

Effectiveness of Specific Spinal Stabilization Exercises Combined with Conventional Physiotherapy among Postpartum Women suffering from Mechanical Low Back Pain

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Abstract

Objective: To evaluate the pain intensity in rest and different functional activities before and after introducing spinal stabilization exercises with conventional Physiotherapy and conventional Physiotherapy alone in postpartum women with mechanical low back pain. *Method:* A quasi experimental design was used in this study. Sample was selected by using simple random sampling procedure and samples were randomly assigned to each of two groups by simple random sampling technique from Gynecological and Women's Health unit, CRP, Mirpur. Thus, seven patients with postpartum mechanical low back pain were randomly assigned to spinal stabilization with conventional physiotherapy group (exercises and also electrotherapeutic modalities) and seven patients to the only conventional physiotherapy group for this study. Both the group received treatment for a period of 6 days. Numeric Pain Rating Scale was used to measure pain intensity in different functional activities such as swiping, squatting, chair sitting heavy weight lifting, walking, journey by bus or rickshaw and stair climbing. Pain score was analyzed by calculating "Mann- Whitney U test". *Results:* Results showed that pain reduced relatively in several functional activities such as during toilet sitting, stair climbing in trial group between group's comparison and that was also statistically significant. In contrast statistically significant result was not found in some functional activities such as swiping, floor sit to stand, and sitting on chair. *Conclusion:* Specific spinal stabilization exercises combined with conventional Physiotherapy reduced pain and improving functional activities and proven to be an effective treatment protocol.

Key words: Spinal stabilization exercises, Conventional physiotherapy, postpartum mechanical low back pain.

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Introduction:

Low back pain (LBP) is one of the most common symptoms experienced by people throughout the world (Charoenchai et al., 2006). It is the most common disabling musculoskeletal symptom and there is little understanding of risk factors of low back pain. Certain mechanical stresses, repetitive heavy lifting, a sedentary life style, obesity, certain personality profiles and psychological stresses all have been cited as important risk factors associated with the frequency, severity and resultant disability from low back pain (Bach, 2009). According to World Health Organization (2003), LBP is responsible for a major portion of people staying away from work or visiting a medical practitioner. It is estimated that 70 to 80% of the world's population has at least one episode of back pain in their lifetime. This condition may cause a decrease in the quality of life of individuals, as well as deterioration in physical activity. Generally, incidents of back pain most commonly occur in between ages 25 and 50 years (Charoenchai et al., 2006).

The prevalence of back pain 2 to 18 months postpartum is about 2% to 65%. However, in most studies, no clear definition of the exact origin of the back pain in postpartum period has been given. On the contrary some studies showed that the location of pain was most often in lumbar and posterior pelvic areas (Alkherayf et al., 2010).

The incidence of back pain in postpartum patients has also been quoted in between 30% to 45%. This incidence is particularly high in those receiving epidural anesthesia during labor despite the use of epidural anesthesia in postpartum back pain is still controversial (Breen et al., 1994).

The reported incidence of persistent postpartum low back pain symptoms also varied widely in the literature. The presence of low back pain is more than 60% within 2 days after delivery to approximately 37% at 12 months, to up to 82% at 18 months for those with recurrent back pain from previous pregnancies. Most reports on the persistence of postpartum mechanical low back pain symptoms after

pregnancy need short-term follow up that is several months after delivery when only a few reports emphasized on longer-term follow up that is beyond 1 year (Macarthur et al., 1995).

A complete physiotherapy treatment program for postpartum mechanical low back pain should consist of a combination of postural advices, stretching for back pain relief, low-impact aerobic exercises such as bicycling, walking or swimming, core strengthening exercises of abdominal and back muscles to increase stability and gentle stretching for maintaining flexibility are parts of an exercise program for the back and spine to avoid or prevent re-injury (Samad, et al., 2010).

A treatment program focusing on specific spinal stabilizing exercises had both statistically and clinically a significantly better effect on decreasing pain, improving functional status, health related quality of life and physical tests than physical therapy without specific stabilizing exercises (Bunzli et al., 2011).

Spinal stabilizing exercise is meant to dynamically control the lumbar segments and the pelvic joints by activating the local muscles in coordination with the global muscles. It is a program of back exercises designed to teach patients strengthening and flexibility in a pain-free range. It not only improves the patient's physical condition and symptoms but also helps the patient with efficient movement. It provides the patient with movement awareness, knowledge of safe postures, and functional strength and coordination that promotes management of low back pain (Crisms et al., 2006). Hypothesis: Spinal stabilization exercises combined with Conventional Physiotherapy is more effective than Conventional Physiotherapy for mechanical low back pain among postpartum women.

Null Hypothesis: Spinal stabilization exercises combined with Conventional Physiotherapy is no more effective than Conventional Physiotherapy for mechanical low back pain among postpartum women.

Methodology:

Study design: The study was a quasi-experimental study. The study was a single blinded study which has been conducted at gynecological physiotherapy department of CRP, Mirpur. A pretest (before intervention) and posttest (after intervention) administered with each subject of both groups to compare the pain effects before and after the treatment

Study site: The study was conducted in outpatient Gynecological and Women's Health Physiotherapy Unit, CRP, Mirpur.

Study Population: The study population included postpartum women with mechanical low back pain who attended at Gynecological and Women's Health unit at CRP-Mirpur.

Sampling Technique: Sample Random sampling was used to select the participants.

Data collection Technique: Data was collected through face to face interview by using a descriptive questionnaire. Pain intensity on different functional activities was measured

before and after treatment.

Data collection Instrument: A structured questionnaire, Numeric Pain Rating Scale, pen, pencil, paper and computer. **Data Analysis:** Data was analyzed by SPSS version 20 Computing the descriptive statistics- Bar chart, pie chart, percentage and "Mann- Whitney U test" to calculate the significance level of the study.

Intervention:

Spinal Stabilization exercise parameters

In four point kneeling position on bed, continue to breath normally, slowly try to draw abdominal wall, holding this position maintain normal thoracic and lumbar curve, the rib case and pelvis should remain in neutral position, avoid bending the elbows. Have to perform it ten times per set, two sets a day and stop performing beyond painful range (Stuge et al, 2004).

In hook lying position on bed have to maintain normal neutral spine, holding the hands together and arms straight raise knees so that it comes horizontal to the bed level and leg goes out. Arms go over head at the same angle of the leg. Alternate in the other leg. Have to perform it five times per set, three sets a day and stop performing beyond painful range (Stuge et al, 2004).

In supine lying position on bed have to maintain normal neutral spine, contract abdominal muscles, raise buttock about 2 inches above the bed, gently down the lower back, relax the muscles. Perform it ten times per set, three sets a day. Also in same position that is supine lying position on bed hands place on thighs, Slider hand toward knees. shoulder blade and head reaches off the table, never bend chin to chest, maintain good cervical and lumbar spine (maintain lumbar lordosis), perform it 5 times per set, two sets a day. Another exercise on the same position that is participants have to use the hands to hold the thigh, keep the leg straight means ninety degree position from supine whenever another knees keep ninety degree bend on bed, perform it three to five times per set, three sets a day. Both exercises have to stop performing beyond painful range (Stuge et al, 2004).

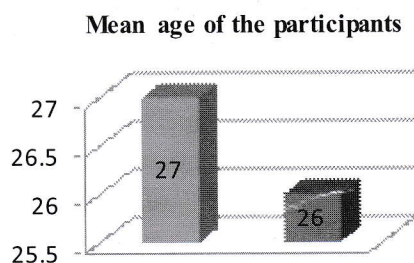
In prone lying position, use a fold of towel to support forehead, straight leg raise of one leg about six inches above the table then slowly return, perform it ten times per set, three sets a day. Another exercise on the same position that is raise one arm and one leg at a time, have to perform it five times per set, three sets a day. Both exercises have to stop performing beyond painful range (Stuge et al, 2004).

Conventional Therapy: The researcher formulated a list of evidence based physiotherapy interventions used in postpartum mechanical low back pain and provided it to the responsible physiotherapist working at the study area. Researcher requested the physiotherapist to mark the interventions commonly used as conventional physiotherapy for postpartum mechanical low back pain.

Mechanical directional movements, Maitland grade of Mobilization, soft tissue mobilization techniques, back muscles stretching, electro therapeutic agents (E.g.: Infrared Radiation, Transcutaneous electrical nerve stimulator)

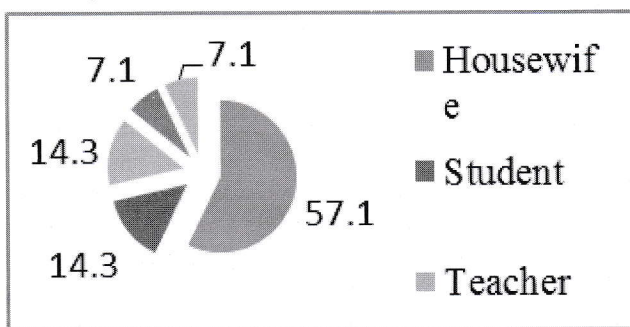
Result and Discussion:

Among the participants, the mean age of the respondents in control group was 26(n=7; SD 1.6) and trial group was 27(n=7; SD 1.7).



Control Group Mean Age = 26
Trial Group Mean Age = 27

Occupation considering 57.1% were housewives, 14.3% were students, 14.3% were teachers, 7.1% were bankers and another 7.1% were doctors.



Onset of low back pain during seven months to one year postpartum period was 71.4% and less than two year postpartum period was 24.6%.

The mean difference of reduction of pain in experimental group was 3.286 whereas in control group it was 2.429. There was also significant improvement found in different functional activities by comparing the pain intensity level on Numeric Pain Rating Scale between pretest and posttest session that was sequentially 1.857, 1.571, 2.285, 1.758, 2.143, 1.857, 1.857, 2.285, 2.571 and 2.858.

The result of this study showed that, in subjects with postpartum mechanical low back pain who received spinal stabilization exercises relatively decrease pain in resting position and also all functional activities compared to individuals who received conventional physiotherapy only by calculating the mean difference.

Researcher also found significant improvement by calculating statistical test (Mann Whitney U test) in seven among ten functional activities considering the p value <0.05. These functional activities included journey by bus or rickshaw, toilet sitting, waking, resting position, stair climbing, weight lifting and bed rolling. Muthukrishnan et al (2010) has done a pragmatic control trial and stated that the spinal stabilization exercises were effective to reduce pain in the functional activities of waking, resting position, stair

climbing, weight lifting and bed rolling etc. He also argued that addition of core stabilization regime with spinal stabilization exercises had an added benefit. In our country context researcher did not included that regime in recent study but significant result also has got in statistical analysis. The functional activities which were not significantly improved by introducing spinal stabilization exercises included swiping, floor sit to stand, and sitting on chair. Mindy et al (2006) done a randomized control trial where significant improvement may not be found in those functional activities. He emphasized on reception of less treatment over a shorter period, not consideration of specific subgroup of patients such as sub-acute, chronic or recurrent low back pain, not measurement of core stabilizing system of the spine, no use of educational booklet and also no follow up at home. Researcher also regarded these factors for negative findings.

Conclusion:

Low back pain is a global health problem that just not affects only postpartum women but also pregnant and non - pregnant women. The manifestations are not only pain but also limitation in movements and restriction to activities of daily living. From this research, researcher also concluded the specific variables and comparison of their improvement rates. This will aid the professionals to decide the specific evidence based protocol for applying interventions in case of postpartum mechanical low back pain.

The performance of Spinal stabilization exercise with conventional physiotherapy is more effective, regardless only conventional physiotherapy. From this research the researcher wishes to explore the effectiveness of Spinal stabilization along with conventional physiotherapy to reduce the features of postpartum patients with mechanical low back pain which will be helpful to facilitate their rehabilitation through physiotherapy management and to enhance functional activities.

Recommendation:

A larger sample size, a longer time frame and long-term follow-up examination and double blinded sampling method may improve the statistical significance of some of the results in further study.

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