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ORIGINAL RESEARCH

Prevalence and Associated Risk Factors of Postpartum Low Back Pain and Its Impact on Quality of Life in Women

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ABSTRACT

Background: Postpartum back pain is common due to hormonal changes, weakened muscles, and the physical strain of pregnancy and childbirth. The present study was conducted to find out the prevalence of low back pain in women after one years of delivery.

Materials and methods: 500 patients in a low-risk obstetric population with singleton pregnancies aged between 20 and 35who had attended in our orthopaedics and antenatal /postnatal OPD were studied (study duration January 2022 to September 2024)till 1 year after delivery. They were surveyed for back pain symptoms during pregnancy in the early postpartum period by a structured questionnaire.

Results: 375 patients (75%) reported one or more episodes of back pain during their pregnancy. Significantly more patients with presence of pain in pregnancy had history of previous back pain episodes when not pregnant (50% vs. 22%, $p < 0.001$), as well as during previous pregnancies (70% vs. 45%, $p < 0.035$), or in the postpartum period (48% vs. 7%, $p < 0.01$). There was no significant difference between those with or without pain in their pregnancy outcome. Complete data on 375 of the 500 study patients (75%) were available for analysis at 12 months after delivery. The incidence of persistent back pain(>12monthspost- delivery)symptoms was 20% (n = 100). Those with persistent pain were older, had significantly earlier onset of pain symptoms in the index pregnancy compared with those without pain at 12 months, and they also had their worse symptoms at an earlier gestation during the index pregnancy. Moreover, those with persistent pain had a higher weight gain at 12 months compared with their pre pregnancy weight (7 kg, SD2.9) compared with those without further pain (3.9 kg, SD3.0) ($p < 0.01$), as well as less weight loss compared with their early postpartum weight (7.9 kg, SD4.5 vs. 1.3 kg, SD5.8) ($p < 0.01$).

Conclusion: The study concluded that there is significant difference in prevalence ofback pain in women after one year of delivery.

Keywords: Postpartum back pain, Numeric Pain Rating Scale, Roland-Morris Disability Questionnaire, Prevalence

INTRODUCTION

Postpartum back pain is common due to hormonal changes, weakened muscles, and the physical strain of pregnancy and childbirth. It often stems from loosened ligaments, altered posture, and the weight of the baby.[1,2] While generally temporary, it can persist for several months. Managing it involves good posture, supportive exercises, and seeking professional help if needed.[3] Postpartum women often display altered muscle activation patterns in their abdominal muscles and pelvic muscles. These alterations can lead to decreased support for the

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spine, contributing significantly to the experience of back pain after pregnancy.[4]

This pain can have an adverse impact on the quality of life and on ordinary daily activities such as loading bearing, cleaning, sitting and walking abilities of women affected and there is some evidence of socioeconomic detriment, mainly job absenteeism.[5,6] During pregnancy back pain is the common problem faced. Previous studies have shown the incidence rate of back pain during pregnancy is 20% to 50%.[7,8] Pathophysiology leads to back pain in antenatal period have been seen, including the increase in load on the back as a result of the total weight gained during pregnancy and the weight of the fetus[9]hormonal changes in the pregnant woman, which destabilizes the spine and sacroiliac joints;[10] and connective tissue microtrauma in the sacroiliac joints resulting from trunk extensor muscle forces to balance the anterior flexion moment caused by the growing fetus.[11] The incidence rate of back pain in postpartum period seen between 30% and 45%.[12] This incidence is believed to be particularly high in those receiving epidural anesthesia during labor, despite the fact that the role of epidural in postpartum back pain is still controversial.

AIM AND OBJECTIVES

The present study was conducted to find out the prevalence of low back pain in women after one years of delivery.

MATERIALS AND METHODS

Study Design: This was a prospective observational study designed to evaluate the prevalence of low back pain (LBP) and its impact on quality of life in primigravida women. Although some retrospective elements such as past obstetric history were recorded, the core methodology and follow-up were prospective. The study involved structured interviews, clinical assessments, and validated outcome measures across defined antenatal and postpartum intervals.

Study Population: A total of 500 primigravida women**,** aged 20 to 35 years, with singleton pregnancies, were enrolled in the study. Among these, 375 women (75%)reported experiencingone or more episodes of low back pain during pregnancy, while 125 women (25%) reported no low back pain during the study period.

Participants were enrolled from the orthopaedics and antenatal/postnatal outpatient departments (OPDs) of a tertiary care teaching hospital in India. Only low-risk obstetric cases were included to minimize confounding factors.

Study Place: The study was conducted by the Orthopaedics, R D J M Medical College, Turki, Muzaffarpur, Bihar, India in collaboration with Department of Obstetrics &Gynaecology, Sri Krishna Medical College& Hospital, Muzaffarpur, Bihar, India

Study Duration: The study was conducted over a period of one year and nine months, from January 2022 to September 2024.

Ethical Considerations: Ethical clearance was obtained from the Institutional Ethics Committee prior to initiating the study. Written informed consent was taken from all participants after explaining the purpose, procedure, and confidentiality aspects of the research. Participation was entirely voluntary, and the data collected were anonymized and used exclusively for academic purposes.

Inclusion Criteria

- Primigravida women aged 20 to 35 years.
- Singleton pregnancies.
- Attendance in antenatal/postnatal and orthopaedic OPDs during the study period.
- Willingness to provide written informed consent.
- Ability to complete follow-up assessments up to one year postpartum.

Exclusion Criteria

- Pre-existing chronic low back pain prior to pregnancy.
- Multiple gestations.
- High-risk pregnancies (e.g., gestational diabetes requiring hospitalization, preeclampsia).
- Known spinal deformities or neurological disorders.
- Caesarean section performed under general anaesthesia.
- Participants lost to follow-up before the completion of one-year postpartum assessment.

Study Procedure

Participants were identified and recruited during their antenatal visits. Following informed consent, a pre-validated structured questionnaire was administered. Follow-up evaluations were performed at:

- Early postpartum period,
- 6 weeks postpartum,
- 6 months postpartum, and
- 1 year postpartum.

Data Collected:

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- Demographic details,
- Obstetric and menstrual history including:
  - Parity and gravidity,
  - History of spontaneous abortion and gestational age at which it occurred,
  - History of dysmenorrhoea,
  - Booking status of index pregnancy,
  - Single/multiple gestations,
  - Mode of delivery in the index pregnancy,
  - Birth weight of the newborn.
- Presence and duration of low back pain,
- Pain aggravating and relieving factors,
- Sleep quality, mobility status, and impact on daily activities.

Participants were assessed using two validated scales:

1. **Roland-Morris Disability Questionnaire (RMDQ)** – to assess functional disability caused by back pain.
2. **Numeric Pain Rating Scale (NPRS)** – to measure pain severity on a scale of 0 to 10.

All results were recorded systematically for analysis and interpretation.

Investigations

No routine laboratory or radiological tests were conducted, in keeping with the non-invasive and observational nature of the study. However, if clinically indicated (e.g., persistent or severe pain), imaging studies such as X-ray or MRI of the lumbar spine were performed and documented accordingly.

Back Pain Assessment:

Out of the 500 participants, 375 women (75%) reported experiencing one or more episodes of low back pain (LBP) during pregnancy, whereas 125 women (25%) reported no back pain throughout gestation.

Follow-up and Outcome Evaluation:

Participants were followed up at early postpartum, 6 weeks, 6 months, and 1 year postpartum. Complete follow-up data were available for all 500 participants until 6 months postpartum, and for 375 women (75%) at 12 months postpartum. Among these, 100 patients (20%) experienced persistent back pain lasting beyond 12 months.

Primary Outcome

- Prevalence of low back pain during pregnancy and postpartum period.

Secondary Outcomes

- Pain intensity using NPRS.
- Functional disability due to back pain using RMDQ.
- Impact on quality of life and daily functioning.
- **Correlation between LBP and:**
  - Obstetric history,
  - Menstrual characteristics,
  - Mode of delivery,
  - Birth weight of the neonate.

Statistical Analysis

Data were compiled using Microsoft Excel **and analyzed with** SPSS version 25.0.Categorical variables were expressed as frequencies and percentages, while continuous variables were expressed as mean ± standard deviation (SD).

- Descriptive statistics (means, standard deviations, frequencies) were used to summarize participant characteristics.
- Chi-square test was used for comparison of categorical variables.
- Independent t-test or Mann–Whitney U test was applied for continuous variables, depending on the normality of distribution.
- Multivariate logistic regression analysis was conducted to identify predictors of LBP.
- Pearson's correlation and logistic regression were applied to determine associations between LBP and various maternal factors.
- A p-value < 0.05 was considered statistically significant.

RESULTS

Table I: Low back pain in pregnancy by obstetrics characteristics (n = 500)

Parameters	Variables	LBP Present (n = 375)	LBP Absent (n = 125)	p-value
Booking status	Booked	169 (45%)	54 (43.2%)	0.91
	Unbooked	206 (55%)	71 (56.8%)	
Previous back pain (non-pregnant)	Yes	188 (50%)	28 (22%)	< 0.001
	No	187 (50%)	97 (78%)	
Back pain in prior pregnancies	Yes	263 (70%)	56 (45%)	0.035
	No	112 (30%)	69 (55%)	
Postpartum back pain	Yes	180 (48%)	9 (7%)	< 0.01
	No	195 (52%)	116 (93%)	

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Weight gain at 12 months postpartum (mean ± SD)	—	7.0 ± 2.9 kg	3.9 ± 3.0 kg	< 0.01

Table I show that there was no significant difference in the prevalence of LBP between booked and unbooked antenatal patients.LBP was reported in 45% of booked and 55% of unbooked women, but the p-value (0.91) indicates **no statistical association**.

Among women who had back pain during pregnancy, 50% had a previous history of back pain before becoming pregnant.In contrast, only 22% of women without LBP during pregnancy had such a history.The p-value (< 0.001) indicates a highly significant association, suggesting prior back pain is a strong predictor for developing LBP during pregnancy.

Although all participants were primigravida in this study, some had prior pregnancies ending in miscarriage or early abortion. Among those with LBP, 70% had back pain in such previous pregnancies compared to 45% in the LBP-absent group. The p-value (0.035) suggests a statistically significant association.

48% of women with LBP during pregnancy continued to experience back pain in the postpartum period. Only 7% of those without LBP during pregnancy reported postpartum pain. The difference is highly significant ($p < 0.01$), indicating that antenatal LBP is a predictor of persistent postpartum pain.

Women who had persistent LBP gained more weight postpartum (mean 7.0 ± 2.9 kg) than those without LBP (3.9 ± 3.0 kg). This difference was statistically significant ($p < 0.01$), suggesting a potential link between weight gain and chronicity of back pain.

Table II: Association between Mode of Delivery and Low Back Pain (LBP)

Mode of Delivery	LBP Present	LBP Absent	Total
NVD	210 (42%)	110 (22%)	320 (64%)
LSCS	150 (30%)	30 (6%)	180 (36%)
Total	360 (72%)	140 (28%)	500 (100%)

Chi-square value: 15.78, p-value: 0.00007 (statistically significant)

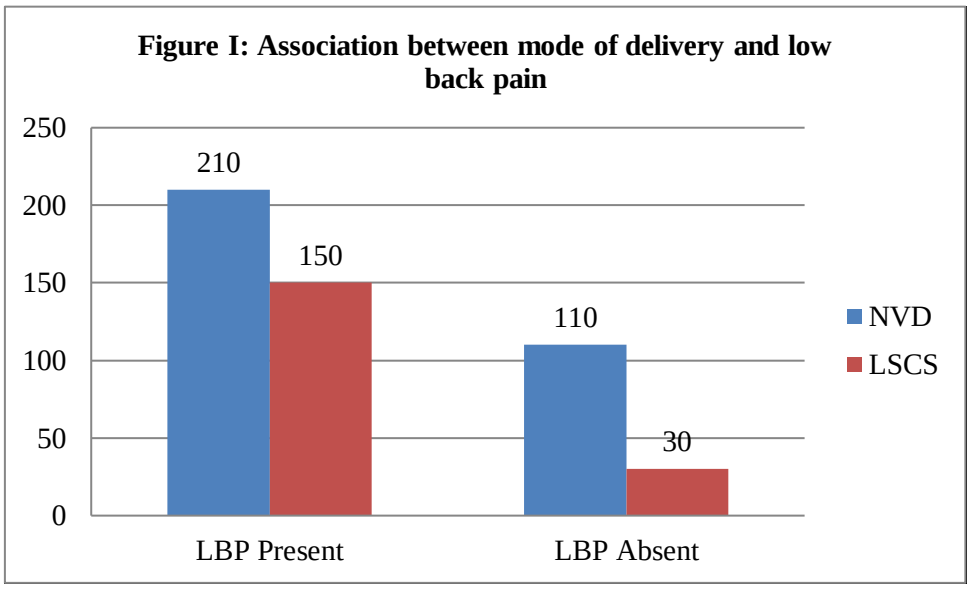

Table II and figure I, shows that among the 320 women who underwent normal vaginal delivery (NVD) out of which 210 women (42% of total) reported experiencing LBP.110 women (22% of total) reported no LBP.Among the 180 women who underwent lower segment cesarean section (LSCS) out of which 150 women (30% of total) reported LBP.Only 30 women (6% of total) reported no LBP.Overall, 360 out of 500 women (72%) experienced low back pain postpartum.A greater proportion of women who underwent LSCS (150/180 = 83.3%) experienced low back pain, compared to those who had a

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normal vaginal delivery (210/320 = 65.6%).The chi-square test value of 15.78indicates a strong association between the mode of delivery and prevalence of LBP.The p-value of 0.0007 (which is less than 0.05) confirms that this association is statistically significant.

Table III: Numeric Pain Rating Scale (NPRS) Distribution among Study Participants

Numeric Pain Rating Scale	Number of Subjects	Percentage (%)
0–5 (Mild Pain)	125	25%
6–10 (Moderate to Severe Pain)	375	75%
Total	**500**	**100%**

Table III presents the distribution of postpartum women based on their self-reported pain severity using the Numeric Pain Rating Scale (NPRS).125 participants (25%) reported pain levels between 0 and 5, which indicates mild pain.A significantly larger group of 375 participants (75%) reported pain levels between 6 and 10, signifying moderate to severe pain.This data highlights that the majority of women experienced a high intensity of low back pain in the postpartum period, which may significantly impact their quality of life and daily functioning.

Table IV: Roland-Morris Disability Questionnaire (RMDQ) Scores

RMDQ Score Range	Number of Subjects
0–12 (Mild Disability)	125 (25%)
13–24 (Moderate to Severe Disability)	375 (75%)

Table IV shows that the Roland-Morris Disability Questionnaire is a widely used tool for assessing functional disability due to low back pain (LBP). Scores range from 0 (no disability) to 24 (maximum disability), with higher scores indicating greater impairment in daily activities.In this study, 375 out of 500 postpartum women (75%) had RMDQ scores between 13 and 24, suggesting moderate to severe disability, while only 125 participants (25%) scored 0–12, indicating mild disability. These results imply that a significant majority of women with postpartum LBP experienced notable functional limitations in their everyday life. The association between high RMDQ scores and elevated NPRS pain scores in this cohort supports the hypothesis that pain intensity is directly linked with functional impairment. This emphasizes the need for integrated postpartum care, including pain management, physical therapy, ergonomic education, and psychosocial support.

DISCUSSION

Low back pain (LBP) is a common health concern among women during pregnancy worldwide. The prevalence of low back pain during pregnancy varies from and within sub regions; it ranges from 24-90%. Moderate to severe disability associated with low back pain is often a burden in pregnancy.[7] The negative impact of low back pain during pregnancy has implications on maternal quality of life and satisfaction with pregnancy.[8,9] The present study was conducted to find out the prevalence of low back pain in women after one years of delivery.

We found that 75% of participants experienced one or more episodes of LBP during pregnancy, consistent with previous studies reporting a prevalence of 50–80% in pregnant women worldwide (Wang et al., 2004).[11] The high incidence in our cohort underscores the substantial burden of musculoskeletal discomfort in the antenatal period, even among low-risk obstetric populations.

A significant association was observed between antenatal LBP and a history of back pain prior to pregnancy (50% vs. 22%, $p < 0.001$). This finding is in agreement with earlier reports indicating that a prior history of LBP is a strong predictor of pregnancy-related LBP (Fast et al., 1987; Wu et al., 2004).[12,13] Similarly, women who experienced LBP during previous pregnancies—even if they were not carried to term—were more likely to develop LBP during the index pregnancy, suggesting a possible cumulative or recurrent risk pattern.

Moreover, our study revealed that 48% of women with antenatal LBP continued to report pain in the postpartum period compared to only

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7% in those without prior LBP. These results align with research suggesting that a significant subset of women continue to suffer from back pain months after delivery, with some developing chronic symptoms (Albert et al., 2000).[14] Importantly, 20% of our participants still reported persistent pain at 12 months postpartum, indicating that for a notable portion of women, LBP may not be a self-limiting condition.

A novel observation in our study was the association between persistent postpartum LBP and postpartum weight gain. Women with ongoing LBP at 12 months postpartum gained significantly more weight (mean 7.0 ± 2.9 kg) than those without persistent pain (mean 3.9 ± 3.0 kg, $p < 0.01$). Excessive postpartum weight retention may contribute to mechanical strain on the lumbar spine and delayed recovery Bjelland et al. (2013).[15] Additionally, lower weight loss from early postpartum to one year was noted in the persistent LBP group, suggesting that physical limitations imposed by pain could hinder effective postpartum weight management.

This study observed a high prevalence (72%) of low back pain (LBP) among postpartum women, with a significant association between mode of delivery and occurrence of LBP ($p = 0.0007$). Notably, women who underwent lower segment cesarean section (LSCS) reported a higher prevalence of LBP (83.3%) compared to those who delivered vaginally (65.6%). These findings are consistent with previous studies suggesting that cesarean delivery may increase the risk of postpartum LBP due to factors such as spinal or epidural anaesthesia, altered biomechanics, and prolonged immobility during the postoperative period (Wang et al., 2004; Fast et al., 1990).[11,12]

Anaesthetic techniques, while effective for pain relief during surgery, have been implicated in persistent back pain due to needle trauma or local inflammatory responses at the injection site.

On the other hand, women with normal vaginal delivery (NVD) also reported a considerable prevalence of LBP. This may be attributed to mechanical stress on the lumbar spine and pelvic girdle during labor and delivery, as well as hormonal changes—particularly elevated relaxin levels—that contribute to ligamentous laxity and musculoskeletal strain (Kovacs et al., 2003).[16]

Moreover, the persistence of LBP in the postpartum period may be influenced by modifiable factors such as posture during breastfeeding, infant care activities, lack of ergonomic awareness, and decreased physical activity (Mogren I.M, 2006).[17] These issues may be more pronounced in women who undergo LSCS due to their delayed return to regular mobility and physical routines.

The significant association between mode of delivery and LBP found in our study supports findings from other large-scale studies such as those by Bjelland et al. (2013), who reported that mode of delivery could influence the persistence and severity of pelvic and back pain in the postpartum period.[15]

The present study highlights a significant prevalence of moderate to severe low back pain (LBP) in postpartum women, as measured by the Numeric Pain Rating Scale (NPRS). According to Table III, 75% of participants reported pain scores between 6–10, indicating moderate to severe intensity, while only 25% experienced mild pain (scores 0–5). These findings suggest that postpartum LBP is not only common but also often debilitating in intensity. This high prevalence aligns with existing literature, which suggests that between 50% and 80% of women experience LBP during pregnancy or the postpartum period, with many reporting persistent symptoms after childbirth (Wang et al., 2004).[11] The persistence and severity of pain noted in this study may be attributed to multiple physiological and biomechanical factors, including hormonal changes, ligamentous laxity, and altered spinal posture during pregnancy (Wu et al., 2004).[13]

Moreover, the elevated NPRS scores reported by a large portion of participants in our study are clinically relevant, as such levels of pain have been associated with significant functional limitations and decreased quality of life (Fast et al., 1987).[12] This is supported by our concurrent use of the Roland-Morris Disability Questionnaire (RMDQ), which similarly indicated varying degrees of functional impairment among affected women.

Another contributing factor could be inadequate postpartum support and the lack of targeted physiotherapy or ergonomic counseling, especially in resource-limited settings. A study by Ostgaard et al. (1991) emphasized that early intervention, including education and postural correction, could reduce the burden of LBP in postpartum women.[5] W. W. K. To et al.18 found that significantly more patients with presence of pain in pregnancy had history of previous back pain episodes when not pregnant, or in the postpartum period (40% vs. 6.6%, $p < 0.001$). So, it is important to study these changes and signs and symptoms occurring after the delivery.

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To treat these symptoms first it's important to know the prevalence rate for which this study was done. So, study shows that there were 75% of population scored above 12 in RMDQ and NPRS. 375 patients (75%) reported one or more episodes of back pain during their pregnancy. Significantly more patients with presence of pain in pregnancy had history of previous back pain episodes when not pregnant (50% vs. 22%, $p < 0.001$), as well as during previous pregnancies (70% vs. 45%, $p < 0.035$), or in the postpartum period (48% vs. 7%, $p < 0.01$). There was no significant difference between those with or without pain in their pregnancy outcome. Complete data on 375 of the 500 study patients (75%) were available for analysis at 12 months after delivery. The incidence of persistent back pain (>12 months post- delivery) symptoms was 20% (n = 100). Those with persistent pain were older, had significantly earlier onset of pain symptoms in the index pregnancy compared with those without pain at 12 months, and they also had their worse symptoms at an earlier gestation during the index pregnancy. Moreover, those with persistent pain had a higher weight gain at 12 months compared with their pre pregnancy weight (7 kg, SD2.9) compared with those without further pain (3.9 kg, SD 3.0) ($p < 0.01$), as well as less weight loss compared with their early postpartum weight (7.9 kg, SD 4.5 vs. 1.3 kg, SD5.8) ($p < 0.01$).

The findings from Table IV reveal a high burden of functional disability due to low back pain (LBP) in postpartum women. With 75% of participants scoring 13–24 on the RMDQ, it is evident that LBP significantly interferes with basic physical tasks and quality of life in the postpartum period. These results are consistent with previous studies demonstrating that postpartum LBP is often more than a transient complaint—it frequently leads to substantial limitations in daily activities, childcare, mobility, and work participation (Robinson et al., 2010).[19] The RMDQ has been shown to effectively quantify these limitations and correlate well with the severity of perceived pain and the impact on life roles.

One contributing factor may be the physical demands placed on new mothers, such as frequent bending, lifting, and prolonged standing, which are exacerbated by musculoskeletal changes from pregnancy and insufficient recovery time (Wang et al., 2004).[11] Hormonal influences like increased relaxin levels also continue postpartum, contributing to joint laxity and instability, thereby increasing the risk of persistent back pain and related disability (Wu et al., 2004).[13]

Moreover, sociocultural factors, particularly in resource-limited settings where structured postpartum physiotherapy and ergonomic guidance are lacking, may compound the issue. Women often resume strenuous activities too soon without adequate rehabilitation, worsening the disability (Albert et al., 2000).[14]

Omokeet al.[20] found that of the 478 women interviewed, 138 (28.9%) of them (95% CI 25.1-33.1) reported LBP in the index pregnancy. The onset of pain was predominantly in the third trimester and the mean pain intensity was 4.3 ± 1.36. In the univariable analysis, six factors were significantly associated with LBP. Logistic regression analysis identified LBP in previous pregnancy (aOR: 24.76, (95% CI 6.88- 89.11); $p< 0.001$), macrosomia (aOR: 4.15(95% CI 2.05-8.42); $p< 0.001$) and absence of domestic help (aOR: 0.50(95% CI 0.31-0.82); $p=0.006$) as independent risk factors for LBP during pregnancy among the women.

LIMITATIONS OF THE STUDY

- Recall bias in reporting pain symptoms.
- Loss to follow-up may have led to underreporting.
- Being a single-centre study, results may not be generalizable to all populations.
- Subjective pain assessments without radiological correlation.
- Lack of a control group limits comparative analysis.
- There were no homogenous population included, small geographic area and study duration was short and limited. Suggestions and recommendations can be given that this study could done on larger population and Further research for literature is advised for planning treatment strategies.

CONCLUSION

Early identification and appropriate postpartum care are essential to reduce disability and improve maternal well-being.This study demonstrates a high prevalence (72%) of low back pain (LBP) among postpartum women, with significant associations noted between LBP and primiparity, history of back pain, pain during previous pregnancies, postpartum period, and mode of delivery—particularly higher among those undergoing LSCS. Most affected women reported moderate to severe pain (75%) and functional disability (75%) as assessed by NPRS

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and RMDQ, respectively, significantly affects their quality of life. These findings highlight the need for early screening, proper pain management, and targeted postpartum rehabilitation to reduce disability and improve maternal quality of life.

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