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THE COMPARISON OF THE FREQUENCY OF LOW BACK PAIN BETWEEN PRIMIPAROUS AND MULTIPAROUS PREGNANT FEMALES

Original Research

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ABSTRACT

Background: Low back pain is a prevalent musculoskeletal issue in pregnancy, with an incidence ranging from 24% to 90%. Pregnancy-induced mechanical and hormonal changes contribute to its development, often leading to functional limitations. The severity of pain and associated disability can be measured using the Visual Analogue Scale (VAS) and the Oswestry Disability Index (ODI). Identifying the influence of parity on the occurrence and severity of low back pain is essential for understanding its impact on maternal health and developing preventive strategies.

Objective: To analyze the frequency of low back pain and disability among primiparous and multiparous pregnant females.

Methods: A cross-sectional study was conducted among 117 pregnant females recruited through non-probability convenience sampling at the outpatient department of Lady Willingdon Hospital, Lahore. The intensity of low back pain was assessed using the Visual Analogue Scale (VAS), while disability was evaluated using the Oswestry Disability Index (ODI). Statistical analysis was performed using SPSS version 21, with a significance level of $p < 0.05$.

Results: Low back pain was reported by 81.2% (95/117) of the participants, with a higher prevalence among multiparous women (83.8%) compared to primiparous women (76.7%). However, no statistically significant association was found between low back pain and parity ($p = 0.347$). Disability was reported by 78.6% (92/117) of participants, with a higher frequency in multiparous (81.1%) than primiparous (74.4%) women, though this difference was also not statistically significant ($p = 0.397$). The majority of participants were in their third trimester (79.5%).

Conclusion: Low back pain was a common complaint among pregnant females, with higher pain and disability scores observed in multiparous women. Although no significant association was found between parity and these outcomes, multiparity remains a potential risk factor. Preventive strategies focusing on education, posture management, and physical therapy are essential to improve maternal well-being.

Keywords: Disability, low back pain, multiparity, parity, pregnancy, primiparous, Visual Analogue Scale.

INTRODUCTION

Lower back pain (LBP) is a common musculoskeletal complaint with a prevalence of approximately 40%, affecting individuals due to various underlying causes. Among these, pregnancy is a significant contributor, with the incidence of pregnancy-related LBP ranging from 24% to 90% (1). Pregnant women frequently experience multiple discomforts, including hypertension and nausea, yet LBP remains one of the most prevalent and distressing conditions during pregnancy (2). The onset of LBP can occur at any stage of pregnancy, persisting throughout all three trimesters with varying intensity. In some cases, the pain may extend beyond childbirth, lasting for months or even years (3). The physiological and biomechanical changes associated with pregnancy play a crucial role in the development of LBP, with hormonal fluctuations, postural alterations, and mechanical strain on the lumbar spine contributing to its occurrence (4). During pregnancy, the expanding uterus shifts the center of gravity, increasing spinal curvature and exerting greater stress on the lumbosacral region, which predisposes women to LBP (4). Several risk factors have been identified, including advanced maternal age, increased body mass index (BMI), and weakened abdominal musculature. The progressive stretching and weakening of abdominal muscles lead to compromised core stability and postural imbalances, further aggravating LBP (5). Weight gain during pregnancy exerts additional pressure on the musculoskeletal system, with evidence suggesting a direct correlation between elevated BMI in the third trimester and increased frequency of LBP (6). Recent studies also indicate that pregnancy-related LBP is linked to altered lumbopelvic perception, affecting postural awareness and motor control (7). Furthermore, disturbances in body perception, particularly in late pregnancy, have been associated with postpartum LBP, which may significantly impact sleep quality and overall well-being (8). Pregnant women experiencing LBP often report diminished quality of life, decreased self-efficacy, and physical limitations, emphasizing the need for effective management strategies (9). If left untreated, LBP can lead to severe complications such as sacral fractures, acetabular labral tears, symphysis pubis diastasis, cauda equina syndrome, and sacroiliitis, with potential long-term consequences (5). Additionally, chronic pregnancy-related LBP may contribute to urinary incontinence, sensory deficits in the pelvic region, and pelvic girdle pain, further impairing functional mobility (10).

Management of pregnancy-related LBP involves a range of interventions, including neuraxial techniques such as epidural anesthesia, opioid injections, and alternative therapies like acupuncture and sterile water injections (11). Physical therapy and targeted exercises, such as pelvic tilts, gluteal bridging, and hip flexor stretching, have shown efficacy in alleviating postpartum LBP, provided they are tailored to the individual's condition and performed under expert guidance (12). While epidural analgesia is widely employed for pain relief during labor, its use carries potential risks, including post-procedural backache, headache, and neurological complications (13). Parity has been identified as a crucial factor influencing the prevalence and severity of pregnancy-related LBP. Primiparous women, undergoing their first childbirth, generally report lower incidence and intensity of LBP compared to multiparous women (14). With successive pregnancies, abdominal endurance diminishes, leading to increased susceptibility to postpartum LBP and functional disability (15). The cumulative effects of biomechanical changes in the spine and pelvis contribute to a higher frequency of LBP in multiparous women, with evidence suggesting a progressive increase in disability with each gestation (16). Existing research in Pakistan primarily focuses on generic causes of pregnancy-related LBP, such as poor posture, excessive physical exertion, and sedentary behavior (17). However, there is a notable gap in understanding the relationship between LBP, disability, and parity within the Pakistani population. This study aims to compare the frequency of LBP between primiparous and multiparous pregnant women to determine whether parity is a significant predictor of LBP and associated disability. Identifying disparities in LBP occurrence between these groups will contribute to improving prenatal care strategies and guiding healthcare professionals in developing targeted interventions to mitigate LBP-related complications. By addressing this knowledge gap, the findings may serve as a foundation for future research aimed at optimizing maternal musculoskeletal health and enhancing the quality of life for pregnant women.

METHODS

This cross-sectional study aimed to assess the frequency of low back pain and its associated disability among primiparous and multiparous pregnant females. A total of 117 participants were recruited using a non-probability convenience sampling technique. The sample size was determined using an appropriate statistical formula, with the prevalence value (P) derived from a previously published study (18,19). The study population included females of reproductive age, ranging from 15 to 45 years, who had experienced at least one pregnancy and were residents of Punjab. Individuals with pre-existing spinal deformities, other musculoskeletal conditions, or

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systemic diseases that could influence low back pain were excluded. Additionally, participants with a history of low back pain prior to pregnancy and those unwilling to provide consent were not included in the study. Data collection was conducted at the outpatient department of Lady Willingdon Hospital, Lahore. Pain intensity was assessed using the Visual Analogue Scale (VAS), a standardized tool for quantifying pain severity, while disability associated with low back pain was measured using the Oswestry Disability Index (ODI), which evaluates the extent of functional impairment caused by pain. Ethical approval was obtained from the institutional review board, and formal permission was granted by the hospital administration before the commencement of the study. Informed written consent was secured from all participants after they were provided with detailed information regarding the study objectives, potential risks, and benefits, ensuring voluntary participation (20).

Participants initially completed a structured demographic questionnaire that collected information on age, education level, socioeconomic status, and parity. Following this, participants were asked whether they were experiencing low back pain during pregnancy. Those who reported pain underwent further assessment using the VAS and ODI to determine the severity of pain and its impact on daily activities. The collected data were systematically recorded and analyzed using SPSS software, version 21, to identify statistical patterns and correlations relevant to the study objectives (21).

RESULTS

Low back pain was reported by 81.2% (95) of the total 117 pregnant participants, while 18.8% (22) did not experience pain. Among primigravida females, 76.7% (33 out of 43) reported low back pain, whereas in multigravida females, the prevalence was higher at 83.8% (62 out of 74). Although low back pain was more frequently observed in multigravida females, statistical analysis showed no significant association between low back pain and parity, as indicated by a p-value of 0.347. Disability related to low back pain was reported in 78.6% (92) of the total participants, whereas 21.4% (25) did not experience disability. Among primigravida females, 74.4% (32 out of 43) reported disability, while among multigravida females, 81.1% (60 out of 74) experienced disability. Despite a higher prevalence of disability in multigravida females, the association between disability and parity was not statistically significant, with a p-value of 0.397. Regarding gestational age distribution, 6.0% (7) of the participants were in the first trimester, 14.5% (17) in the second trimester, and the majority, 79.5% (93), were in the third trimester. In terms of gravidity distribution, 36.8% (43) were primigravida, and 63.2% (74) were multigravida. The data indicated that the majority of participants were in their third trimester and had experienced more than one pregnancy.

Table 1: Gestational Age and Gravidity Distribution of Participants

Category	Frequency (%age)
Gestational Age	
First Trimester	7 (6.0%)
Second Trimester	17 (14.5%)
Third Trimester	93 (79.5%)
Gravidity	
Primigravida	43 (36.8%)
Multigravida	74 (63.2%)
Total	117 (100.0%)

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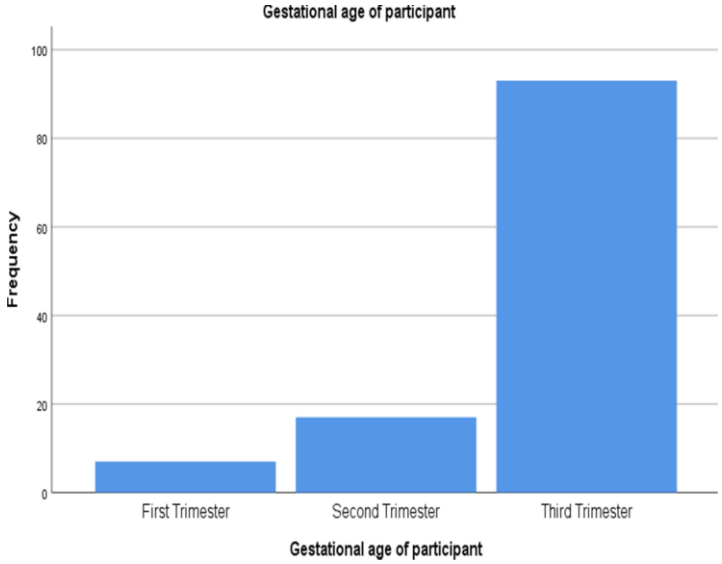

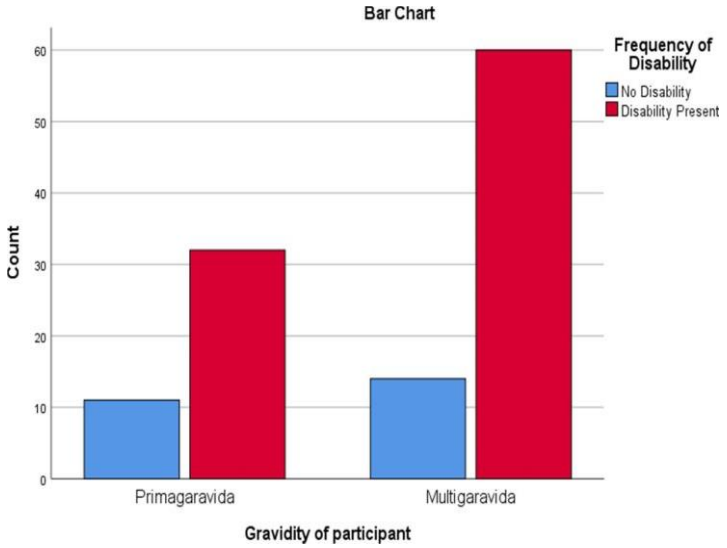

Table 2: Gravidity of Participant* Frequency of Pain

		Frequency of Pain		Chi- square	P- Value
		NO	Yes		
Gravidity of participant	Primigravida	10	33	.883	.347
		23.3%	76.7%		
	Multigravida	12	62		
		16.2%	83.8%		
Total		22	95		
		18.8%	81.2%		

Table 3: Gravidity of Participant* Frequency of Disability

		Frequency of Disability		Chi- square	P- Value
		NO	Yes		
Gravidity of participant	Primigravida	11	32	.719	.397
		25.6%	74.4%		
	Multigravida	14	60		
		18.9%	81.1%		
Total		25	92		
		21.4%	78.6%		

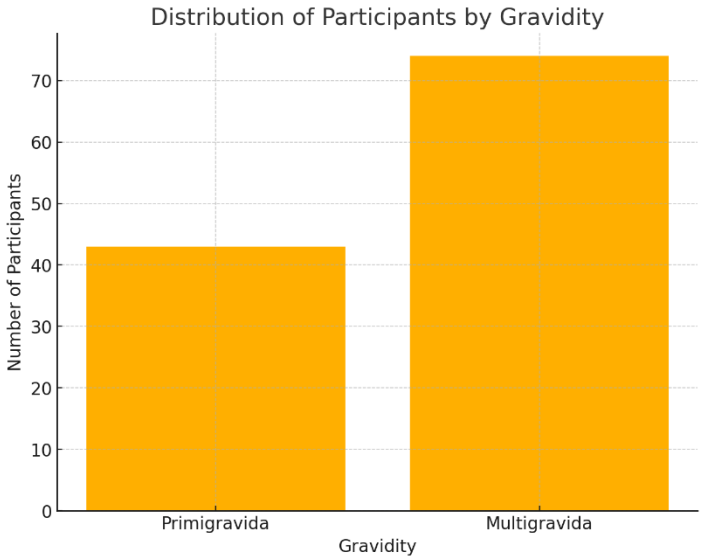

Figure 2 Distribution of Participants by Gravidity

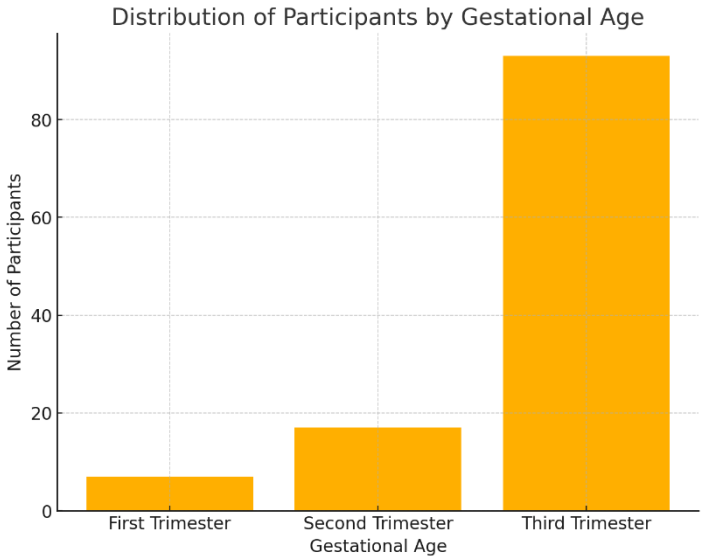

Figure 1 Distribution of Participants by Gestational Age

DISCUSSION

Low back pain was identified as a prevalent musculoskeletal concern among pregnant females, reinforcing its status as a significant health issue during pregnancy. Previous studies have consistently reported a high prevalence of lumbo-pelvic pain in pregnant women, affecting the lower lumbar region and pelvic girdle (20). The findings of this study further support the notion that low back pain is a major concern during pregnancy, highlighting the need to identify contributing risk factors and implement preventive strategies to mitigate its impact (20). The study revealed that low back pain was more prevalent in the third trimester, which aligns with existing literature suggesting that increasing body weight, hormonal fluctuations, and biomechanical adaptations during this stage significantly contribute to lumbar discomfort. The additional weight gain exerts greater pressure on the lower back and supporting structures, while hormonal changes lead to ligamentous laxity and musculoskeletal imbalances, further predisposing pregnant women to low back pain (21). Emotional stress and heightened muscle tension during late pregnancy have also been implicated as contributing factors. These findings are consistent with prior research indicating that low back pain is most commonly reported in the third trimester, making this period particularly challenging for pregnant females (21,22). Multiparity was identified as a potential risk factor for pregnancy-related low back pain, as the condition was more commonly observed in multigravida females compared to primigravida females. These findings correspond with previous research, which has associated multiparity with chronic low back pain due to factors such as increased maternal age, socioeconomic constraints, and cumulative biomechanical stress on the spine (22). Other studies have reported that multiparity, in conjunction with pre-existing low back pain and lower education levels, contributes to moderate to severe pain during pregnancy (23). However, conflicting evidence exists, as some studies have found no statistically significant association between parity and pregnancy-related low back pain. Research has suggested that previous episodes of low back pain, neonatal birth weight, and postural changes may be more strongly linked to the condition than the number of pregnancies alone (24). These discrepancies highlight the multifactorial nature of pregnancy-related low back pain and the need for further investigation to delineate the precise role of parity as a contributing factor (25,26). Low back pain during pregnancy was also found to contribute to mild to moderate disability, with a higher prevalence among multigravida females. This observation aligns with prior studies reporting that a substantial proportion of pregnant women experiencing low back pain develop moderate to severe disability, with parity, gestational age, and a history of chronic low back pain being identified as significant contributing factors (16). The impact of pregnancy-related low back pain on functional capacity underscores the importance of early identification and targeted interventions to minimize disability and improve quality of life in affected individuals (27,28).

The findings of this study emphasize the need for structured educational programs aimed at raising awareness about low back pain and its prevention among pregnant women. Such programs should focus on risk factor modification, proper posture maintenance, targeted physical exercises, and lifestyle adaptations to alleviate strain on the lower back. The integration of these preventive strategies into

routine prenatal care may help reduce the burden of pregnancy-related low back pain. Furthermore, standardized clinical protocols should be developed to ensure compliance with these preventive measures, thereby optimizing maternal health outcomes (29). A notable strength of this study is its contribution to the growing body of evidence regarding pregnancy-related low back pain and disability, particularly within the local population. However, certain limitations must be acknowledged. The reliance on self-reported data introduces the potential for response bias, which may affect the accuracy of pain and disability assessments. Additionally, while efforts were made to exclude individuals with pre-existing musculoskeletal conditions, other unaccounted factors such as occupational workload, body mass index, and physical activity levels could have influenced the findings. Future research should incorporate longitudinal study designs with objective pain assessment tools to provide a more comprehensive understanding of pregnancy-related low back pain and its associated disability. Expanding the sample size and considering additional confounding variables will further enhance the validity and generalizability of future studies (30). These findings underscore the clinical significance of pregnancy-related low back pain and its implications for maternal health. Addressing this issue through evidence-based preventive strategies and targeted management approaches is essential to improving the well-being and functional outcomes of pregnant women. Further research is warranted to explore the interplay between parity, gestational age, and additional risk factors to refine clinical recommendations and optimize maternal musculoskeletal health during pregnancy.

CONCLUSION

The findings of this study highlight the high prevalence of low back pain among pregnant females, with multiparous women experiencing greater discomfort and functional limitations. Low back pain during pregnancy was influenced by factors such as age, socioeconomic status, and parity, contributing to varying degrees of disability. While the condition was more frequently observed in multiparous women, the association between parity and pain severity was not statistically significant. These findings emphasize the need for proactive interventions, including prenatal education, ergonomic modifications, and targeted physical therapy, to mitigate the impact of pregnancy-related low back pain. Addressing this common concern through preventive strategies and evidence-based management approaches can enhance maternal well-being and improve overall pregnancy outcomes.

AUTHOR CONTRIBUTIONS

Author	Contribution
Humna Irfan*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Khubaib Shahid	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Sidrah Shabbir	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Zahid Mehmood Bhatti	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Muhammad Mahmood Alam	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Ayesha Nawal	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Fatima Shaukat	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Lyba Javaid	Writing - Review & Editing, Assistance with Data Curation
Rimsha Touqeer	Writing - Review & Editing, Assistance with Data Curation
Rabia Masood	Writing - Review & Editing, Assistance with Data Curation

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