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# Frequency of Low Back Pain After Spinal Anaesthesia in Obstetric and Non-Obstetric Patients: A Comparative Study in Bangladesh

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## Abstract

**Background:** Low back pain after spinal anaesthesia is a recognised postoperative complaint. Clinical observations suggest it disproportionately affects pregnant women undergoing cesarean section, while non-obstetric patients rarely report similar symptoms. **Aim of the study:** This study aimed to compare the frequency and pattern of low back pain after spinal anaesthesia in obstetric and non-obstetric patients at a tertiary care hospital in Bangladesh. **Methods:** This retrospective comparative study was conducted at Gazi Medical College Hospital, Khulna, Bangladesh, from July 2024 to June 2025, and included 80 patients undergoing surgery under spinal anaesthesia: 40 obstetric and 40 non-obstetric. Data were extracted from hospital records and postoperative follow-up documents, and group comparisons were performed using chi-square, Fisher's exact, and unpaired t-tests, with binary logistic regression used to identify predictors of post-spinal low back pain. **Results:** Obstetric patients were significantly younger than non-obstetric patients. The mean age was 27.8 ± 4.6 versus 38.9 ± 12.4 years. Obstetric patients also had higher BMI (28.1 ± 3.2 versus 24.6 ± 3.8 kg/m²), both p<0.001. They more often underwent spinal anaesthesia in the sitting position (77.5% vs 50.0%, p=0.010) and had multiple spinal attempts (40.0% vs 22.5%). Low back pain after spinal anaesthesia was significantly more frequent in obstetric patients at 6 months (40.0% vs 17.5%; p=0.027) and at 6 to 12 months (27.5% vs 10.0%; p=0.044). Among patients with low back pain, obstetric patients had higher pain scores at 6 months (4.8 ± 1.6 vs 3.6 ± 1.2) and greater functional limitation (43.8% vs 14.3%). Multivariable analysis showed independent predictors of low back pain: obstetric status (AOR 2.86, 95% CI 1.02 to 8.01, p=0.046), previous low back pain (AOR 3.78, 95% CI 1.02 to 14.06, p=0.047), multiple spinal attempts (AOR 3.12, 95% CI 1.08 to 9.04, p=0.036), and immediate post-procedure back discomfort (AOR 4.63, 95% CI 1.39 to 15.41, p=0.013). **Conclusion:** Low back pain after spinal anaesthesia was more common in obstetric than non-obstetric patients, suggesting that spinal anaesthesia alone may not fully explain the observed differences. The findings suggest that factors such as previous back pain, higher BMI, multiple spinal attempts, and early post-procedure back discomfort also influence post-spinal low back pain.

**Keywords:** Low back pain, Spinal anaesthesia, Obstetric patients, Non-obstetric patients, Cesarean section.

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## Introduction

Low back pain (LBP) is one of the most common musculoskeletal complaints worldwide. It remains a leading cause of disability and years lived with disability across age groups.[1] In Bangladesh, national survey data also identify LBP as an important population-level health problem, showing its relevance beyond specialised pain and spine services.[2] In perioperative care, LBP is increasingly important. Postoperative back pain may delay mobilisation, increase analgesic requirements, reduce patient satisfaction, and complicate recovery. These concerns are especially relevant in places where spinal anaesthesia is often used for lower abdominal, lower limb, gynaecological, urological, and obstetric procedures.[1-3]

Pregnant patients need special attention, as pregnancy is closely linked to low back and pelvic pain. Reviews show these symptoms are common during pregnancy and may last after childbirth.[4,5] This is understandable, since pregnancy changes body weight, spinal curvature, pelvic movement, posture, and joint stress, all of which increase lower back vulnerability.[5,6] Regional studies report high rates of back and pelvic pain in low-resource and South Asian areas. For example, studies from India and Africa highlight significant back pain among pregnant women.[7,8] As such, when a woman develops back pain after spinal anaesthesia during pregnancy, it can be difficult to distinguish whether the pain stems from pregnancy itself or from the procedure.[4-8]

At the same time, spinal anaesthesia is usually the first choice for most C-sections. It avoids many airway complications associated with general anaesthesia and improves outcomes for mothers and babies in low- and middle-income countries (LMICs).[9,10] Nevertheless, back pain after spinal anaesthesia is a known complaint. Studies suggest it has several causes. These include body weight, the size of the spinal needle, the number of attempts at insertion, contact with bone, bleeding at the site, and the location of needle placement.[3,11,12] In women having C-sections, reported back pain after spinal anaesthesia is usually mild and resolves on its own. Still, it matters because it can slow walking, make baby care more difficult, make breastfeeding less comfortable, and delay the mother's recovery.[3,9,11]

Despite this relevance, the existing literature leaves an important evidence gap. Most studies either evaluate only parturients, only mixed surgical populations, or focus on technical predictors, rather than directly comparing post-spinal back pain between obstetric and non-obstetric patients in the same hospital.[3,11,12] Longer-term links between delivery-related neuraxial anaesthesia and chronic LBP also remain debated.[10] In Bangladesh, although both cesarean delivery and spinal anaesthesia are common, limited hospital-based peer-reviewed data directly compare post-spinal back pain in obstetric versus non-obstetric groups. A local comparison clarifying whether obstetric status itself increases back pain incidence, or whether patient, procedural, and surgery-related factors explain the differences, remains needed. Given this background, the present retrospective study aimed to determine and compare the frequency and pattern of low back pain after spinal anaesthesia in obstetric and non-obstetric patients at Gazi Medical College Hospital in Khulna, Bangladesh.

## Materials and methods

This retrospective comparative study was conducted in the Department of Anesthesiology at Gazi Medical College Hospital, Khulna, Bangladesh, over one year from July 2024 to June 2025. A total of 80 patients who underwent surgery under spinal anaesthesia were included and categorised into two groups: obstetric (n=40) and non-obstetric (n=40). Group A comprised of obstetric patients who underwent cesarean section under spinal anaesthesia. Group B comprised non-obstetric patients, including male and non-pregnant female patients who underwent various surgical procedures under spinal anaesthesia.

Patients were selected from hospital records based on predefined eligibility criteria. Only adult patients with complete perioperative and follow-up records were included. Patients who had pre-existing spinal disease, a history of spinal surgery, traumatic back injury, chronic inflammatory musculoskeletal disease, or neurological disorders affecting pain assessment were excluded. Patients with incomplete medical records were also excluded. Data were collected retrospectively from patient files, anaesthesia records, operative notes, and follow-up records using a structured data collection sheet. In all cases, spinal anaesthesia was administered at the L3–L4 interspace using a 25G Quincke-Babcock needle.

Demographic and clinical variables such as age, sex, body mass index, comorbidities, smoking history, ASA physical status, and history of low back pain were

recorded. Procedure-related variables, including type of surgery, elective or emergency status, duration of surgery, patient position during spinal anaesthesia, number of spinal attempts, traumatic tap, and immediate post-procedure back discomfort, were also recorded. The primary outcome of low back pain was assessed using a numerical rating scale (0–10) after spinal anaesthesia at 6 months and again during the 6 to 12-month period post-surgery. Pain severity and functional limitation were also recorded when available.

Data were entered and analysed using standard statistical software (SPSS, V. 26.0). Continuous variables were expressed as mean ± standard deviation and compared using the unpaired t-test, while categorical variables were presented as frequency and percentage and compared using the chi-square test or Fisher's exact test, as appropriate. Logistic regression analysis was performed to identify factors associated with post-spinal low back pain. A p-value of less than 0.05 was considered statistically significant. Ethical approval was obtained from the institution's ethics committee, and data confidentiality was maintained.

## Results

Obstetric patients were younger than non-obstetric patients, with a mean age of 27.8 ± 4.6 years versus 38.9 ± 12.4 years, and had higher BMI (28.1 ± 3.2 kg/m² versus 24.6 ± 3.8 kg/m²), both differences statistically significant (p<0.001). Comorbidity was more common in the non-obstetric group (35.0% vs. 15.0%), p=0.037. Smoking was present only in the non-obstetric group (27.5%), while most obstetric patients were ASA I (75.0%).

**Table 01: Baseline demographic and clinical characteristics of the study participants**

| Variables | Obstetric patients (n=40) | Non-obstetric patients (n=40) | p-value |
|---|---|---|---|
| | Mean ± SD/n(%) | Mean ± SD/n(%) | |
| Age (years) | 27.8 ± 4.6 | 38.9 ± 12.4 | <0.001 |
| BMI (kg/m²) | 28.1 ± 3.2 | 24.6 ± 3.8 | <0.001 |
| Previous history of low back pain | 8 (20.0) | 4 (10.0) | 0.21 |
| Comorbidity present | 6 (15.0) | 14 (35.0) | 0.037 |
| Smoking history | 0 (0.0) | 11 (27.5) | <0.001 |
| ASA I | 30 (75.0) | 18 (45.0) | 0.006 |
| ASA II | 10 (25.0) | 19 (47.5) | |
| ASA III | 0 (0.0) | 3 (7.5) | |

Procedure-related findings showed that obstetric patients were more often given emergency surgery (55.0% versus 40.0%) and were more frequently given spinal anaesthesia in the sitting position (77.5% versus 50.0%), p=0.010. Surgery duration was shorter in the obstetric group (58.4 ± 12.6 minutes) compared with the non-obstetric group (74.2 ± 21.8 minutes), p<0.001. Multiple spinal attempts were also more common in obstetric patients (40.0% versus 22.5%).

**Table 02: Spinal anaesthesia and procedure-related characteristics of the study participants**

| Variables | Obstetric patients (n=40) | Non-obstetric patients (n=40) | p-value |
|---|---|---|---|
| | Mean ± SD/n(%) | Mean ± SD/n(%) | |
| Elective surgery | 18 (45.0) | 24 (60.0) | 0.179 |
| Emergency surgery | 22 (55.0) | 16 (40.0) | |
| Duration of surgery (minutes) | 58.4 ± 12.6 | 74.2 ± 21.8 | <0.001 |
| Sitting position during spinal anaesthesia | 31 (77.5) | 20 (50.0) | 0.01 |
| Lateral position during spinal anaesthesia | 9 (22.5) | 20 (50.0) | |
| Single spinal attempt | 24 (60.0) | 31 (77.5) | 0.092 |
| Two or more spinal attempts | 16 (40.0) | 9 (22.5) | |
| Traumatic tap | 7 (17.5) | 3 (7.5) | 0.182 |
| Immediate post-procedure back discomfort | 12 (30.0) | 5 (12.5) | 0.056 |

Low back pain after spinal anaesthesia was more frequent in obstetric patients at both follow-up periods. At 6 months, low back pain occurred in 16 patients (40.0%) in the obstetric group and 7 patients (17.5%) in the non-obstetric group, p=0.027. At 6 to 12 months, it remained higher in the obstetric group (27.5% versus 10.0%), p=0.044. No low back pain at either follow-up was observed in 52.5% of obstetric patients compared with 80.0% of non-obstetric patients (p=0.009).

**Table 03: Frequency of low back pain after spinal anaesthesia at follow-up**

| Follow-up outcome | Obstetric patients (n=40) | Non-obstetric patients (n=40) | p-value |
|---|---|---|---|
| | n(%) | n(%) | |
| Low back pain at 6 months | 16 (40.0) | 7 (17.5) | 0.027 |
| Low back pain at 6 to 12 months | 11 (27.5) | 4 (10.0) | 0.044 |
| Persistent low back pain from 6 months to 6 to 12 months | 8 (20.0) | 3 (7.5) | 0.108 |
| Newly developed low back pain during 6 to 12 months | 3 (7.5) | 1 (2.5) | 0.305 |
| No low back pain at either follow-up | 21 (52.5) | 32 (80.0) | 0.009 |

Among patients who developed low back pain, obstetric patients had higher pain severity and greater functional impact compared to non-obstetric patients. Specifically, at 6 months, the mean pain score was 4.8 ± 1.6 in obstetric patients, compared with 3.6 ± 1.2 in non-obstetric patients. In the obstetric group, moderate pain was most common, affecting 56.3%, and 56.3% required medication, in contrast to rates in non-obstetric patients. Functional limitation was reported in 43.8% of obstetric patients, compared with 14.3% of non-obstetric patients. At 6 to 12 months, mean pain scores remained higher among obstetric patients (3.9 ± 1.4) compared to non-obstetric patients (2.8 ± 1.0).

**Table 04: Severity and functional impact of low back pain among affected patients**

| Variables | Obstetric patients with LBP (n=16) | Non-obstetric patients with LBP (n=7) | p-value |
|---|---|---|---|
| | Mean ± SD/n(%) | Mean ± SD/n(%) | |
| Pain score at 6 months | 4.8 ± 1.6 | 3.6 ± 1.2 | 0.083 |
| Mild pain | 5 (31.3) | 4 (57.1) | 0.245 |
| Moderate pain | 9 (56.3) | 3 (42.9) | |
| Severe pain | 2 (12.5) | 0 (0.0) | |
| Pain requiring medication | 9 (56.3) | 2 (28.6) | 0.216 |
| Functional limitation at 6 months | 7 (43.8) | 1 (14.3) | 0.174 |
| Pain score at 6 to 12 months | 3.9 ± 1.4 | 2.8 ± 1.0 | 0.181 |
| Limitation of daily activities at 6 to 12 months | 4 (36.4) | 1 (25.0) | 0.681 |

Logistic regression analysis showed that obstetric status was independently associated with low back pain at 6 months (AOR 2.86, 95% CI: 1.02 to 8.01, p=0.046). Additionally, previous low back pain was also a significant factor (AOR 3.78, 95% CI: 1.02 to 14.06, p=0.047). Similarly, two or more spinal attempts increased the odds (AOR 3.12, 95% CI: 1.08 to 9.04, p=0.036). Notably, immediate post-procedure back discomfort was the strongest predictor (AOR 4.63, 95% CI: 1.39 to 15.41, p=0.013).

**Table 05: Logistic regression analysis of factors associated with low back pain at 6 months**

| Variables | UOR (95% CI) | p-value | AOR (95% CI) | p-value |
|---|---|---|---|---|
| Obstetric patient status | 3.14 (1.11 to 8.89) | 0.031 | 2.86 (1.02 to 8.01) | 0.046 |
| BMI >25 kg/m² | 2.72 (1.01 to 7.31) | 0.047 | 2.41 (0.90 to 6.49) | 0.079 |
| Previous low back pain | 4.54 (1.29 to 15.94) | 0.018 | 3.78 (1.02 to 14.06) | 0.047 |

| | | | | |
|---|---|---|---|---|
| Two or more spinal attempts | 3.69 (1.33 to 10.27) | 0.012 | 3.12 (1.08 to 9.04) | 0.036 |
| Traumatic tap | 2.88 (0.73 to 11.29) | 0.131 | 2.11 (0.49 to 9.13) | 0.316 |
| Immediate post-procedure back discomfort | 5.50 (1.75 to 17.24) | 0.004 | 4.63 (1.39 to 15.41) | 0.013 |

## Discussion

In this retrospective comparative study, low back pain after spinal anaesthesia was more frequent in obstetric than non-obstetric patients at both follow-up points. At 6 months, low back pain occurred in 40.0% of obstetric patients versus 17.5% of non-obstetric patients, and at 6 to 12 months, the difference remained, 27.5% versus 10.0%. Obstetric patients also showed a higher mean pain score at 6 months (4.8 ± 1.6 versus 3.6 ± 1.2) and greater functional limitation (43.8% versus 14.3%). These findings support the view that post-spinal low back pain in obstetric practice is not fully explained by neuraxial puncture alone, but likely reflects the combined effect of pregnancy-related biomechanical stress, higher BMI, positioning, and technical difficulty during spinal placement.[13-17]

Our obstetric 6-month rate of 40.0% is higher than the 15% to 21% postpartum low back pain prevalence reported by Tavares et al. at 1, 3, and 6 months, although their work examined a general postpartum population rather than women selected for cesarean delivery under spinal anaesthesia.[18] It is also above the 28.9% 6-month persistence reported by Miladi et al. and close to the 44%-point prevalence described by Madzivhandila et al. in women more than six weeks postpartum.[19,20] In contrast, most women in the Ontario cohort (76% to 80%) were pain-free by 1 to 6 months postpartum, which is notably better than the 52.5% pain-free rate in our obstetric group.[18] These differences suggest that cesarean delivery under spinal anaesthesia may concentrate women already at elevated risk because of pregnancy-related lumbopelvic strain and perioperative factors.

The non-obstetric findings in our study were 17.5% at 6 months and 10.0% at 6 to 12 months. These results are directionally consistent with the literature, which shows lower, usually transient rates outside the obstetric setting. Forozeshfard et al. followed 410 non-obstetric patients for one year and found low back pain in only 5.8%. There were no persistent cases, and only 4.2% lasted up to 17 days.[21] Benzon et al., in a review of neuraxial anaesthesia, similarly concluded that back pain after neuraxial block is generally not more common than after general anaesthesia. Pre-existing pain is one of the key drivers of persistence.[15] Our data and these studies support the interpretation that the low incidence in non-obstetric patients argues against spinal anaesthesia being the sole cause of later back pain.

Several of our associated factors mirror the published literature. Obstetric status remained independently associated with low back pain, AOR 2.86. Previous low back pain, AOR 3.78, multiple spinal attempts, AOR 3.12, and immediate post-procedure back discomfort, AOR 4.63, were also significant. Prior studies have repeatedly found previous pregnancy-related or pre-pregnancy pain to be a major determinant. Olsson et al. found important determinants of lumbopelvic pain 6 months postpartum. Robinson et al. showed pelvic girdle pain prevalence remained 31% to 30% from 12 weeks to 1 year postpartum, despite functional improvement.[13,14] Miladi et al. reported prior low back pain before pregnancy in 44.6% and during pregnancy in 75% of women with persistent postpartum pain.[19] In a large Taiwanese cohort, cesarean delivery with epidural anaesthesia was associated with a modestly increased risk of chronic low back pain (adjusted OR 1.26, 95% CI 1.17 to 1.34). Again, this suggests obstetric and peri-delivery factors matter.[16]

Our observation that repeated puncture attempts and early post-procedure discomfort predicted later pain is also biologically plausible and agrees with technical studies. Akdemir et al. compared spinal needles in obstetric patients and documented postdural puncture backache as a recognised complication after cesarean spinal anaesthesia.[22] Mishra et al. reported that post-spinal backache at one week was more frequent with the median than the paramedian approach (29 versus 16 cases), even though longer-term differences narrowed.[23] Niraj et al. further showed that, after accidental dural puncture in obstetric patients, low back pain at 18 months occurred in 48.3% versus 17.4% of controls, emphasising how tissue trauma and difficult neuraxial procedures may have durable consequences.[24]

The broader pregnancy literature also helps explain why obstetric patients are especially vulnerable. A large Spanish multicenter study found 4-week prevalences

during pregnancy of 71.3% for low back pain and 64.7% for pelvic girdle pain.[4] Dunn et al. reported that among primiparous women, lower back pain affected 77% during pregnancy and 52% postpartum.[25] Systematic reviews similarly show that pregnancy-related low back pain is common, with estimates around 57.3% in recent syntheses. Global figures commonly exceed half of pregnancies.[4,26] Therefore, when spinal anaesthesia is used for cesarean section, patients may already have altered posture, ligament laxity, abdominal wall weakness, and lumbopelvic pain susceptibility.

Clinically, these findings suggest that counselling should move away from blaming spinal anaesthesia alone. Instead, women at higher risk should be identified early, especially those with prior back pain, obesity, pregnancy-related pain, or anticipated difficult spinal placement. Efforts should aim to minimise repeated attempts, optimise positioning, use experienced providers, and offer postpartum follow-up for persistent symptoms. Such steps may reduce long-term morbidity. This is particularly relevant in Bangladesh, where Nawshin and Sanam reported a mean Oswestry Disability Index of 26.1 ± 9.9, with 62.4% moderate impairment among postpartum women with low back pain. Higher pain and impairment followed cesarean section.[20] Overall, our study adds comparative evidence that obstetric patients experience more frequent and clinically meaningful post-spinal low back pain than non-obstetric patients. Pregnancy-related and technical factors likely act together.

## Limitations of the study

Several limitations were present in this study. As a single-centre retrospective analysis with a relatively small sample size, the findings may have limited generalizability. Reliance on record-based and follow-up data may have resulted in incomplete documentation and recall bias. Additionally, potential confounding factors such as pre-pregnancy low back pain severity, occupational strain, and detailed postoperative lifestyle factors could not be fully evaluated.

## Conclusion

Low back pain after spinal anaesthesia was more common in obstetric than non-obstetric patients at both 6 months and 6–12 months post-surgery. This finding suggests that spinal anaesthesia is not usually the sole cause of later low back pain. In obstetric patients, increased risk is likely due to pregnancy-related biomechanical changes, as well as higher BMI, previous back pain, multiple spinal attempts, and early post-procedure discomfort. The study highlights that careful patient selection, precise technique, and dedicated follow-up are needed to reduce the long-term risk of low back pain in high-risk obstetric patients.

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