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ORIGINAL ARTICLE

EFFECTS OF SITTING PELVIC TILT EXERCISE AND PELVIC FLOOR EXERCISE DURING THIRD TRIMESTER IN PRIMIGRAVIDA ON LOW BACK PAIN

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ABSTRACT

Background of the Study: Low back pain is common condition during the pregnancy. The increased Lordosis of pregnancy combined with the effect of relaxin on the joint of the pelvis and the weight of gravid uterus results on anterior shift in the center of gravity which all together contributes to complain of low back pain during pregnancy. The main objective of the study is to find out the effects of sitting pelvic tilt exercise and pelvic floor exercise during third trimester in Primigravida on low back pain.

Methodology: This was an experimental study with pre and post intervention. The study setting was done in ACS medical college and hospital. Total 30 Primigravida women aged between 20-35 years selected by random sampling method. The selected women followed sitting pelvic tilt exercise and pelvic floor exercise for 8 weeks. Three sets per day with 10 repetitions per set. The outcome measures were determined by Numerical Pain Rating Scale (NPRS). Primigravida (third trimester) Numerical pain rating scale score (4-6). **Result:** The study revealed that sitting pelvic tilt and pelvic floor exercise shows better reduction in pain on comparing the pre-test and post-test values in low back pain on Primigravida women. It showed a significant difference in mean value (1.13) at p value < 0.0001. **Conclusion:** The study concludes that sitting pelvic tilt exercise and pelvic floor exercise was effective on reducing pain intensity. Hence sitting pelvic tilt exercise and pelvic floor exercise is effective therapeutical option for the management of low back pain among Primigravida on third trimester.

Keywords: Primigravida; Third trimester; Sitting pelvic tilt exercise; Pelvic floor exercise; Low back pain.

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INTRODUCTION

Pregnancy is a time of tremendous musculoskeletal, physical and emotional changes, but yet a condition of wellness. Low back ache is one of the most common complaints during gestation, affecting 48-90 per cent of women^{1,2,3}. During pregnancy lot of physiological and musculoskeletal changes takes place for the development of fetus⁴. In pregnant women, it is most common and significantly affecting their daily activities⁵. As the fetus grows, a women's abdominal wall stretches to accommodate the expanding womb. Abdominal muscle stretched to the point of their elastic limit by end of pregnancy⁶.

The center of gravity shifts upward and forward because of enlargement of the uterus and breast. This requires postural compensation for balance and stability during pregnancy, the hormone relaxin is present ten times more than its normal concentration in female body. Relaxin also causes abnormal motion in many other joints of body, causing inflammation and pain^{7,8}.

Lumbar Lordosis that develops at later stages of pregnancy, gravity shifting, postural changing, and workload lead towards pregnancy related low back pain¹. Increased Lordosis of pregnancy combined with the effect of relaxin on the joint of the pelvis and the weight of the gravid uterus which results anterior shift in the center of gravity.

All contribute to complaint of low back pain during pregnancy Hormonal changes that occur during pregnancy causes softening of ligaments and the joints, particularly of the pelvis, to enable the fetus to pass through the birth canal more easily⁹. This results in increased joint looseness and decreased stability. This, in

conjunction with lengthening of the abdominal muscles, compromises the stability of the spine and results in excess mobility of the joints. This may be the cause of pain in the lower back and posterior pelvis. Low back pain during pregnancy was most frequently reported in the third trimester of pregnancy (40.7%) and was often reported to be in lower back area (71.2%). One third of them will suffer from severe pain which will reduce their quality of life^{10,11}.

The majority of women affected are Primigravida 80% of pregnant women suffering from low back pain^{12,13}, Pelvic floor muscles training is safe and effective technique that restore or develop pelvic floor muscles strength and help women control this musculature during pregnancy¹⁴. The sitting pelvic tilt exercise is one of the mobility exercise which seems to strengthen or increases the flexibility of muscles needed to compensate for increase abdominal mass and thereby maintaining normal posture. The pelvic floor exercise is used in this study was designed to coactive superficial and deep core muscles thus, results in significantly better improvement in pain¹⁵.

There are two simple exercise that can be safely given to women during pregnancy- pelvic floor and pelvic tilt exercise. This study was performed to assess the effect of sitting pelvic tilt exercise and pelvic floor exercise on low back pain during the third trimester in Primigravida. Exercise is given in sitting position is called sitting pelvic tilt exercise, the pelvic floor exercise is also given in sitting position during third trimester.

Aim of the study: To investigate the effects of sitting pelvic tilt exercise and pelvic floor exercise during third trimester in Primigravida on low back pain.

Need of the study: Pregnancy related low back pain has become the common issue for women in the last trimester which affect the quality of life during pregnancy. Sitting pelvic tilt exercise and pelvic floor exercise which approaches for low back pain during the third trimester. So this study is done to find out the effects of these exercises in reducing low back pain.

METHODOLOGY

This was an Experimental study with Comparative Pre and Post type. Study Setting: done at A.C.S Medical College and hospital, Velappanchavadi, Chennai-77. Sample Size for this study was 30 Primigravida and intervention duration was 8 Weeks.

Inclusion Criteria for this study were Primigravida women third trimester with low back pain, Age 20-35 Years, Numerical pain rating scale (4-6), Subjects willing to participate. Material Used for this study were hard chair, scoring sheet. Outcome Measure for the study was Numerical Pain Rating Scale.

Procedure: Subjects would be selected based on selection criteria. Numeric pain rating scale consists of 10 scores. The women should choose corresponding score according to their level of pain. The intervention included sitting pelvic tilt exercise and pelvic floor exercise for low back pain in participants respectively.

Intervention

Sitting pelvic tilt exercise: Subjects will be asked to sit in chair with a straight backrest with feet flat on the floor at hip's width distance. Subjects will be asked to tilt the pelvis back and draw in umbilicus. Holding time is three to ten seconds. Duration of the program was three sets per day. Each set consist ten repetitions.

Pelvic floor exercise: Sit and lean slightly forward with straight back. Squeeze and lift the muscles in gentle manner then hold the squeeze for 8 seconds. Duration of the program was three sets per day. Each set consist ten repetitions.



Fig 1: Anterior Pelvic tilt



Fig 2: Posterior Pelvic tilt



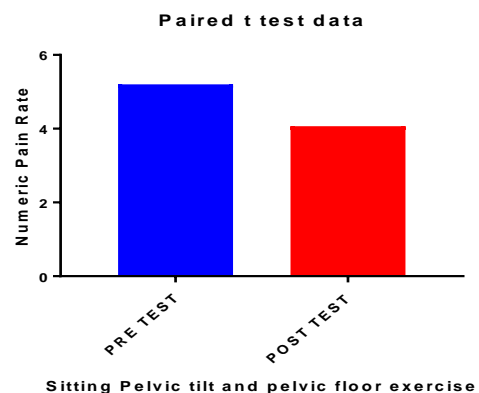
Fig 3: Pelvic floor exercise

Data Analysis: The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for social science (SPSS) version 24. Paired t-test was adopted to find statistical difference within the groups.

Group A	Number of pairs	Mean Differences	SD, SEM	df	t	P Value	Significant different (P<0.05)
Pre-Post	30	1.133	0.5713 0.1043	df= 29	10.86	<0.0001	****

Table-1 Comparison of numeric pain rating scale (NPRS) score within the group in pre and post test

The above table reveals the mean difference, standard deviation (S.D), t-value and p-value of the low back pain between the pre-test and post-test within the group. Based on low back pain, it shows that there is statistically significant difference between pre-test and post-test value within the group $p < 0.0001$.



Graph-1: Graphical representation of comparison on numeric pain Rating scale within the group between pre and post test

RESULT

A total sample of 30 subjects was included in the study with the age group between 20 to 35 years. The patients were selected from A.C.S. Medical College & Hospital, Chennai-77. These patients were inquired about the characteristics of pain and functional activity. The study revealed that sitting pelvic tilt and pelvic floor exercise showed better reduction in pain intensity. On comparing the pre-test and post-test values in low back pain on primigravida women shows significant difference in mean value (1.133) at p value < 0.0001 .

DISCUSSION

The present study was designed to investigate the efficacy of two exercise for Primigravida women with low back pain during third trimester. The sitting pelvic tilt exercise and pelvic floor exercise shows effectiveness in reducing pain and have improvement in functional ability. Low back pain commonly occurs during pregnancy. Both sitting pelvic tilt exercise and pelvic floor exercise is very simple and effective exercise. In our study we are improving the strength of lower back region and thereby reducing pain in women with low back pain. 30 primigravida were selected by random sampling method.

The pain is measured using Numerical Pain Rating Scale. This study supports the finding on Yana Richens et al, (2015)¹⁶ reported back ache first developing during the 5th-7th month of pregnancy. Symptoms are often reported by women to be worse in the evening and in third trimester and suggested that pelvic tilting and pelvic floor exercise which can be safely given during pregnancy. Areerat s et al., (2002)³ reported the sitting pelvic tilt exercise during third trimester in primigravida could decrease

pain intensity without incidence of preterm labor, low birth weight or neonatal complication.

A study reported that sitting pelvic tilt exercise during third trimester in Primigravida did not only reduce pain in numerical pain scale and also decrease episodes of insomnia and sleep disorders. Another study stated that on comparing non exercised pregnant women with prenatal exercised pregnant women decreases the severity of low back pain^{16,17}.

Low back pain intensity was increased in control group. The exercise group shows significant reduction in the intensity of low back pain after exercise. Exercise during second half of the pregnancy significantly reduced the intensity of low back pain. Physical activity and exercise during pregnancy promotes physical fitness and may prevent excessive weight gain¹⁸.

Exercise may reduce the risk of gestational diabetes, preeclampsia and cesarean deliveries and exercise offers significant benefits in women reducing low back pain and pelvic pain, specifically beneficial effects in severity of pain and thus on functional abilities and quality of life of the women affected. The sitting pelvic tilt exercise and pelvic floor exercise has been suggested as its management for low back pain in pregnancy^{19, 20}.

The statistically report reveals there is a significant difference in Numeric pain Rating scale scoring ($P < 0.0001$) in subjects who undergone sitting pelvic tilt exercise and pelvic floor exercise. Finally the sitting pelvic tilt exercise and pelvic floor exercise can be used as simple and effective treatment on reducing

low back pain among third trimester Primigravida.

Ethical clearance: There was no risk of conducting this study. Ethical clearance was obtained from the ethical Institutional Review Board of Faculty of Physiotherapy, Dr. MGR. Educational and Research Institute, Chennai with reference No. A23/PHYSIO/IRB/2018-2019 approval letter dated 08/01/2019.

Conflicts of Interest: There is no conflict of interest to conduct this study.

Fund for the study: This is self-funded study.

CONCLUSION

The study revealed that sitting pelvic tilt Exercise and pelvic floor exercise was effective reducing pain intensity, hence concluded that sitting pelvic tilt exercise and pelvic exercise is effective therapeutical option for the management of low back pain for exercise among Primigravida in third trimester.

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