



Original Article

Effect of Specific Stabilization Exercise Along with Muscle Relaxation Technique to Treat Lumbopelvic Pain During Pregnancy

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ABSTRACT

Pain in lower back area amid pregnancy is a typical gripe among women frequently viewed as an inescapable disadvantage of an ordinary Pregnancy. Spinal Specific Stabilizing Exercises and Progressive Muscle Relaxation Techniques are popular form of physiotherapy management in preventing lumbopelvic pain that limits the activities of daily living in patients during and after gestation period. These Specific Stabilization Exercises strengthen Abdominal and Para spinal muscles, which control Lumbopelvic stability **Objective:** To compare the effects of Specific Stabilizing Exercises and Specific Stabilizing Exercises along with Progressive Muscle Relaxation Technique in prevention and management of Lumbopelvic Pain during pregnancy. **Methods:** 30 women were randomized to six-week workout plan comprising both Particular workout for stabilization and Progressive Muscle Relaxation Techniques in experimental group and 30 were randomized as control group including only the Specific Stabilizing Exercises. Lumbopelvic torment was evaluated on Visual Analog Scale (VAS) of torment force. **Results:** The control and the experimental group were comparable at baseline. The experimental group receiving both exercises showed significant improvement in intensity of perceived pain ($p = 0.002$) at the termination of 6 weeks' treatment plan in comparison to control group receiving only specific stabilization exercise **Conclusion:** Specific Stabilizing Exercises along with Progressive Muscle Relaxation Technique reduced pain significantly in pregnant women with lumbar and pelvic girdle pain.

INTRODUCTION

Pain in lower back area amid Pregnancy is a typical complain among women, frequently viewed as an inescapable encumbrance of pregnancy. At least 50% of pregnant ladies encounter some sort of Back pain in pregnancy or during their postpartum period [1]. Reason for this Pain in lower back region includes changes in body mechanics like greater pubic symphysis mobility, Hormonal changes like increased concentrations of relaxing, estradiol and progesterone causing joint laxity and other [2]. There had been differences between the terms pelvic girdle pain and pregnancy related low back

pain but currently most adhere to the definition of pelvic girdle pain, both of them usually start around 18th week of pregnancy [3]. Pain may delay the mother's return to activities of daily life. It may last up to 2 years in 20-80% of women after pregnancy. 2 out of 10 women with pregnancy-related LBP become reluctant to conceive again and it accounts for at least 60% of absence from work and approximately 20% of maternity leave [4]. Continuous low back pain is less common among these females, but activities like standing, walking, lying down, sitting, or changing positions can become painful with greater

difficulty in walking fast and over long distance [5]. Thus, females with pelvic girdle pain avoid activities, this long run idleness leads to muscular weakness and to deconditioning, which in turn predisposes to loss of function and pain, consequently affecting their lives significantly and thus becoming the most well-known reason for debilitated leave after child birth too [6]. Physiotherapy and specific exercise programs can be beneficial through reduction in the severity of acute exacerbations correction underlying mechanical adaptations and deficits. Targeted exercises promote strength of the gluteal and adductor muscles in conjunction with reduction of the activity of lumbar spine musculature. Physiotherapists can also help prevent aggravation of symptoms by reducing the impact of unavoidable activities of daily life [7]. As the pelvis transfers load from trunk to the legs, for effective transmission of loads and minimize shear forces pelvis needs to be stabilized. Stabilization of Lumber and Pelvis can be achieved by Specific Stabilization exercises which can improve the strength and function of the muscles [8]. These Specific Stabilization Exercises improve motor pattern and recruitment pattern of local stabilizing muscles thus changing the load pattern through the pelvis [9]. The isometric tightening of Abdominal muscles such as transverse abdominis effectively improves pelvic floor muscles activity in postpartum females [10]. Pelvic tilt exercises effectively tighten ligaments and muscles supporting the internal organs, decreases tension, improve posture, circulation, and thus decrease low back pain in postpartum females [11]. Stabilization can be achieved through stability ball exercises as it is proven to be effective in reducing low back pain and boost daily life functions in post-partum females [12]. Progressive muscle relaxation is a form of complementary and alternative medicine used to induced relaxation in pregnancy related low back pain it leads to both physiological and psychological effects thereby reducing pain sensation. This technique involves Deep Breathing and Progressive Relaxation of 3 major muscle groups (Lower Limb, Abdomen, and Chest, Arms, Shoulder, Neck and Face) by first contracting and then releasing for at least 20 minutes [13]. These techniques increase a woman's ability to cope up with the stress and problems related to back pain as well as reduce oxygen consumption, respiratory rate, metabolic rate, muscular tension, systolic blood pressure and improves immunity [14-15]. Low Back ache that is associated with pregnancy is a typical issue inducing lower functional ability, quality of life and disability. Physiotherapy intervention is significantly important in reducing Low Back ache in Pregnancy. There is a literature gap regarding effect of "Specific Stabilizing Exercises in

conjunction with Progressive Muscle Relaxation Technique. Therefore, this study will help to understand and apply combine effect of these Interventions practically in Pakistan. It will provide an opportunity to share professional experience with the persons of community for the better care of Obstetric patients. The outcomes of study will be a great contribution to maternal health care system of the country and it will be of great value for new researchers.

METHODS

A randomized controlled study was conducted, and data was collected from Antenatal Care Departments of different Hospitals in Lahore. 60 Patients aged between 20 - 40 years were enrolled in the study. All the patients were assessed for the outcome of different back pain and its nature. Visual Analogue Scale (VAS) scoring 0-10 was used to assess the severity of back pain. Back pain was caused by performing provocation (P4 test) for posterior pelvic pain as it increased pressure on SI joint [16]. After completing the Questionnaire, the patients were divided into controlled and experimental group performing only specific stabilization exercises (Pelvic Tilts and isometric contractions of Transverse Abdominis) and stabilization exercises along with muscle relaxation technique respectively. Severity of pain was noted at 2nd, 4th and 6th week on Visual Analog Scale.

RESULTS

The experimental group receiving both exercises showed significant improvement in intensity of perceived pain ($p = 0.002$) at the end of 6 weeks of treatment plan as compared to controls receiving only specific stabilization exercises. Table 1 shows that all the other variables in the questionnaire among socio-demographic and obstetric data showed no statistical difference with the p -value > 0.05 . Hence, these are independent of the treatment option used except the Number of trimesters in which pain starts that is dependent of the treatment option used.

Characteristics	Experimental group n (%) n= 30	Control group n (%) n=30	p-value
Age (years)			
20-25	16 (53.3)	16 (53.3)	0.565
26-30	11(36.6)	11(36.6)	
31-35	3(10)	3(10)	
Socioeconomic Status			
Upper	1(3.3)	1(3.3)	0.486
Middle	20(66.7)	15(50)	
Lower	9(30)	14(46.7)	
Gravidity			
1	2(6.7)	1(3.3)	0.098
2	12(40)	8(26.7)	
>2	16(53.3)	21(70)	
No. of Children			
1st	3(10)	4(13.3)	0.387
2nd	12(40)	6(20)	

3rd	15(50)	20(66.7)	
Blood Pressure			
High	7(23.3)	5(16.7)	0.253
Low	23(76.7)	25(83.3)	
Occupational level			
Housewife	26(86.7)	23(76.7)	0.587
Working	4(13.3)	7(23.3)	
Onset of Pain			
1st trimester	14(46.7)	12(40)	0.443
2nd trimester	16(53.3)	18(60)	
Nature of Pain			
Shooting	17(56.7)	16(53.3)	0.389
Burning	1(3.3)	0(0)	
Dull ache	2(40)	14(46.7)	
Previous physical therapy treatment			
Yes	3(10)	2(6.7)	0.279
No	27(90)	28(93.3)	

Table 1: Socio-demographic and obstetric characteristics of women enrolled in a Study of specific stabilization

exercises along with progressive muscle relaxation to Treat low back pain. All the 60 patients first consulted gynecologist as the pain started and were satisfied when consulted the physical therapist. Table 2 shows the pain intensity of all the women in both groups that was measured at the VAS before the treatment started, then at the 2nd week, 4th week and 6th week of study. Initially there was no significant statistical difference between the VAS scores linked with lumbopelvic pain between the two groups. At the end of 6th week the experimental group experienced the reduction in pain score and the difference was statistically significant ($F=92.859$; $df=3$; $p=0.002$) as compare to the control group (Table 2). The results of this research have shown major improvement in the low back pain of the pregnant women treated with combined exercise plan.

Pain assessment on VAS	Study groups			Total	p-value
	Group A (experimental group)	Group B (control group)			
Before treatment	Mild (1-2)	1	0	1	P=0.220.
	Moderate (3-5)	5	10	15	
	Severe (6-9)	24	20	44	
At 2 weeks	Mild (1-2)	2	1	3	P=0.203
	Moderate (3-5)	23	18	41	
	Severe (6-9)	5	11	16	
At 4 weeks	None	1	0	1	P=0.514
	Mild (1-2)	12	10	22	
	Moderate (3-5)	17	19	36	
	Severe (6-9)	0	1	1	
At 6 weeks	None	11	0	11	p= 0.002
	Mild (1-2)	15	20	35	
	Moderate (3-5)	4	8	12	
	Severe (6-9)	0	2	2	

Table 2: Pain assessment on Visual analog scale (VAS) pretreatment and at 2 weeks, 4 weeks and 6 weeks post treatment

DISCUSSION

The fundamental goal of this study was to determine the effective relation of the Specific Stabilizing Exercises (sitting pelvic tilts and isometric tightening of the muscles of abdomen) along with Progressive muscle Relaxation for prevention and treatment of lower backache associated with Pregnancy. Mean age of the participants was 25.57 ± 3.985 , so most of the females were of the age between 20 to 30 years. Pain intensity totals were analogous amid the units at the start of research which were similar to those stated in the previous researches [13]. When combined exercise interventions including Specific Stabilizing Exercises and Progressive Muscle Relaxation were applied, a substantial alteration in pain intensity score was seen amongst the two groups. It was also seen that the Experimental group, which received both therapeutic exercises and practiced them regularly, experienced significant improvement in perceived pain. Former researches showed management plans including only Particular Stabilization exercises during pregnancy which were also found to be effective. The results of this study were different from that performed by J.Kluge et al [6] and Akmes et al [13] regarding interventions i.e. Specific Stabilizing along with Progressive Muscle relaxation. The treatment protocol in our study focused mainly on combined effects of Stabilization and Relaxation i.e. Pelvic tilts and "Transversus Abdominis" strengthening, which lead to the stability of Lumbar Spine and significantly reduce laxity of Sacroiliac Joint [17], While muscle relaxation decreased stress hormones, increase endorphins, improve circulation and inhibit sympathetic nerves by blocking the feedback pathway to the brain [18]. Thus, Specific Stabilization and Progressive Muscle Relaxation induced reduction in perception of pain at Visual Analogue Scale (VAS), as shown in a previous study [19]. In a systemic review of non-specific ache in lower back, it was described that stabilization exercises alone or in addition to other therapy, lessened ache [20].

CONCLUSIONS

Although all the patients who participated were satisfied of physical therapy treatment but the application of both the exercises can improve quality of life of pregnant women. As all the patients first visited gynecologists when the pain started so there is need of physical therapy awareness among such patients. The gynecologists can also play a better role in this regard by referring patients to the physical therapy department. The physiotherapists can have better results if they use combine exercise plan to manage lower back pain amid pregnancy.

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