

Impact of Pelvic Pain on Hip Adductors in Pregnant Females during Third Trimester

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Abstract

Background: Pregnancy leads to some physiological changes and anatomical changes within maternal and developmental fetus. Posterior pelvic pain usually arises in 20% of the pregnant ladies which may become a cause of adductor tightness during third trimester.

Objective: The objective of the study was to find out the impact of pelvic pain on hip adductors in pregnant females during third trimester.

Study type, settings & duration: A cross sectional study was conducted at Arif Memorial Teaching Hospital, General Hospital Lahore and Dr. Sadia Khan Clinic, Lahore from March to October 2019.

Methodology: Total 206 pregnant women were enrolled. A non-probability convenient sampling method was used. Keeping the margin of error 0.05% and level of significance equal to 5%. Pain was measured by pelvic girdle questionnaire and hip adduction was measured by hip adduction test using goniometer. The standard normal range of hip adduction was 25.

Results: Pelvic Pain during pregnancy was reported by 66 % of multigravida patients which was 135 out of 206. Data collector and data analyzer were blinded and main methodological problems were avoided by careful study planning to avoid biasness. Hip adduction tightness was up to 16 degree and found in the pregnant ladies; whereas normal range of hip adduction is 20 to 30 degree. Hip adductors tightness mostly found in multigravida patient with the mean age of 29 years.

Conclusion: Study concluded that pregnant ladies who suffered from posterior pelvic pain during third trimester can also have hip adductor tightness.

Key words: Pelvic pain, lumbopelvic pain, adductor tightness, primigravida, multigravida.

Introduction

Posterior pelvic pain usually arise in 20% of the pregnant ladies and suffered with weight bearing difficulties; around 73% ladies reported impaired mobility.¹

Another study reported that the prevalence of pelvic pain vary from 24% to 90%.² A sum of 7% of pregnant ladies utilized supports during pregnancy and 15% announced awakening around evening time habitually because of pelvic girdle pain

(pelvic girdle pain) in pregnancy at one area or more. Risk factors of pelvic pain including psychological factors, patient characteristics, acute preoperative and acute postoperative pain and surgical procedures.³ Some of the risk factors included younger age, (early) postoperative pain, fibromyalgia, somatization and poor physical health.⁴ Some of the precipitating factors are involved long period time sitting, sexual intercourse, stress, defecation, periods, child birth and surgical procedure.⁵

There are five muscles in this group. Names of these muscles are Gracilis, obturator externus, adductor brevis, adductor longus and adductor magnus. Adduction of the hip happens through commitments from the anteromedial compartment muscles including the adductor magnus, bravis and longus muscles, and the pectineus and Gracilis muscles. Hip joint allows 25 degree adduction before hip impairment occurs.⁶

The prevalence of pelvic pain vary from 24% to 90%.⁷ Another study reported that 21% of primipara had both posterior pelvic pain and low back pain, while 51% had not one or the other.

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Authors Contribution

RN & MA conceptualized the project and did the data collection. Statistical analysis was performed by SB & IS. Literature search, drafting, revision & writing of manuscript were done by RN.

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While this figures in multipara found 31% and 33%.⁸ The symptoms of constant pelvic pain side effect for the most part envelops the accompanying clinical attributes – term of a half year and more, fragmented help with most medications, altogether debilitated useful capacities at home or work, related with indications of sadness like sleep deprivation, anorexia, weight reduction and adjusted family jobs.⁹

Pregnancy is a period of conceiving an embryo within a maternal body. It leads to some physiological changes and anatomical changes within maternal and developmental foetus. Pregnancy, divided in 3 trimesters. In third trimester of pregnancy, one of physiological changes is soft tissue edema. Edema in soft tissue during pregnancy is accounted for around 80% of ladies, with discoveries generally striking during the most recent two months of pregnancy.¹⁰ Increased liquid maintenance can predispose to nerve compression. Another physiologic difference in pregnancy is ligamentous laxity. It is identified with the releasing of the hormones relaxin and estrogen. Relaxin is known to relax pelvic connective tissue and actuate collagenolytic framework.¹¹ The physiologic difference in pregnancy is ligamentous laxity. It is identified with the releasing of the hormones relaxin and estrogen.¹¹ The skeletal and bone changes occur in pregnancy and bony turnover become increased during 3rd trimester as compare to 1st trimester. During third trimester the source of Ca is stored in bone.¹² An amplifying gravid uterus extends and abdominal muscles become weak, in this setting extra lumbar muscles become strained that make stomach muscle tone and quality becomes decreased. This activity makes an extra flexion mobility on the lumbar spine that finishes in an expanded burden on the lumbar spinal musculature.¹³

In a study of Rochester University, it is described that in pregnancy the Relaxin and progesterone hormone relax the muscles and loosen the joints, especially in the pubic area. Another study describes that Relaxin hormone produces during pregnancy which relaxes the muscles, ligaments and joints of the whole body.¹⁴ With pregnancy, when the lordosis occurs and the anterior pelvic tilt there and with these changes the adductors also become tight.¹⁵

Some studies concluded that the whole body's muscles relax during pregnancy especially in pubic area due to relaxin which causes instability of joints that leads to pain complaints. But other studies indicate that abdominal muscles relax and the adductor muscles become tight while further pulling symphysis pubis down to make it painful. So

there is conflict of views in both studies that adductors either become tight or not because of relaxin. A number of researches have been conducted on the posterior pelvic pain in pregnant females but with the best of researcher's knowledge, a literature gap has been found regarding the impact of pregnancy on hip adductors and pelvic pain in third trimester. This study may help other researchers to design the weekly exercises in pregnancy.

Methodology

An observational descriptive cross sectional study was used. The study was completed in the duration of six months. A non-probability convenient sampling method was used in this study. Keeping the margin of error 0.05% and level of significance equal to 5%, the sample size was 206. The study was conducted in Arif Memorial Teaching Hospital, Lahore General Hospital Lahore, and Dr Sadia Khan clinic.

The females with age of 25 to 40 years in 3rd trimester, who had complain about the lumbopelvic pain at iliac crest, gluteal folds and in thighs were included in this study. Females (Primigravida and multigravida) with positive pelvic girdle questionnaire and adductor tests were taken. Adductor tightness Test¹⁶ and Pelvic Girdle questionnaire¹⁷ are given below. Patient who were with trauma or other disease like neoplasm and signs of radiculopathy arise, i.e. passive Straight leg raise restricted the range of motion and cause pain in lower leg were excluded and also the patients who do not filled the consent form.

The patient lies on plinth with neutral body positions. The test was performed by the goniometer. Goniometer was placed on the anterior superior iliac spine with fixed and moveable arm in the direction of the femur bone. Patient was asked to adduct his leg comfortably. The moveable arm of goniometer moved with the direction of the leg and hence value was calculated. (Adductor Test)

There were 25 questions with maximum score of 75 and least score was 0 and divided into three sections, 1st portion was with 20 questions consisted of problems in daily life. 2nd portion was for pain experience intensity that had 2 questions. The last and third portion was for functional mobility impairments and sleep disturbance.

The data was analyzed by using SPSS version 21. The quantitative variables were presented using mean, standard deviation and range. The categorical variables were presented as frequencies and percentages.

The Ethical approval was obtained from Ethical Committee of University of Health Sciences, Lahore. The protocol of the study was approved by the Departmental Research Committee of Faculty of Physiotherapy.

Results

Pelvic pain and adductor tightness during pregnancy was common in women. The data showed that females with posterior pelvic pain in third trimester could have hip adductor tightness. The mean value was 16.6 ± 1.72 degrees that were up to 7 degrees decreased from normal range of hip adduction. The percentage of pregnant ladies ($n=54$) who suffered with hip tightness was 26% which was up to 16 degrees, 7% of the ladies ($n=15$) suffered up to 14 degrees that was 6 to 8 degrees less from normal range of hip adduction (standard hip adduction range is 25 degrees) while 20% of the pregnant ladies ($n=43$) had tightness up to 15 degrees and 19% of the total population ($n=40$) had tightness up to 17 degrees whereas 12% ($n=26$), 7% ($n=15$) and 2% ($n=6$) showed hip tightness for up to 18, 19 and 20 degrees respectively. The population with up to 20 to 22 degrees of hip adduction i.e. 1.94% ($n=4$), 1.46% ($n=3$) were considered as normal respectively (Figure-1).

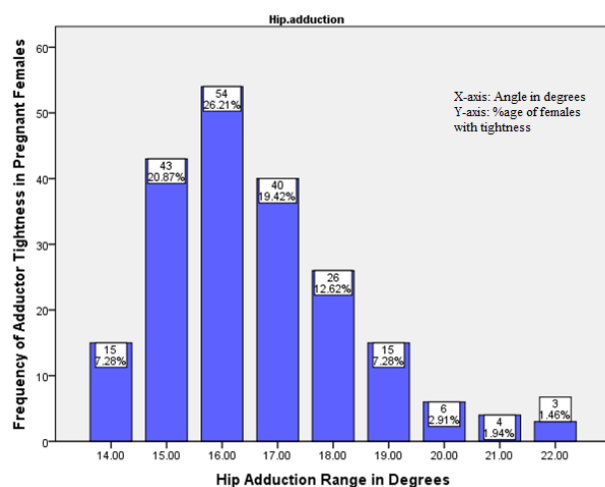


Figure 1: Hip adduction score of enrolled patients.

The mean score of pelvic pain during pregnancy was 65.8 with standard deviation was 7.98. However, the minimum value was 52 and the maximum value was 88 which were showing on X-axis. Maximum 29 percent females complaint the pain at score of 66 percent according to pelvic girdle questionnaire (Figure-2). Mean value of activity limitation is 53.63. (Figure-3) Most of the pregnant

women had hip adductor tightness in association with pelvic pain. There is weak positive correlation seen in females between hip adduction and pelvic girdle pain as r is equal to 0.59 (Table).

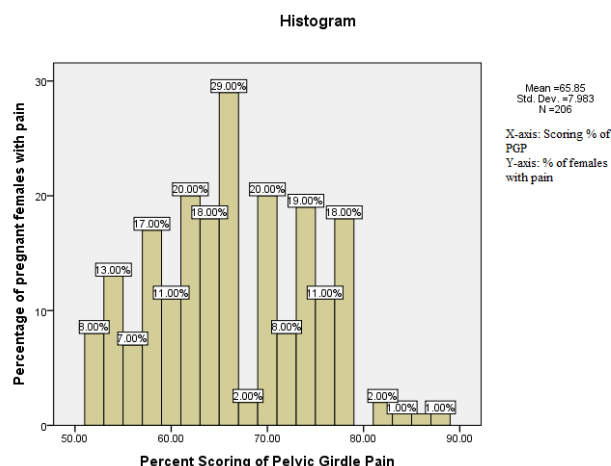


Figure 2: Pelvic girdle questionnaire.

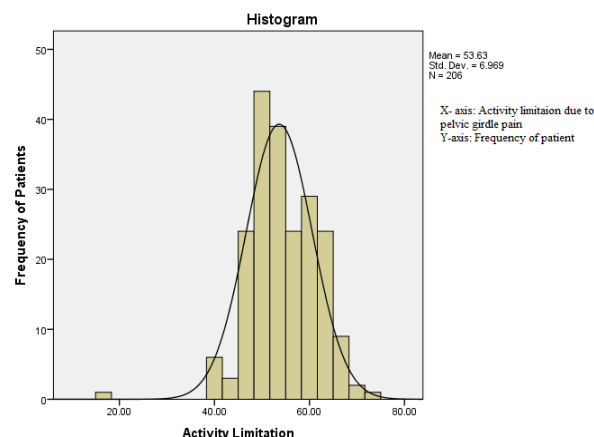


Figure 3: Activity limitation due to pain.

Table: Impact of pelvic pain on hip adduction.

		HAT	PGPS
Hip. adduction	Pearson	1	0.132
Tightness in females	Correlation		
third trimester having	p-value		0.059
pelvic girdle pain			

HAT: Hip Adduction Tightness, PGPS: Pelvic Girdle Pain Score

Discussion

The higher the value of pelvic girdle pain, the more will be the adductor tightness in third trimester. Adductor tightness with the pelvic girdle pain was up to 16 degrees, whereas normal range of hip adduction was 20 to 30 degrees. Due to the tightness, movement of adductors of hip is decreased

about 4 to 6 degrees with some of the limited activity of daily living. Most of the hip adduction found in multigravida pregnant females with the mean age of 29 years and the decrease in hip adduction movement found up to 6 degree decreased. This is due to the pelvic pain during pregnancy that is complained by the patients with mean score of 66 out of 100 (percent) and most of the multigravida patient presented with complain of pain. The previous study of pelvic pain had showed the ± 5 standard deviation whereas this study indicated that the standard deviation was ± 7 in third trimester. Previous study proved that lumbo pelvic pain is mostly high in pregnant ladies as compared to the pelvic pain.¹⁸

A study has been conducted which indicated that subjects interlinked with different professions (high grade profession, low grade profession, housewife, house husband and peon, sweepers) with back pain have tight hamstring muscle. House wife and house husband are most commonly affected.¹⁹ But adductor tightness has not been checked in any of previous studies with pelvic pain in third trimester.

In previous study, the relationship of adductor tightness in pelvic girdle pain discussed in players. Decreased hip ROM may be considered an etiological factor in the occurrence of adductor strain in male professional soccer players.¹⁶

There are lots of studies on pelvic pain but no study was reported to check the impact of pelvic pain on hip adduction tightness especially in third trimester of the pregnant women.

This study also showed that the pregnant women with pelvic pain and hip adduction tightness reported limitations in their daily activities by using pelvic girdle questionnaire.¹⁷ The women in gestation period had activities in walking, in sitting and standing and more.

There were following limitations related to this study; low sample size, confined to one city i.e. Lahore and data collected from few hospital and clinical settings.

This study concluded that the hip adduction had normal range from 20 to 30 degree. While this study showed that there was tightness in adduction movement. The movement is decreased about six degrees in third trimester of the pregnancy with correlation of the pelvic pain that was about 66%.

Conflict of interest: None declared.

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