

# COMPARATIVE EFFECTS OF HOME-BASED STABILIZATION AND KEGEL EXERCISES ON LOW BACK PAIN, DISABILITY AND QUALITY OF LIFE IN POSTNATAL FEMALES

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## ARTICLE INFO

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## ORIGINAL ARTICLE

### ABSTRACT

**Background:** Lower back pain is the most common musculoskeletal postnatal problem and effects the quality of life in postnatal women. Hormonal changes occur in pregnant females and due to which they experience hormonal induced hyper-mobility which results low back pain and decrease joint stability. The optimal biomechanics restoration is amongst goal of physiotherapy of lower back pain in postnatal women.

**Objective:** To find out the comparative effects of home based stabilization and kegel exercises on low back pain, disability and quality of life in postnatal females.

**Methods:** This randomized clinical trial was conducted at the Family Hospital in Lahore. 22 postpartum mothers were divided into two groups ; Home-based stabilization exercises and kegel exercises. For six months, each exercise was done three times daily with 10 repetitions and a holding period of 5 to 10 seconds. The

outcome was assessed using the Oswestry Disability Index for pain-related disability and the visual analogue scale for lower back pain and life's quality of life using the Short Form 36. Before and after the treatment's first six weeks, all results were evaluated. The data was examined using SPSS 21.

**Results:** According to the study, the statistically significant p value for the pretreatment session of the two groups' visual analogue scales was 0.762, which was higher than the statistically significant p value for the post treatment session, which was 0.384 for both groups' pain intensity. Pretreatment session for both groups' Oswestry disability indices had a statistically significant p value of 0.805, which was higher than post treatment session's statistically significant p value of 0.719 for both groups' disabilities. The statistically significant value for both groups' SF36 pretreatment sessions was 0.620, which was lower than the value for both groups' SF36 post treatment sessions, which was 0.894.

**Conclusion:** The results of the current study showed that while both regimens were equally successful in reducing low back pain and pain-related impairment, there was no discernible difference in quality of life.

**Key words:** Disability, Females, Lower back pain, Quality of life, Stabilization exercises

## INTRODUCTION

Every pregnant woman runs the risk of developing lower back discomfort, which negatively impacts their quality of life. The

latter trimester of pregnancy is when pregnant women are most likely to have lower back discomfort<sup>1</sup>. Numerous studies have found

that lower back discomfort caused by pregnancy often decreases by 50%. Lower back discomfort is caused by a variety of biomechanical and anatomical causes in pregnant women. The most frequent factor in lower back discomfort in pregnant women is pelvic stability. Pregnancy weight increase and maintaining balance caused the Centre of gravity to shift anteriorly. Women who adopt an unnatural stance<sup>2</sup>. Pregnant women endure hormonal changes that lead to hormonally caused hypermobility, which decreases joint stability and causes low back discomfort<sup>1</sup>. Increased relaxin production during pregnancy also contributes to back discomfort, pelvic instability, and spine dislocation<sup>3</sup>.

The initial action of a healthcare practitioner is to reassure female patients that their suffering is only momentary, self-limiting, and will soon go away<sup>4</sup>. Numerous studies have shown that stabilization exercises can help pregnant women with low back discomfort<sup>1</sup>. The everyday activities of living are tough for females who suffer low back discomfort connected to pregnancy. One of the goals of physio-therapy for lower back pain in postpartum women is the appropriate biomechanics repair<sup>5</sup>. Exercises, teaching, and manual treatment are all part of traditional physiotherapy.

The Trans-versus Abdominis and multifidus were the primary areas of attention<sup>6</sup>. The most often impacted muscles are the Trans-versus abdominis and abdominal muscles<sup>7</sup>. It was also crucial to measure the length of the pelvis and the legs in cases of postpartum low back discomfort<sup>8</sup>. The best conservative treatments include medication, physical therapy, yoga, acupuncture, nerve stimulation, massage, stabilization belts, and relaxation<sup>9</sup>.

One therapy strategy to improve the function of the trans-versus abdominis and pelvic floor muscles is stabilization exercise<sup>10</sup>. The core

stabilization exercises have started to be used in rehabilitation programs and have become a popular trend in fitness; stabilization exercises for three months are more effective during the postpartum period than strengthening exercises, massage, joint mobilization, and relaxation<sup>3</sup>. Postpartum females with Diastasis Rectus Abdominis are advised to follow a routine that includes abdominal workouts, cardiovascular activities, posture training, and external support<sup>11</sup>. Pregnancy-related low back pain may be treated with exercises, acupuncture, heat/cold packs, traction, ultrasound, massage, and laser therapy, among other treatments. The most crucial therapies to improve stability in the postpartum period are posture training and core stabilization exercises<sup>12</sup>.

Many biomechanical and structural variables have a role in low back pain in pregnant women, and numerous studies have shown that the prevalence of lower back pain associated with pregnancy decreases by around 50%. Therefore, it's crucial to identify the best low back pain therapeutic options so that postpartum women can do ADLs with ease. In order to enhance techniques for the treatment of low back pain, quality of life, and pain-related impairment in postnatal females, this study aims to give evidence. This study may aid medical professionals in determining if kegel exercises or home-based stabilization exercises have the same results in treating low back pain in postpartum women.

## MATERIAL AND METHODS

**Study Design:** Randomized clinical trial (NCT05707143).

**Duration:** 8 months after the approval of synopsis

**Study Setting:** The information was gathered from the Family Hospital in Lahore, Pakistan's gynecological division.

**Sample Size:** The sample size of 22 females was calculated by open epi calculator by using Oswestry tool from previous literature.<sup>7</sup>

**Sampling Technique:** non-probability convenience sampling technique

**Sample Selection criteria:**

**Inclusion Criteria:**

- Age: 18-35 years
- Cesarean delivery
- Multi gravida females
- Postpartum low back pain (more than 5 on VAS) last for 1 year<sup>13</sup>

**Exclusion Criteria:**

- Low back pain before pregnancy
- Urogenital infections
- History of pelvic floor or lumber surgery
- Malignancy
- Pelvic or lumber fractures

**Data collection procedure:**

Everyone who participated were made aware of the objective and procedure of the study before it began. Each of them consented to the project and the use of their personal data for research purposes by signing a written agreement. This is to verify that the research was conducted in compliance with all applicable rules and regulations. Women who fulfill the inclusion criteria were enrolled in this study. The title of the study was approved by the "Research & ethical committee RCRS & AHS" with Ref.No.REC/RCR & AHS/23/0501. The current RCT registration No. is NCT05707143. Total 22 participants were included in this study. Randomization was done by dividing the participants into two groups by lottery method. There was no blinding in this study. In this study three outcome measures were used ; Visual analogue scale for the measurement pain, Oswestry disability index for pain related disability and Short form 36 for quality of life. The intervention for group A was home stabilization exercises and group B was kegel exercises. The combined treatment was TENs, hot packs, and core stabilization exercises. All participant in both groups were evaluated before and after 6 weeks treatment program.

**Data Analysis Procedure:**

The following tests were run on the data using SPSS for Windows software, version 21:

Statistically descriptive: Tables of frequencies, pie charts, and bar graphs were utilized to display the summary of group measures taken over time.

For non-parametric data, the difference between pre- and post-treatment values was calculated. There was a Wilcoxon signed rank test. This was a test that compares groups that is non-parametric.

Non-parametric test that was used to compare two populations at varied intervals was called the difference between groups. When non-parametric data were obtained, the Mann Whitney U test was applied.

## RESULTS

A total number of 22 participant were part of this study. 11 participants in each group were allocated to Group A and Group B via lottery method. A sample size of 22 was calculated with an attrition rate of 10%. All the 22 participants were completed the study out of total calculated sample size of 22 and there was no dropout. After collection of data, analysis was done by SPSS version 21. For presentation and categorical features frequency, Mean+ S.D and percentage was used. The level of significance was accepted as  $< 0.05$ , Normality of data was tested by using Shapiro-Wilk test was less than 0.05, so the data was not normally distributed and non-parametric tests were applied for analysis.

Baseline statistic were analyzed for both groups as Mean+ S.D. Mean age of total 11 participant in group A were 30.91 while S.D was 2.982. Mean age of total 11 participant were 32.18 while S.D was 2.442. In both group 59.09% participant were normal, 18.8% participant were underweight while 22.73% participant were overweight. In both groups 10% participant had 2 children, 7% had 3 children, 4% had 4 children while 1% had more than 5 children. In both groups 10% participant were working women while 12%

participant were housewife.

Mean age and standard deviation was (30.90+2.98), mean height and standard deviation (5.31+0.22), mean weight and standard deviation was (53.54+5.55) while mean BMI and SD was (2.00+0.63) and for Group B; mean age and standard deviation was (32.18+2.44), mean height and standard deviation (5.31+0.20), mean weight and standard deviation was (54.95+6.00) while mean BMI and SD was (2.00+0.70).

Table 1 showed that df value of VAS, ODI and SF36 was 22 according to test of normality (Shapiro -wilk test). After applying test of normality p-value for 3 out of 3 variable was less than 0.05 hence non parametric test was applied, Mann Whitney U test applied for between group comparison and Wilcoxon Signed Rank test applied for within group comparison.

Table 2 showed between pretreatment and post treatment comparison of Group A and Group B in order to check change in visual analogue scale by physiotherapy intervention used in that treatment session. According to that test, statistically significant value for pretreatment session of both group was 0.762 which was high than post treatment session which statistical significant value of 0.384 for both group to pain intensity.

Table 2 showed between pretreatment and post

treatment comparison of Group A and Group B in order to check change in Oswestry disability index by physiotherapy intervention used in that treatment session. According to that test, statistical significant value for pretreatment session of both group was 0.805 which was high than post treatment session which statistical significant value of 0.719 for both group to disability (ODI).

Table 2 showed between pretreatment and post treatment comparison of Group A and Group B in order to check change in SF 36 by physiotherapy intervention used in that treatment session. According to that test, statistical significant value for pretreatment session of both group was 0.620 which was less than post treatment session which statistical significant value of 0.894 for both group to quality of life (SF 36).

Table 3 showed within group comparison of group A and B after pre and post treatment session following by physiotherapy intervention used in that study. According to that test, for group A significant value for pain scale was 0.002, for disability score was 0.004 and for quality of life score was 0.789 and for group B significant value for pain was 0.002, for disability was 0.005 while for quality of life was 0.286.

The current study concluded that the both protocols are equally effective in decreasing pain and disability but there is not significant effect on improving the quality of life.

**Table 1: Test of normality**

Variables	SHAPIRO-WILK		
	Statistic	Df	Sig.
Pre VAS	0.914	22	0.058
Pre ODI	0.847	22	0.003
Pre SF36	0.823	22	0.001

**Table 2: Between group comparison of Group A (Home-based stabilization exercises) and group B (Kegel exercises) (Mann Whitney test)**

Outcome measure	Treatment	Groups	Mean Rank	Median	P-Value
Visual Analogue Scale	Pre Treatment	A	11.91	3.00	0.762
		B	11.09		
	Post treatment	A	10.36	1.00	0.384
		B	12.64		
Oswestry Disability Index	Pre Treatment	A	11.82	3.00	0.805
		B	11.18		
	Post Treatment	A	11.86	2.00	0.719
		B	11.14		
Short form 36	Pre treatment	A	10.82	383.00	0.620
		B	12.18		
	Post Treatment	A	11.32	658.500	0.894

**Table 3: Within group comparison of Group A (Home Based Stabilization) and group B (Kegel Exercises) for change in Visual Analogue scale, oswestry disability index and SF 36 (Wilcoxon test)**

Tools	Group A				P-Value	Group B				P-Value
	Pre		Post			Pre		Post		
	Median	Mean Rank	Median	Mean Rank		Median	Mean Rank	Median	Mean Rank	
VAS	3.00	6.00	1.00	0.00	0.002	3.00	6.00	1.00	0.00	0.002
ODI	3.00	5.50	2.00	0.00	0.004	3.00	5.00	2.00	0.00	0.005
SF 36	383.00	10.00	662.00	4.50	0.789	385.00	10.50	658.00	5.00	0.286

**DISCUSSION**

The most prevalent musculoskeletal postnatal issue, low back discomfort negatively impacts postpartum women's quality of life. Women find it difficult to conduct daily tasks because

of low back pain. Anxiety, depression, and exhaustion are all possible effects of low back pain. Low back pain in some women who have given birth subsides naturally, although it is



frequently persistent in nature. A randomized clinical research was carried out to compare the benefits of kegel exercises and home-based stabilization exercises on postpartum females' low back pain, life's quality, and impairment. Information was gathered at the Family Hospital in Lahore.<sup>22</sup> postpartum mothers made up the sample size. They were split into two equally sized groups. The outcome was assessed using a pain-related visual analogue scale (VAS) in the low back, Oswestry disability index for pain-related disability and quality of life with Short form 36 (SF-36). Both before and after the treatment, all results were assessed. SPSS 21 was used to analyze the data.

2023, Afaf Hassan Ahmed et al. studied how Kinesio taping affected postpartum females who had C-sections' lower back discomfort and pain-related impairment. While the current study concentrated on the impact of kegel exercises and home-based stabilization on postpartum low back pain and disability.

2022: Jennifer Dieter. to restore the core and lessen pain, postnatal care was worked on. According to the study, postnatal care measures including therapeutic exercise decreased postpartum women's low back discomfort. Additionally, the current study demonstrated that kegel and home-based stabilization exercises reduced postpartum women's low back pain.

2019 Marie-Pier Girard et al.. Investigated the relationship between anxiety, exercise, weight reduction, and LPP in postnatal females. The current study focused on the relationship between low back pain, impairment brought on by pain, and quality of life. According to the current study, postpartum back pain affects women's quality of life and leads to pain-related disabilities, but physiotherapy interventions can lessen both the pain and the disabilities and improve quality of life.

2019 Abeer M. ElDeeb et al. It was investigated how postnatal pain in females in PG would be affected by fragmental stabilizing training augmented by PFM activities. According to the research, pelvic girdle pain in postpartum women need a rehabilitation program that includes PFMs training<sup>1</sup>. The current study came to the conclusion that both home-based stabilization exercises and kegel exercises have the same positive effects on postpartum females in terms of low back pain, life quality, and impairment.

The current study evaluated the 2 treatment procedures for postnatal low back pain, however 2019 Naoka Matsuda et al, research on the connection between lower back pain and pelvic girdle discomfort with excessive prenatal weight gain was done.

### CONCLUSION:

The results of the current study showed that while both regimens were equally successful in reducing low back pain and pain-related impairment, there was no discernible difference in quality of life.

### AUTHOR'S CONTRIBUTION

**MH:** Study design, acquisition of data, data collection, **HG:** Manuscript writing, **MF:** Study design, acquisition of data, **AB:** Manuscript writing

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