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Impact of Antenatal Lumbopelvic Pain on Fear of Childbirth, Pregnancy-Related Quality of Life, and Kinesiophobia

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ABSTRACT

Background: Antenatal lumbopelvic pain is one of the most common musculoskeletal discomforts that affects women during pregnancy. There are numerous reasons for the pain, commonly it arises due to biomechanical, hormonal, and postural changes and can significantly restrict daily activities of functional living. In addition, it may contribute to the psychological disturbances including fear of childbirth. Therefore, understanding the relationship between lumbopelvic pain and the fear of childbirth, quality of life, and kinesiophobia in pregnant women is essential for developing targeted interventions to improve maternal well-being.

Methodology: The data was collected from 105 pregnant women aged 18 to 40 years, diagnosed with lumbopelvic pain and the positive posterior pelvic pain provocation test. The level of pain intensity, fear of childbirth, quality of life, and kinesiophobia were outcome variables that were measured using the numeric pain rating scale (NPRS), tokophobia severity scale (TSS), quality of life gravidarum questionnaire (QoL-GRAV), and Tampa scale of kinesiophobia, respectively.

Results: Pearson correlation test was used to assess the correlation between the study variables and $p \leq 0.05$ was considered significant. Higher lumbopelvic pain weakly correlates with fear of childbirth (r=0.374) and kinesiophobia (r=0.013). However, a weak negative correlation was observed between lumbopelvic and pregnancy-related quality of life (r=-0.159).

Conclusion: The antenatal LPP pain is associated with fear of childbirth and pregnancy-related QOL. However, the relationship between LLP and kinesiophobia was found to be non-significant.

Keywords: Fear, Kinesiophobia, Low Back Pain, Lumbopelvic pain, Pregnancy, Quality of life

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INTRODUCTION

Pregnancy is a state characterized by profound anatomical, physiological, and psychological adaptations that place considerable stress on the musculoskeletal system. As gestation progresses, the growing uterus alters the centre of gravity, leading to compensatory postural changes such as increased lumbar lordosis and anterior pelvic tilt. These adaptations, although essential for fetal development, significantly increase mechanical load on the lumbopelvic region, predisposing pregnant women to pain and functional limitations. In addition, hormonal changes, particularly increased levels of relaxin and progesterone, contribute to ligamentous laxity and reduced joint stability, further exacerbating susceptibility to lumbopelvic pain (LPP).

LPP is the term that is frequently used in pregnancy to describe the combination of pelvic girdle pain (PGP) as well as low back pain (LBP).[1] This type of pain includes both lower back pain (LBP), felt between the ribs and buttocks, possibly radiating down the legs, [2] and pelvic girdle pain (PGP), experienced between the hip bones and buttocks, often near the sacroiliac joints, and sometimes affecting the groin and back of the thigh.[3]

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Lumbopelvic pain is led by inadequate joint stability that is influenced by biomechanical changes caused by increased BMI, lordosis, weak or insufficient motor control of trunk muscles,[4] ligament dysfunction, and metabolic, genetic, and hormonal factors. Risk factors for pregnancy-related LPP include maternal age, parity, extended physical work, obesity, lack of exercise, smoking, menstrual pain, oral contraceptive use, and in-vitro-fertilization (IVF)[5]. Over 50% of women experience LPP during pregnancy, and 25% experience it in the postpartum period. Pregnancy-related LPP (PR-LPP) negatively impairs daily activities, sleep quality, social and sexual life, and work capacity.[6]

The fear of childbirth (FOC), also known as tokophobia, is described as the debilitating fear of pain associated with childbirth that creates avoidance behavior of pregnancy that may also cause hindered domestic and work-related tasks, limited social activities, and impaired relationships.[7] It is closely linked to the rising frequency of cesarean sections in Western nations. [8,9] A person's quality of life (QOL) usually encompasses their psychological, physical, and mental health, and it also serves as a useful indicator of their behavioral patterns. [10] Kinesiophobia encompasses fear of pain and re-injury, resulting in avoidance behavior in uncomfortable or painful situations. Prolonged kinesiophobia leads to loss of muscle strength, balance degradation, movement impairment, and functional decline. [11] This avoidance behavior is highly likely to be observed in women during pregnancy, and to protect themselves from further injury, women with PGP are sometimes urged to refrain from engaging in physical activities that exacerbate their pain and affect their quality

of life, and a vicious cycle of kinesiophobia begins. [12]

As the psychological functioning and stress level keep on changing during the first trimester to the third, [13] it is crucial to study the added impact of antenatal lumbopelvic pain on fear of childbirth, pregnancy-related quality of life, and kinesiophobia. Therefore, this study aimed to investigate the interaction between physical stress and psychological well-being in women during pregnancy, focusing on the childbirth experience, overall quality of life throughout pregnancy, and their willingness to engage in physical activities.

METHODOLOGY

This cross-sectional study was carried out at the District Headquarters (DHQ) Hospital, Mianwali from October 2023 to July 2024. The ethical approval was taken from the Research Ethics Committee (REC) of the University of Lahore (REC-UOL-170-11-2023). Written consent was signed by each participant, and the study's objective was explained to them, while confidentiality and anonymity were ensured.

A sample of 105 participants was selected for this study through a non-probability convenience sampling technique. The sample size was estimated through an online software "Epitool" at 95% CI, and by keeping the proportion of pregnancy-related LPP=0.33. [14] The eligibility criteria were pregnant women aged between 18 and 40 years, diagnosed with lumbar or pelvic girdle pain, or any combination of these,[15] diagnosed by a gynecologist and further confirmed by the posterior pelvic pain provocation test. The participants could be primigravida or multigravida, working women or housewives. Exclusion criteria for this study were pregnant women diagnosed with any locomotor system disease such as arthritis and osteoporosis, any specific spinal problems including disc degenerative disease, radiculopathy, previous fracture, or tumor, or previous associated surgery, pregnancy-related red flags such as bleeding, discharge, gestational diabetes mellitus, pre-eclampsia, any psychopathology including schizophrenia and bipolar disorders, placental abruption, referred pain due to urinary tract infection.[16]

The data was collected from the participants who fulfilled the inclusion criteria. Firstly, socio-demographic details were documented from the pre-diagnosed patients of LPP, a posterior pelvic pain provocation test was administered, and the location of pain was noted on a pain diagram drawn from the demographic form. BMI was calculated by taking the weight of participants in Kg and height in meters. Pain intensity, fear of childbirth, pregnancy-related quality of life, and kinesiophobia were the primary outcome variables. Numeric Pain Rating Scale (NPRS) was used to assess the intensity of LPP, that is, an 11-point numeric scale that ranges from zero to ten, where "0" shows no pain at all, to "10" represents the severe imaginable pain. [17] The Tokophobia Severity Scale (TSS) was used to evaluate the fear of childbirth in pregnant women, which is a 13-item questionnaire with a score range of 0-39, where, the higher scores indicate a higher level of anxiety related to delivery.[18] The PR-QOL was assessed by the Urdu Version of QOL-GRAV, [19] which is a nine-question instrument with a score range from 0-45, and high QoL was reflected in lower mean scores.[20] The Urdu version of the Tampa scale of kinesiophobia (TSK)[21] was administered to measure one's level of fear of moving or becoming injured. It is a self-reported questionnaire with 17 items, with the scores varying from 17 to 68. The lowest score denotes a lack or a very low grade of kinesiophobia, and higher values represent an advanced grade of kinesiophobia. [22]

The data analysis was made using SPSS version 25. The normality of data was measured using Kolmogrov-Smirnov test (n≥50). The relationship of lumbopelvic pain with fear of childbirth, pregnancy-related quality of life, and kinesiophobia was established using Pearson's correlation. p-value ≤ 0.05 was considered significant.

RESULTS

Out of 105 participants, the majority, i.e., 51 (48.6%) females were aged 26-30 years, around 55 (52.4%) had a normal BMI, and 59 (56.2%) were in the second trimester, 49 (46.7%) had two children, and 97 (92.4%) were in low parity (See Table 1).

Table 1: Sociodemographic and Obstetrics Factors (n=105)

Variables	Categories	n (%)
Age	18-25	28 (26.7%)
	26-30	51 948.6%)
	31-35	16 (15.2%0
	36-40	10 (9.5%)
BMI	Underweight	22 (21.0%)
	Normal	55 (52.4%)
	Overweight	28 (26.7%)
Trimester	First	12 (11.4%)
	Second	59 (56.2%)
	Third	34 (32.4%)
No of children	One	28 (26.7%)
	Two	49 (46.7%)
	Three	20 (19.0%)
Parity	More than three	8 (7.6%)
	Low Parity (parity 1 to 3)	97 (92.4%)
	Grand Parity (parity 4 to 8)	8 (7.6%)

The results explored that 93 (88.6%) of the women suffered from the LPP with moderate level of severity of pain at NPRS with a mean score of 7.22±2.12, a high level of fear of childbirth at TSS with a mean score of 25.96±5.87, and a moderate level of kinesiophobia at TSK with a mean score of 47.47±5.73. However, the mean score of 28.81 ± 4.78 of QOL-GRAV reflects a relatively good quality of life among pregnant women.

Pearson's correlation indicates a weak positive, linear relationship of antenatal lumbopelvic pain with fear of childbirth ($r = 0.374$, $p < 0.001$), which means that the increase in LPP also increases the fear of childbirth. While the LLP during pregnancy has a weak and negative relationship with the quality of life ($r = -0.159$, $p = 0.105$), suggesting that with the increase of pain, the quality of life

slightly decreases. However, a very weak positive non-significant correlation was observed between antenatal lumbopelvic pain and kinesiophobia (r = 0.013, p = 0.896), representing that there is no relationship between LPP and Kinesiophobia during pregnancy. (See Table 2)

Table 2: Correlation of Study Outcome Variables

Variables	Correlation Coefficient(r)	p-value
NPRS* vs. TSS*	0.374	≤0.001
NPRS vs. QOL-GRAV *	-0.159	0.105
NPRS vs. Tampa Scale	0.013	0.896

NPRS=Numeric pain rating scale, TSS=Tokophobia Severity Scale, QOL-GRAV= Quality of Life in Gravidarum

DISCUSSION

Antenatal lumbopelvic pain is a prevalent health concern among women during pregnancy, as this pain may cause activity limitation and participation restriction that may create a vicious cycle of physical and psychological health issues, augmenting each other, and may disturb the quality of life. [23]

Previous studies have shown that lumbopelvic pain is a common issue among pregnant women, with high maternal age and being overweight or obese. This condition mostly causes pain in the second and third trimesters as the body undergoes physical changes that can alter the biomechanics of the lumbar spine. [24, 25] A study reported that women experience lumbopelvic pain, with the majority of cases occurring during the second and third trimesters. It was noted that primiparous women reported a lower frequency of lumbar pain compared to multiparous women with two or three children. [26] Similar trends were observed in the present study, where 26% of the women were overweight, 56% were in their second trimester, and 34% were in their third trimester, who reported complaints of lumbopelvic pain.

A study found that approximately 10% of pregnant women experienced severe fear of childbirth (FOC) and reported that factors such as a woman's education level, age, number of pregnancies, prior childbirth experience,[27] social support, and preferred delivery method influence the anxiety about giving birth.[28] The present study also found a high score of TSS, i.e., 25.96 out of a total score of 39, among pregnant females, which was correlated with LPP.

The present findings align with existing literature on the pregnancy-related quality of life in women, indicating that females with LPP have reduced quality of life that may impact their overall well-being.[29] In this study, a non-significant yet a weak negative correlation was observed between lumbopelvic pains (LPP) and quality of life. Likewise, kinesiophobia is commonly observed in women with lumbopelvic pain (LPP), [30] as reflected in the high Tampa Scale scores in the current study. However, no significant association was found between kinesiophobia and LPP. This finding may be explained by the influence of underlying psychological factors, variations in individual pain perception, and the impact of daily household responsibilities, which may have moderated or masked the expected relationship.

The limitation of the study is the confinement of data collection to the lower and middle-class population of a district hospital of Mianwali. The cultural, social, and economic differences between rural and urban populations could influence perceptions of pain, psychological well-being, and healthcare-seeking behavior. It is recommended that future research should also include the spouse role and psychological health status, who may offer a more holistic understanding of the psychosocial dynamics during pregnancy. By exploring these important health factors, tailored interventions can be developed to improve the antenatal care.

CONCLUSION

The antenatal lumbopelvic pain impact the FOC and QoL in pregnancy. The high number of females reported with LPP during pregnancy, and a weak yet statistically significant positive correlation between LPP intensity and fear of childbirth was observed, suggesting that greater pain may be linked to increased childbirth-related fear. Additionally, a non-significant, weak inverse relationship was found between LPP and pregnancy-related quality of life, indicating that higher pain levels are associated with lower perceived quality of life. However, no significant correlation was observed between LPP and kinesiophobia, explaining that pain did not appear to influence fear of movement. These findings address the need for early assessment of pregnancy-related musculoskeletal pain and tailored intervention to manage and improve the mental, emotional, and physical well-being of women during pregnancy.

Conflict of interest

The authors stated no conflict of interest.

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Author's Contributions

HA, and AJ contributed to the conception and design of the study. Data collection was carried out by all authors (HA, AJ, and KA). Data analysis, and interpretation was performed by HA, and AJ. Manuscript drafting and critical revision were undertaken by all authors. All authors approved the final manuscript.

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