05 .

The following tests were used: Differences between pre- and post-treatment values: within the same group, analyzed by using the paired t-test Differences between the groups: between the groups, analyzed by using independent samples t-test.

Table 1: Baseline measurement of outcome variables:

Variable	Strengthening Exercises with belt	Strengthening Exercises without belt	P value
Mean \pm SD		Mean \pm SD	
VAS	7.12 \pm 0.64	7.00 \pm 1.31	0.812
ODI	30.00 \pm 1.07	29.25 \pm 1.49	0.266

Table 2: Between group comparison of VAS and ODI among the groups

Variable	Strengthening Exercises with belt (Mean \pm S.D)		Strengthening Exercises without belt (Mean \pm S.D)		p-value
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	
VAS	7.12 \pm 0.64	2.62 \pm 0.74	7.00 \pm 1.31	4.75 \pm 1.39	0.00
ODI	30.00 \pm 1.07	12.00 \pm 0.93	29.25 \pm 1.49	21.63 \pm 1.59	0.00

The CONSORT diagram shows the progress of participants at each stage of the study. 23 participants were assessed according to the eligibility criteria. 07 of them were excluded, 05 of them were not fulfilling the inclusion criteria and 01 of them refused to participate and 01 had other reason. Baseline values of demographic data variables like age, weight, and BMI of participants across both groups were comparable on basis of mean \pm std. deviation.

Total 16 patients, 08 in strengthening exercises with belt group 1 and 08 in strengthening exercises without belt group 2. In group 1, the patients mean age were 29.38 years and in group 2, mean age were 29.75 years. Mean value of group 1 was 86.38 kg for weight and group 2 have mean value 91.00 kg for weight.

Group 1 with mean value of 28.44 kg/m² for BMI and group 2 have mean value 29.68 kg/m² for BMI.

Groups were homogenous at baseline and not statistically significant in all the parameters including VAS and ODI with p value > 0.05 (table 1)

After the analysis, it was found that within group analysis showed a statistically significant (p < 0.001) improvement in the entire outcome measures including VAS and ODI over a period of 4 weeks in both groups. (Table 2)

The between-groups analysis showed statistically significant differences in VAS and ODI with p-values of 0.00 and 0.00 respectively. (Table 2)

The results of this study state that performing strengthening exercises with lumbopelvic belt is more effective than strengthening exercises without lumbopelvic belt in terms of outcome measures.

IV. Discussion:

This study aimed primarily to evaluate the effects of pelvic strengthening exercises with or without the lumbopelvic belt on postpartum females with pelvic girdle pain in terms of reducing pain and low back

disability. Results indicated significant improvement in both groups receiving intervention regarding all outcome measures. However, mean change in values of strengthening exercises with belt are more improved as compared to strengthening exercises without belt group. Previous systematic review stated that stabilizing exercises are effective in treating pelvic girdle pain during pregnancy and the postpartum periods. Stabilizing exercises decrease pain and improve the quality of life for pregnant women when they are carried out on a regular basis.(18) Present study results for within group analysis using paired t test indicated that subjects performing strengthening exercise with belt showed statistically significant reduction in pain and improvement in low back pain with p- value < 0.05. This has also been proved in a previous study which concluded that use of lumbosacral support/orthosis reduces pain and improves daily activities in women with pregnancy-related PPGP and also recommended the use of support as an early rehabilitative treatment for women receiving postpartum posterior pelvic pain.(19) Another study found that in short term lumbopelvic belt and information in treatment of pregnant women with pelvic girdle pain is superior to exercise plus information or information alone.(20)

Pain is one of the major complaints among females suffering from PGP. Performing strengthening exercises with conventional physiotherapy helped in reducing low back pain. In contrast to previous study concluded that an individualized treatment approach with specific stabilizing exercises appears to be more effective than physical therapy without specific stabilizing exercises for women with pelvic girdle pain after pregnancy.(21) Previous study conducted by Jeanne Bertuit in which results indicate that the belts appear to be interesting tools to reduce pelvic pain and improve comfort of pregnant women. The different types of belts could have differential effects on global, sacroiliac joint and back pain during pregnancy.(22) Current study also supports that lumbopelvic belt help in reduction of the LBB and pelvic pain among females.

Literature review demonstrated the paucity of methodologically rigorous research to help healthcare practitioners make reliable decisions regarding the effectiveness of physical exercises for postpartum PGP. An individually tailored program with stabilizing exercises involving all relevant muscles delivered under the guidance of a therapist achieved high patient compliance and was shown to be effective for PGP.(23)

The current study favors the previous study that pain scale dropped more in strengthening exercises with belt group as compared to without belt group.

V. Conclusion:

In this study Close kinetic chain exercises were more effective than the Daily adjustable progressive resistance exercises on extensor lag for post-operative knee joint stiffness to improving the pain, physical function, range of motion and strength.

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Disclaimer:

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Conflict of interest:

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