Prevalence of Patterns of Pregnancy induced Pelvic Girdle Pain and Low Back Pain in a Tertiary Care Centre- a Cross Sectional Study

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ABSTRACT

Background: Biomechanical changes during pregnancy impose postural deviations, leading to various musculoskeletal pain syndromes. Commonly noted are the pelvic girdle pain and low back pain which is experienced by pregnant women globally. The prevalence of pregnancy related pelvic girdle pain and low back pain in western population is known. Data of the same in Indian pregnant population lacks evidence.

Objective: To study the prevalence of pattern of pregnancy related pelvic girdle pain and low back pain in a tertiary care centre.

Methods: A total of 225 pregnant women were screened for inclusion criteria. Confirmation of diagnosis of pelvic girdle pain and low back pain was done using Modified Oswestry Disability Index questionnaire (MODI) and the pelvic girdle questionnaire (PGQ). Once diagnosed, all participants were subjected to nine clinical tests to differentiate the site of pain and to classify them accordingly into 3 different groups namely Group A (Low back pain LBP), Group B (Posterior pelvic pain PPP) and Group C (Anterior pelvic pain APP) respectively.

Results: The point prevalence of pain in group A (LBP) was 31%, group B (PPP) was 65% and group C (APP) was 15% respectively. All subjects with mean age of 23 years and mean gestational age of 38 weeks showed to have PPP. 70% of them were primiparous. However APP was more in subjects with 24.5 years of age.

Conclusion: The prevalence rate of PPP (65%) is higher as compared to LBP (31%) and APP (15%). Also PPP is reported to be highest in primiparous with gestational age of 38 weeks.

Introduction

Pregnancy related pelvic girdle pain (PPGP) and pregnancy-related low back pain (PLBP) are the most common problems addressed by the pregnant women in Indian society. According to the European guidelines of Vleeming et al, pelvic girdle pain can be defined as “Pelvic girdle pain that generally arises in relation to pregnancy, trauma, arthritis and osteoarthritis. Pain is experienced between the posterior iliac crest and the gluteal fold, particularly in the vicinity of the sacroiliac joints (SIJ). The pain may radiate in the posterior thigh and can also occur in conjunction with/or separately in the symphysis pubis.”

Back
Pain is characterized as an axial or para-sagittal discomfort in the lower lumbar region and is musculoskeletal in nature. The reported prevalence rate of pregnancy-related pelvic girdle pain in Western countries varies: 23.6%, 22.6%, 36.2%, 14.2%, 31.2%, and 34% in various prospective studies, and 42.4% and 9.8% in retrospective studies. Similarly, for pregnancy-related low back pain, the point prevalence in the western countries is found to be 25% and 16%. The etiological factors of pelvic girdle pain include hormonal changes, biomechanical changes, trauma, metabolic factors, inadequate motor control, and stress of the ligamentous structures. The hormone relaxin affects the laxity of ligaments of the pelvic girdle as well as ligaments in the rest of the body. The effect of increased ligament laxity is a slightly larger range of movement in the pelvic joints. If this is not compensated by altered neuromotor control, pain may result and also lead to the widening and separation of the symphysis pubis. The studies have reported an association with metabolic comorbidities such as diabetes, but the underlying etiologic mechanism is not clear. Studies elucidate that cases with pelvic girdle pain are more likely to have a mother or sister with pelvic girdle pain. Low back pain in pregnancy is generally ascribed to the many changes in load and body mechanics that occur during the carrying of a child. Increase in the weight during pregnancy clearly shifts the body’s centre of gravity anteriorly and increases the moment arm of forces applied to the lumbar spine. Studies suggest that an anterior shift is associated with pubic symphysis problems. Postural changes may be implemented to balance the anterior shift, leading to lordosis, and increase in the natural inward curvature of the spine, further increasing stress on the lower back. Also, the intervertebral discs respond to axial loading by expelling fluid, resulting in decreased height and an overall compression of the spine.

Pregnancy-related pelvic girdle pain is classified into five subgroups depending on symptoms such as pelvic girdle syndrome, which includes symptoms of anterior and posterior pelvic girdle, symphysis pubis and bilateral joints. Symphysiodynia includes symptoms of the anterior pelvic girdle and pubic symphysis. Symptoms of the posterior pelvic girdle and unilateral sacroiliac joint are called as one-sided sacroiliac syndrome. Double-sided sacroiliac syndrome includes symptoms of the posterior pelvic girdle and bilateral sacroiliac joint. Inconsistent findings of the pelvic girdle are included in the miscellaneous group. Pregnancy-related pelvic girdle pain often starts during the 18th week of pregnancy and it often reaches peak intensity between the 24th and 36th week or begin shortly after postpartum. Women with pelvic girdle pain experience stabbing, shooting, or burning type of pain in the gluteal region, between the iliac crest and the gluteal fold, near the sacroiliac joints and distant to the lumbar spine which may radiate to the posterior thigh and be associated with or without symphysis pain. It limits ability to maintain prolonged positions and activities, especially endurance is diminished for standing, walking, and sitting. Various clinical tests are performed to confirm the diagnoses for sacroiliac joint pain are the Posterior pelvic pain provocation test (P4), Patrick’s Faber test, Palpation of the long dorsal sacroiliac joint ligament, Gaenslen’s test, Distraction, Compression and Menell’s tests. Palpation of symphysis, Modified Trendelenburg’s test of the pelvic girdle is the test used for symphysis pain and Active straight leg raise test (ASLR test) is the functional pelvic test used for LBP. The point prevalence of pelvic girdle pain in pregnant women was found to be 20% in the western countries. Similarly for pregnancy-related low back pain, the point prevalence was found to be 25% and 16% of women with pregnancy-related low back pain reported persistent pain 6 years after childbirth in the western countries. Indian data of the same in Indian pregnant population lacks evidence, hence the present study intends to find the prevalence of patterns of pregnancy-related pelvic girdle pain and pregnancy induced low back pain in Indian pregnant population.

**Material and Methods**

**Source of Data:** Inpatient and outpatient department of obstetrics and gynaecology at a tertiary care centre

**Study Design:** The present study was designed as a cross-sectional study to find the prevalence of patterns of pregnancy-related pelvic girdle pain and low back pain in a tertiary care centre.

**Sampling design and sampling allocation:** Sample of convenience / non-probability sampling

**Procedure:**

- The study was endorsed by the Institutional Ethical Committee. 225 pregnant females were screened based on the inclusion criteria which included 1) Pregnant women with complaints of low back pain and pregnancy-related pelvic girdle pain, 2) Subjects with gestation age of 16 – 40 weeks. 3) Subjects willing to participate in the study.
- The women were excluded if they have a 1) History of neoplasm, trauma or previous spinal, pelvic or femur surgery 2) Gynaecological problem where the women is advised for complete bed rest 3) Women with verified diagnosis of spinal problems such as spondylosis and spinal fracture 4) Women on analgesic for the low back pain and 5) non-cooperative subjects.
- All participants signed an informed consent form that declared their voluntary agreement to participate in the study. Demographic details were taken and confirmation of diagnosis of pelvic girdle pain and low back pain was done using Modified Oswestry Disability Index questionnaire (MODI) and the pelvic girdle questionnaire (PGQ).

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Participants were then subjected to nine clinical tests to differentiate the site of pain and to classify them accordingly into 3 different groups namely Group A (Low back pain LBP), Group B (Posterior pelvic pain PPP) and Group C (Anterior pelvic pain APP) respectively.

Outcome measures:

- Modified Oswestry disability index (MODI): It is a subjective assessment of level of function (disability) in activities of daily living in those suffering from acute or chronic low back pain. The questionnaire examines perceived level of disability in 10 everyday activities of daily living questions.

- Pelvic girdle questionnaire (PGQ): It is a self-reported questionnaire consisting of 20 activity items and five symptom item which are scored on a four point response scale and item score are summed and transformed to yield a score of 0 to 100 where 100 is a worst possible score.

Results

A total of 225 pregnant women were included in the study between the gestational ages of 16-40 week. Nine clinical tests were used to differentiate the pain and group the subjects into LBP, PPP and APP accordingly and the percentage of each group was evaluated.

The mean age of all the participants with PPP and LBP was 23 years and with APP was 24.5 years. Similarly the mean gestational age of all the participants with PPP, APP and LBP was reported to be 38 weeks. The data also showed that the percentages of primiparous women with PPP are 70%, multiparous women are 26% and grand multipara women are 4%. Also, 55% of primiparous, 13% of multiparous women and 4% of grand multiparous women complained of LBP. A total of 86% of primiparous women and 14% of multiparous women were diagnosed with APP.

The point prevalence of PPP is reported to be 65%, LBP had a prevalence of 31% and APP had a prevalence of 15% (Fig 1).

Table 1. Mean age, gestational age and parity of posterior pelvic pain (PPP), Anterior pelvic pain (APP) and Low back pain (LBP).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Posterior pelvic pain</th>
<th>Anterior pelvic pain</th>
<th>Low back pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>23±1</td>
<td>24.5±2</td>
<td>23±2</td>
</tr>
<tr>
<td>Gestational age (weeks)</td>
<td>38±2</td>
<td>38±2</td>
<td>38±2</td>
</tr>
<tr>
<td>Parity (%)</td>
<td>Primiparous</td>
<td>70</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Multiparous</td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Grandmultiparous</td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>

Discussion

The present study shows that the prevalence of posterior pelvic pain (PPP) is more as compared to Low back pain (LBP) and Anterior pelvic pain (APP).

The point prevalence of LBP was found to be 31% in the present study. A similar study was conducted by Wang SM et al. who concluded that the prevalence of low back pain during pregnancy in the New Haven Country, Connecticut is 68.5% \(^9\). The study also stated that there is no association of gestational age with the low back pain. Contradicting, the present study found that low back pain is more common in women with gestational age 38 weeks. This could be due to the effect of relaxin and other hormones along with an increase in the lordosis curvature of the lumbar spine. The present study participants with LBP had mean age of 23 + 1 which is in
consistent with Wang et al study stating that pregnant women in the age group of 25-27 years have more LBP.9 Morgen et al. reported a mean gestation age at onset of low back pain to be 22.1 weeks10 whereas Jennifer S stated that up to 20% of women claimed that pain started as early as 16 weeks with some claiming pain within the first month1. The present study had inclusion criteria of gestational age of 16-40 weeks which is the beginning of LBP during pregnancy. The posterior pelvic pain was reported to be 65% in the present study with anterior pelvic pain of 15%. Francisca M stated that the pelvic pain in the Spanish women attending the antenatal classes was diagnosed to be 64.7%.11 None amongst the 341 pregnant women included by Albert H et al. in his study reported to have anterior pelvic pain symptoms during pregnancy and even in the postpartum period which in contrast to the present study reported that out of 225 pregnant women, 15% of women complained of APP.12 This is due to the activities and postures adopted by the Indian women as compared to the western population. Albert et al states that multiparity is the main factor for developing pelvic pain but the present study states that primiparous women have more chances of developing LBP, PPP and APP.12 This could be due to the sudden hormonal changes, undue stretch of the pelvic soft tissue structure and due to the biomechanical changes that occur during the pregnancy. Mens et al. is of the same opinion as that of the present study that primiparity is more associated with the pelvic pain.13 Bejland et al. also reported that the risk of developing pelvic girdle pain increases with previous pregnancy.14 The results of the present study show more PPP, APP and LBP in primiparous women which could be due to more primiparous women included in the study as compared to the multiparous or grand multiparous. The PPP and APP is diagnosed to be severe in 38 weeks which is almost similar to Mens et al study. Also Stefan M has proved that the pregnancy relates pelvic pain is more in 36 weeks of pregnancy.15 The women of age group between 23 years and between 24.5 years were reported to be positive for PPP and APP respectively which could be due to the biomechanical changes occurring during pregnancy. A study was done by Britt S. et al which reported that pelvic girdle questionnaire is the first condition-specific measure developed for people with pelvic girdle pain and is high reliable and valid in people with pelvic girdle pain both during pregnancy and postpartum. The present study has also used the same questionnaire to administer the women with pelvic girdle pain. Davidson M and Keating JL studied the comparison of five low back disability questionnaires, namely the modified Oswestry Disability Questionnaire, the Quebec Back Pain Disability Scale, the Roland-Morris Disability Questionnaire, the Waddell Disability Index, and the physical health scales of the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) in LBP patients.35 Same questionnaire has been used in the present study. European Guidelines (2008) are recommended for diagnosis of pelvic girdle pain. The tests have high intertester reliability. The present study has used standardized tests for classification2

Conflict of Interest: None

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