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EFFICACY OF CORE STABILITY EXERCISES VS ABDOMINAL STRENGTHENING EXERCISES IN POSTPARTUM WOMEN WITH DIASTASIS RECTI ABDOMINIS: (RCT)

VANIA KHAN
Bachelor's Degree Program in Doctor of Physiotherapy, University of South Asia, Raiwind Road Lahore, Pakistan. Email: Vaniakhan08@gmail.com

ZAIMA TAHIR
Bachelor's Degree Program in Doctor of Physiotherapy, University of South Asia, Raiwind Road Lahore, Pakistan. Email: Zaimatahir.800@gmail.com

MARIA IDREES
Lecturer, Department of Allied Health Sciences, University of South Asia, Raiwind Road Lahore, Pakistan. Email: maria.idrees@usa.edu.pk

MUAZZAMA SALEEM
Bachelor's Degree Program in Doctor of Physiotherapy, University of South Asia, Raiwind Road Lahore, Pakistan. Email: muazzamamalik001@gmail.com

MUHAMMAD ABDULLAH
Bachelor's Degree Program in Doctor of Physiotherapy, University of South Asia, Raiwind Road Lahore, Pakistan. Email: abdbwp05@gmail.com

FATIMA IJAZ
Bachelor's Degree Program in Doctor of Physiotherapy, University of Lahore, Pakistan.
Email: buttfatima240@gmail.com

FIZA JAMSHED
Bachelor's Degree Program in Doctor of Physiotherapy, University of South Asia, Raiwind Road Lahore, Pakistan. Email: Fizajamshaid546@gmail.com

Abstract

Diastasis recti abdominis, the separation of abdominal muscles often occurring after pregnancy, poses a significant concern for postpartum women. Addressing this condition is crucial for restoring abdominal strength and overall well-being. Which exercise approach, between core stability exercises and abdominal strengthening exercises through a randomized controlled trial (RCT). The primary goal of this research is to determine the effectiveness of core stability exercises versus abdominal strengthening exercises in reducing DRA gap width. The study employs a randomized controlled trial (RCT) design. Forty postpartum women who have undergone vaginal delivery or lower segment caesarean (LSCS) and meet specific inclusion criteria were recruited from Mumtaz Bakhtawar hospital and Bajwa Hospital in Lahore, Pakistan. The criteria for including participants consist of an age from 23 to 40 years, BMI of 29kg/m2 or less, postpartum duration 6 months, and the existence of Diastasis Recti Abdominis. Individuals with other disorders were excluded. Participants were randomly assigned to either the core stability exercises group or the abdominal strengthening exercises group and not engaged in any other exercise programs during the study duration. Upon completing the study, the anticipated results offered valuable insights into the relative effectiveness of core stability exercises versus abdominal strengthening exercises in treating

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Diastasis Recti Abdominis. The study's outcomes were measured by assessing the reduction in the gap width between abdominal muscles and improvements in abdominal strength by groups B (Abdominal strengthening). This research addressed the problem of diastasis recti abdominis in postpartum women. We conducted the randomized control trial on the 2 exercise groups A and B. Group B (abdominal exercises) had more effect on diastasis recti abdominis than group A (core exercises). We outcome was 90% in favor of abdominal exercises.

Keywords: Diastasis Recti, Core Stability, Abdominal Strengthening, Postpartum Women, Parity, Multiple Pregnancies.

1. INTRODUCTION

The rectus abdominis muscles (six-pack) muscles run vertically down the front of your abdomen, were separated in a medical disorder called diastasis recti, the Linea alba, a strong connective tissue band connects these muscles. When this tissue stretches perform on this tissue or it become weakens and a gap or separation between the muscles is known as diastasis recti. When the two rectus abdominis separate along the midline of the Linea alba, it is known as diastasis recti abdominis DRA (1).

To manage DRA in postpartum women, core strengthening exercises were frequently advised as a conservative method. Depending on the degree of DRA and the exercises done. These programmers can change effectiveness, the effectiveness of core strengthening programs for diastasis rectus abdominis is described in this overview. Exercises that strengthen the core can help in early postpartum recovery and prevent or minimize DRA during pregnancy (2).

Exercises to strengthen the core can assist women with mild to moderate DRA manage symptoms such lower back pain, pelvic floor problems, and abdominal weakness. It may be beneficial to follow a specific training regimen that incorporates movements like pelvic tilts, transverse abdominis contractions, and light abdominal bracing. The degree of muscle separation or functional limitations varies among DRA patients (3).

A separation of more than 2 centimeter at one or more points on the Linea alba, including the level of the umbilicus or 4.5 centimeter above or below it, A prominent bulge or ridge in the middle of the abdomen, especially due to strain or contract your abdominal muscles, it is a typical sign of diastasis recti. As a result of this illness, some patients may also develop discomfort, pelvic floor or digestive problems, rapid weight gain or loss, improper heavy lifting techniques, multiple pregnancies, genetics, poor posture, weak core muscles, abdominal exercises performed incorrectly were the criteria for determining a DRA (4).

Search on PubMed uncovered just couple of concentrates on DRA predominance both throughout pregnancy and the time following delivery and the pervasiveness rates changed in the distinguished examinations (5). Pregnant women were more likely to experience DRA especially during and after pregnancy in postpartum. The abdominal muscles may separate because of strain from the expanding uterus on the muscles due to baby weight or contractions during labor (6).

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Until now, there is additionally inadequate information about risk factors. However factors, for example, age, multiparity, cesarean segment, due to gain in weight, various pregnancy, nationality, and There have been suggestions for childcare (7). In numerous ladies these side effects endure a very long time into the post pregnancy time frame, essentially affecting personal satisfaction. Although DRA heals on its own in some women, approximately (60%) of women. According to research, have unresolved DRA that persists after the early postpartum period 6 weeks, affecting quality of life long after childbirth (8).

DRA is relatively similar and has a negative impact on women's health during and later pregnancy (ante-and postnatal periods). It usually manifests in the second trimester of the pregnancy, and it affects almost all pregnant women, as (66% to 100%) experience DRA during the third trimester. While almost half of the women up to 53% go through it immediately after the child is born because of the stress of delivering the child (9).

The study aims to investigate the effectiveness of core stability exercises and abdominal strengthening exercises in postpartum women. The rationale is based on the understanding that postpartum women often experience weakened pelvic floor muscles and core instability, which can lead to diastasis recti abdominis (DRA). By strengthening the core and abdominal muscles, women can regain stability and support, leading to reduce gap diastasis recti abdominis (DRA).

2. METHODOLOGY

The research was utilizing non-probability purposive sampling technique to select participants from Mumtaz Bakhtawar and Bajwa Hospitals in Lahore, Pakistan. The study was conducted over a period of six months. The chosen study design for this research was a Randomized Controlled Trial (RCT).

Abdominal Assessment Test: The chosen test was 2 finger method and measuring tape for abdominal gap assessment. Symptom Relief Questionnaire: A questionnaire was administered to assess the time taken for relief from postpartum discomfort symptoms like pain.

A total number of (40) subjects suffering from Diastasis Recti were recruited. In this study we were use the following steps to identify the Diastasis recti. Participants should lie on their back, flexion of knee and flat feet on surface of the couch. The examiner applies gentle finger pressure to assess the separation between muscles of abdominis around the Linea alba. Subjects were randomized into two groups using computer generated random numbers. Outcomes were measured at the baseline and at the end of the treatment after 4 weeks. The data were collected by using symptom relief questionnaire and abdominal strengthening tool. Group A received core stability exercises and Group B received abdominal strengthening exercises. The protocol was given to the participants for four weeks, 3 sessions per week. After collecting the data pain, muscle strengthening, and diastasis gap were compared.

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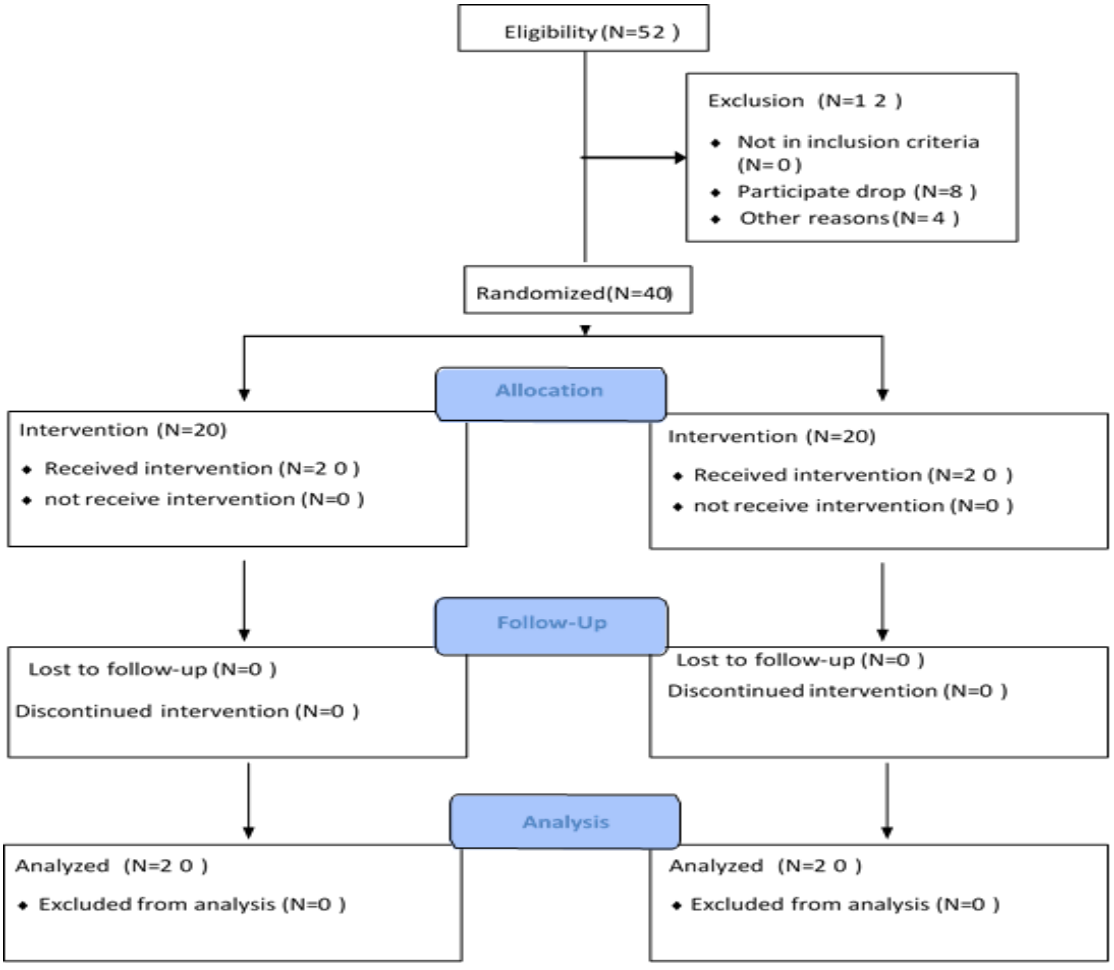
Core Stability Group (Group A):

The group were only receiving core strength training intervention including the following components: Core muscles strengthening exercises: leg raises, bridging and cat-cow. Each Strengthening exercise was performed with 10-15 repetitions.

Abdominal Strengthening (Group B):

The group only receive abdominal strength training intervention including the following components: Abdominal muscles strengthening exercises deep breathing, tissue blowing and heel touch. Each Strengthening exercise was performed with 10-15 repetitions.

Consort Flow Diagram



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3. RESULTS

Table 1: Descriptive statistics

GROUPS	N	Mean	St. Deviation
Core exercises (age)	20	3.05	1.099
Abdominal exercises (age)	20	2.50	1.051
Core exercises (no. of pregnancies)	20	3.00	1.376
Abdominal exercises (no. of pregnancies)	20	2.20	1.322
Core exercises (Number of childbirths)	20	2.15	0.671
Abdominal exercises (Number of childbirths)	20	2.10	1.210

Table 2: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
	Pre-test abdominal	2.2000	20	.41039	.09177
	Post-test abdominal	1.2000	20	.61559	.13765

Table 3: Effects of Abdominal Exercises in DRA

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-test & post-test	1.00000	.56195	.12566	.73700	1.26300	7.958	19	.001

Table 4: Paired Samples Statistics

Group A	Mean	N	Std. Deviation	Std. Error Mean
Pre-test core	2.3000	20	.47016	.10513
Post-test core	2.1000	20	.30779	.06882

Table 5: Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-test core – Post-test core	.20000	.52315	.11698	-.04484	.44484	1.710	19	.104

Table 6: Comparison of Abdominal exercises and Core exercises

	Mean	St. Deviation	DF	t-value	p-value
Core Group Abdominal Group	2.15 1.20	0.366 0.616	38	5.931	0.001

4. DISCUSSION

The current study examined the comparative effects of core exercise programs and abdominal strengthening exercises programs in postpartum women with diastasis recti abdominis (DRA). Our findings contribute to the growing body of research on non-pharmacological interventions for DRA. Particularly in the context of postpartum recovery,

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the findings show that traditional abdominal strengthening exercises significantly reduced the inter-recti distance (IRD) more effectively than core stability exercises. The p-value ($P<0.0001$) indicates a highly significant improvement.

This is consistent with research that shows traditional abdominal exercises can reduce IRD by directly targeting the superficial muscles of abdominal, like the obliques and the rectus abdominis. Improvement observed in DRA could have a physiological basis linked to increased muscle strength and tension in these areas, providing better support to reduce the separation. There was a high level of adherence to the traditional abdominal strengthening program among the participants, which could be attributed to the exercises' straightforward nature and noticeable results. This suggests that traditional abdominal exercises can be a practical and effective solution for postpartum women who seek efficient ways to manage DRA (10).

In a study conducted in 2023 on the efficacy of a strength-based exercise program in patients with chronic DRA. A 12-week strength-based exercise program was evaluated in forty patients 85% women. who aged 37[±13.3] years with chronic DRA in a randomized controlled experiment. The assessment was done at following parameters. After 2.7 months (IRD) functional performance, quality of life and muscle strength. Comparing the intervention group to the control group, the former had significantly better outcomes in reducing IRD, improving muscle strength (11).

A previous study compared the effects of core stability exercises and abdominal exercises in women with postpartum DRA, three groups including forty-five postpartum women were assigned core stability exercises, abdominal exercises and a control group. The study measured baseline, post-treatment, and three-month follow-up outcomes including IRD, functional performance and quality of life. Results indicated that the traditional abdominal exercise group achieved better outcomes in reducing IRD and enhancing functional performance and quality of life compared to the core stability group and control group (12).

In 2017, a study was conducted to measure the efficacy of strength training in postpartum women with DRA, 60 women were divided into a control group (no exercise intervention) and a strength training group (10 weeks of traditional abdominal strengthening exercises). Effectiveness was evaluated at a 19–22-week follow-up, 23 women did strength training and 21 were in the control group. The strength training group showed a significant reduction in IRD and improvement in functional performance, while the control group showed no significant changes (13).

Our current study, in relation to previous studies, shows that traditional abdominal strengthening exercises are more effective than core stability exercises in reducing IRD and improving functional performance in postpartum women with DRA. This study shows that traditional abdominal exercises significantly reduce IRD and improve functional outcomes, while core stability exercises, although beneficial, were less effective in the short term. The findings suggest that traditional abdominal strengthening should be

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considered a primary intervention for postpartum women seeking to manage DRA effectively (14).

To assess the impact of abdominal workouts, paired sample test results were obtained for the pre- and post-values of the abdominal workouts group. The standard deviation was 0.56195, with a mean of 1.000. The difference between the before and post DRA width readings was statistically significant ($p<0.001$). Consequences of core training the results of a sample test were obtained for the core exercise group both before and after therapy, St. deviation was 0.52315 and mean was 0.2000. The difference between the before and post DRA width readings was not statistically significant ($p>0.001$). The comparison of abdominal exercises and core exercises was analyzed using the independent t test as the data was p-value 0.001.

5. CONCLUSIONS

This study focused on addressing DRA (Diastasis Recti Abdominis) after delivery in females, the RCT was conducted involving two exercise groups (A and B). The effects of group A (core exercises) were reducing the typical back pain that follows delivery, enhance the recovery of pelvic floor muscles (assist in lowering the risk of prolapse and incontinence). Boost core stability to make childcare easier and more confidence by having a stronger toned body. The effects of group B (abdominal exercises) were aid in strengthening and reducing the diastasis recti or separation of the abdominal muscles caused by pregnancy. Gain confidence by having a stronger flatter stomach, tone and contour of the pre-pregnancy physique. So, the conclusion was that Group B (abdominal exercises) had more effect on diastasis recti abdominis than group A (core exercises). The outcome was in favor of abdominal exercises.

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