

Does Sitting Pelvic Tilt Influence Quality of Pain in Low Back Pain and Quality of Sleep among Primigravida Indian Mothers

Deepthi RNV, Ponmathi P* and Sivakumar VPR

College of Physiotherapy, Kattankulathur Campus, SRM University, Tamilnadu, India

*Corresponding author: Ponmathi P, Assistant Professor, Department of Physiotherapy, SRM University, Kattankulathur, Kancheepuram District, India, Tel: 914427417000; E-mail: ponmathi_sugadev@yahoo.co.uk

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Abstract

Objective: Does sitting pelvic tilt influence quality of pain in low back pain and quality of sleep among primigravida Indian mothers.

Subjects: About 30 primigravida Indian women with low back ache and sleep disorder was selected with numerical pain rating scale score (5-8) moderate were selected.

Interventions: The participants in the experimental group received back care education along with sitting pelvic tilt exercise, three sets per day while Participants in the control group received only back care instructions alone.

Outcome measure: Numerical pain rating scale and pittsburgh sleep quality index

Results: The statistical results has shown group A subjects who had received sitting pelvic tilt exercise had shown a statistical significance change in numerical pain rating scale and Pittsburgh sleep quality index post 4 weeks ($p < 0.05$), whereas group B did not show any statistical significance change between the pre-test and the post-test values numerical pain rating scale and Pittsburgh sleep quality index post 4 weeks of management.

Conclusion: Sitting pelvic tilt does influence quality of pain in low back pain and quality of sleep among primigravida Indian mothers.

Keywords: Pelvic tilts; Sleep quality; Rehabilitation; Pregnancy

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 in pregnancy that interfere with work, daily activities and sleep of the pregnant women [1,2].

During pregnancy lot of physiological and musculoskeletal changes takes place for the development of foetus [3]. The abdominal muscles also stretch to accommodate the expanding uterus. As they stretch, they lose their ability to perform the function of maintaining body posture, causing the lower back to support the majority of the increased weight of the torso [4]. The centre of gravity shifts up ward and forward because of the enlargement of the uterus and breast which requires postural compensation for balance and stability [2].

During pregnancy, the hormone relaxin is increased up to ten times its normal concentration in the female's body [5]. Relaxin as the name suggests, it relaxes the joints in the pelvis so the baby has room to pass through the birth canal. Unfortunately, relaxin also causes excessive movement in joints of the body, causing inflammation and pain [5,6].

The increased lordosis of pregnancy combined with the effect of relaxin on the joints of the pelvis and the weight of the gravid uterus results an anterior shift in the centre of gravity which all together contributes to complaints of low back pain during pregnancy [2,5].

Low back pain during pregnancy was most frequently reported in the third trimester of pregnancy (40.7%) and was often reported to be in the low back area (71.2%) [5-7].

There has been a plethora of studies regarding the epidemiology of pregnancy-related low back pain. Rates range from 25% to 90%, with most studies estimating that 50% of pregnant women suffer from low back pain [8]. One third of them will suffer from severe pain, which will reduce their quality of life. The majority of women affected are Primigravidas 80% of the pregnant women suffering from low back pain [9-11] claim that it affects their daily routine and 10% of them report that they have sleep disturbances [12].

Recent findings and studies suggest that pregnancy affects sleep in multiple ways. They are:

- Hormonal changes
- Physiologic changes
- Physical factors and behavioural changes

Low back ache falls under the category of physical factor affecting sleep in the third trimester [6,13]. The spectrum of association between the pregnancy related low back ache and sleep disturbance ranges from an increased incidence of insomnia, nocturnal awakening up to parasomnias.

Therefore, it is important for the (women's health physiotherapist) to be knowledgeable and able to recommend effective treatment options for the management of low back pain in pregnancy.

Years back the only non-invasive method for treating low back pain in third trimester was back care instructions, back care education mainly focuses about the posture adaptation for example proper sitting, standing, lying and lifting from ground level [8].

Now due to recent advancement in the field of women's health physiotherapy, the sitting pelvic tilt exercise, a form of mobility exercise has been widely suggested as the management for low back pain in pregnancy [14,15].

The sitting pelvic tilt exercise is one of the mobility exercises which seem to strengthen or increase the flexibility of the muscles needed to compensate for increased abdominal mass and thereby maintaining normal posture [16].

But only very few studies has assessed the effects of sitting pelvic tilts in pregnancy, and also very few studies are done on effect of exercises on sleep disturbances prevailing in pregnancy.

Therefore, this study was performed to assess the effect of sitting pelvic tilt exercise on low back pain and sleep disturbances during the third trimester in primigravidas.

Materials and Methods

Primigravid women were assessed prior to the study and 30 women with low back ache and sleep disorder was selected with numerical pain rating scale score (5-8) moderate and women with specific low back pain-neurologic, orthopaedic and rheumatic origin. Back pain after trauma, High risk pregnancy and complicated obstetric history were excluded from the study. The selected women were well explained about the study, treatment protocol and the duration of the study.

Informed consent was taken from the women who were motivated and willing to participate in the study. Pre-test for the gravid women with low back pain and sleep disorder was done by using Numerical Pain Rating Scale and Pittsburgh Sleep Quality Index.

The gravid women was segregated into experimental and control group. The experimental group of 15 gravid women and the control group of 15 women.

The participants in the experimental group received back care education along with sitting pelvic tilt exercise, three sets per day.

Experimental Group

Back care

Education about the posture adaptation, for example proper, Sitting, Standing, Lying and lifting from gradual level. It is very important to have a good posture. A good posture will automatically work the abdominals, pelvic floor and back muscles. This will protect the back while the mother is standing, sitting and doing every day activities.

Standing

- Stand up tall and contract transverses abdominis.
- Relax the shoulders and breathe normally.
- Distribute the weight equally on both feet, Practice this correct posture as often as possible.

Sitting

- Back is well supported by the chair.

- Maintain lordosis by a small cushion but this should not be exaggerated.
- Feet should be flat on the floor or on a small stool.
- Do not slouch.
- Avoid crossing legs and feet.
- Avoid leaning to one side of the chair or putting feet up on the chair.
- Practice the correct sitting posture as often as possible.

Lifting

- Put one foot in front of the other with the toes facing forward, Keep the back straight and bend the knees to reach down.
- Hold the object firmly keep it close to the body, gently tighten the pelvic floor muscles and the transverse abdominis muscle out and keep the back straight to stand up.
- Avoid twisting the body as you come up.
- Avoid lifting heavy or awkward things, and moving furniture.
- Avoid bending forward from the hips to pick something up.

Sleeping positions

Side lying

Lie on side with a pillow between the knees. A pillow behind the back, or under the abdomen.

Semi prone

In this position the top leg is supported by a pillow and one arm is behind the back.

Supine Lying

- Avoid supine lying continuously more than five minutes.
- Put extra pillows behind to raise the head, shoulders and upper back.
- Another pillow under the thighs.

Do's:

- Wear low-heeled shoes.
- Sit with knees together in a firm chair with the back well supported.
- Sit with your knees level with or lower than the hips.
- Take smaller steps when walking sit down to get dressed.
- Use a shower; they are easier to get in and out of than baths.

Do not's:

- Wear high heels.
- Sit with knees apart, legs crossed or feet tucked up under.
- Stride out or hurry.
- Sit in soft chairs which offer little support.
- Sit in a swivel chair.
- Stand on one leg (or) Use breast-stroke legs when swimming.

Sitting pelvic tilt exercises

Subjects will be asked to sit in a chair with a straight back rest with feet flat on the floor at a hip's width distance. Subjects will be asked to tilt the pelvis back and draw in the umbilicus. Holding time is three to ten seconds. Repetition-ten time's. Three sets per day.

Control Group

Participants in the control group received only back care instructions alone. The participants were in continuous follow up through phone calls and were in direct contact during their visits to the health care centre. After 4 weeks of duration the women were reassessed using Numerical Pain Rating Scale and Pittsburgh Sleep Quality Index for post-test values. Pre-test and the post-test values of Numerical Pain Rating Scale and Pittsburgh Sleep Quality Index were prepared into a master chart and statistical analysis was done.

Observations

In the below Table 1, p is less than 0.01 which shows that there is a significant difference in Intensity of pain through Numerical Pain Rating Scale in Group A subjects treated with Sitting Pelvic tilts and Back Care Program.

NRPS	Mean	SD	t-test	Sig
Pre-Test	7.67	0.724	11.832	0
Post-Test	5.67	0.617	-	-

Table 1: Comparison of Pre-test and Post-test values of Numerical pain rating scale of Group A subjects treated with Sitting Pelvic tilts and Back Care Program (P<0.01).

Comparison of Pre-test and Post-test values of Numerical pain rating scale of Group A subjects treated with Sitting Pelvic tilts and Back Care Program and Group B subjects treated with Back care program (Figure 1).

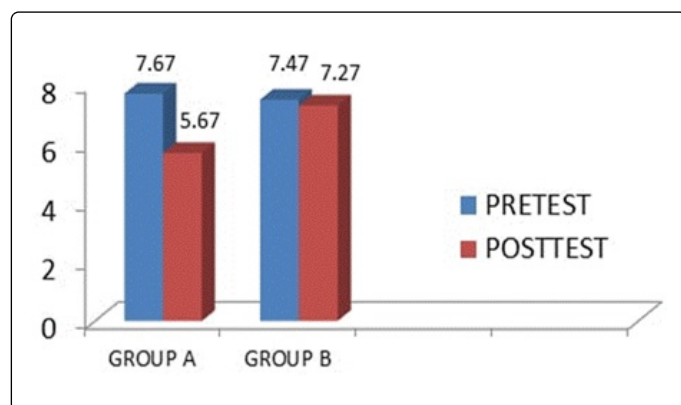


Figure 1: Comparison of Pre-test and Post-test values.

Comparison of Pre-test and Post-test values of Pittsburgh Sleep Quality Index of Group A subjects treated with Sitting Pelvic tilts and Back Care Program and Group B subjects treated with Back care program (Figure 2).

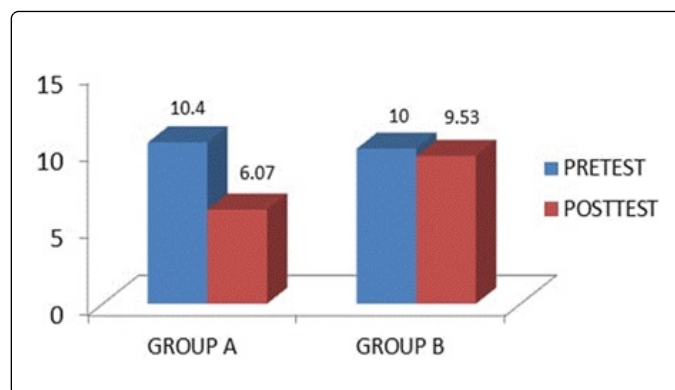


Figure 2: Comparison of Pre-test and Post-test values.

In the below Table 2, p is less than 0.01 which shows that there is a significant difference in Quality of sleep through Pittsburgh Sleep Quality Index in Group A subjects treated with Sitting Pelvic tilts and Back Care Program.

PSQI	Mean	SD	t-test	Sig
Pre-Test	10.4	1.724	17.197	0
Post-Test	6.07	1.1	-	-

Table 2: Comparison of Pre-test and Post-test values of Pittsburgh Sleep Quality Index of Group A subjects treated with Sitting Pelvic tilts and Back Care Program (P<0.01).

In the below Table 3, p is greater than 0.05, which shows that there is no significant difference in Intensity of pain through Numerical Pain Rating Scale in Group B subjects treated with Back Care Program alone.

NRPS	Mean	SD	t-test	Sig
Pre-Test	7.47	0.743	1.148	0.271
Post-Test	7.27	0.799	-	-

Table 3: Comparison of Pre-test and Post-test values of Numerical pain rating scale of Group B subjects treated with Back Care Program (P>0.05).

In the below Table 4, p is greater than 0.05, which shows that there is no significant difference in Quality of sleep through Pittsburgh Sleep Quality Index in Group B subjects treated with Back Care Program alone.

PSQI	Mean	SD	t-test	Sig
Pre-Test	10	1.93	2.43	0.3
Post-Test	9.53	1.6	-	-

Table 4: Comparison of Pre-test and Post-test values of Pittsburgh Sleep Quality Index of Group B subjects treated with Back Care Program (P>0.05).

Discussion

This study focused on to the effectiveness of sitting pelvic tilt exercises on low back pain and sleep disorder during the third trimester in primigravida. The increased lordosis of pregnancy combined with the effect of relaxin on the joints of the pelvis and the weight of the gravid uterus results an anterior shift in the centre of gravity which all together contributes to complaints of low back pain during pregnancy [17]. Low back pain during pregnancy was most frequently reported in third trimester (40.7%) and was often reported to be in the low back area (71.2%) [18].

Years back the only invasive method for treating low back pain in third trimester was back care instructions. Back care education mainly focuses about the posture adaptation for example proper sitting, standing, lying and lifting from ground level. Now due to recent advancements in field of Women's health physiotherapy, the sitting pelvic tilt exercise, a form of mobility exercise has been suggested as the management for low back pain in pregnancy [16].

The statistical results of this study shows that there was statistically significant difference in numerical pain rating scale and Pittsburgh sleep quality index in group A subjects who underwent sitting pelvic tilt exercise along with back care education.

The results goes in hand with Kamali et al. concluded that the sitting pelvic tilt is an imperative cure in pregnancy related low back ache and sleep disorder that arise from it [16].

The statistical results of this study shows that there was no statistical significant difference in Numerical pain rating scale and Pittsburgh sleep quality index in group B subjects trained with back care education alone.

The sitting pelvic tilt exercises during the third trimester in primigravids did not only decrease back pain intensity in numerical pain rating scale but also decreases episodes of insomnia and other sleep disorders as concluded by Suputtida et al. [1].

The statistical results has shown group A subjects who had received sitting pelvic tilt exercise had shown a statistical significance in numerical pain rating scale and Pittsburgh sleep quality index post 4 weeks, whereas group B did not show any statistical significance between the pre-test and the post-test values numerical pain rating scale and Pittsburgh sleep quality index post 4 weeks [19-25].

Thus, the group A subjects treated with sitting pelvic tilt exercise shows a significant difference or improvement in numerical pain rating scale and Pittsburgh sleep quality index post four weeks of treatment than the group B who received back care program alone [25-36].

So sitting pelvic tilt exercise has good effects on low back pain intensity and related episodes of insomnias and sleep disorder among third trimester primigravidas. Future studies can be done including and comparing pelvic tilts in different positions, Primigravida and Multigravida can be compared and effect of pelvic tilt over low back pain in second trimester can be explored [36-47].

Conclusion

The subjects treated with sitting pelvic tilt exercise were benefited in terms of reduction in pain intensity on numerical pain rating scale and increased sleep efficiency in terms of decreased sleep disturbance in Pittsburgh sleep quality index. Hence it is concluded that sitting pelvic

tilt exercise is an effective therapeutic option to manage Low back pain and sleep disturbances among primigravida in third trimester.

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