THE PLANET

Original Article

Prevalence of Low Back Pain in Patients Undergoing General Surgery with Spinal Anesthesia

Abul Hasan[1*], Professor. Syed Asif ul Alam[2], Mohammad Shahin Akter[3], Mizanur Rahman[4], Selim Miah[5]

ARTICLE INFO

Received: 14 October 2026
Accepted: 22 October 2026
Published Online: 03 November 2026

DOI: 10.5281/zenodo.23918947

Volume: 10, Number: 3, Page: 1155-1158

e-ISSN: 2789-5912
ISSN: 2617-0817

*Corresponding author

ABSTRACT

Background: Low back pain (LBP) is a frequent postoperative complaint following spinal anesthesia, with variable prevalence and multifactorial etiology. Its occurrence can adversely affect recovery and quality of life in surgical patients. **Aim of the study:** The study aims to analyze the prevalence of low back pain among patients undergoing general surgery with spinal anesthesia. **Methods & Materials:** This cross-sectional study was conducted at a tertiary care hospital in Bangladesh over one year. A total of 175 patients aged 16–70 years who underwent general surgery under spinal anesthesia were enrolled. Data on demographic, surgical, and anesthesia-related variables were collected through structured questionnaires and medical records. Statistical analysis was performed using SPSS version 26, with $p \leq 0.05$ considered significant. **Result:** Postoperative LBP was reported in 52% of patients. Male gender was independently associated with a higher risk of LBP (OR 2.9, 95% CI 1.90–4.16, $p<0.001$). Supine positioning was relatively protective, whereas prone and lithotomy positions were linked with increased LBP incidence. Duration of surgery and puncture site did not show significant associations. **Conclusion:** Low back pain is a common outcome following spinal anesthesia in general surgery, with male gender and surgical positioning identified as significant risk factors. Preventive strategies should target high-risk groups to minimize postoperative morbidity. Future multicenter studies are needed to confirm these findings and guide clinical practice.

Keywords: *Low back pain, spinal anesthesia, general surgery, prevalence, risk factors.*

1. *Registrar, Department of Orthopaedic Surgery, Faridpur Medical College, Faridpur, Bangladesh (ORCID: 0009-0005-9275-7370)*
2. *Principle and Head of the Department of Orthopaedic Surgery, Faridpur Medical College, Faridpur, Bangladesh*
3. *Associate Professor, Department of Orthopaedic Surgery, Faridpur Medical College, Faridpur, Bangladesh*
4. *Associate Professor, Department of Orthopaedic Surgery, Faridpur Medical College, Faridpur, Bangladesh*
5. *Assistant Professor, Department of Orthopaedic Surgery, Faridpur Medical College, Faridpur, Bangladesh*

INTRODUCTION

Low back pain (LBP) is increasingly recognized as a prevalent musculoskeletal disorder that significantly impacts individuals' quality of life and overall well-being [1]. Characterized by pain localized between the lower margins of the 12th rib and the gluteal muscles, LBP can arise from various physiological conditions and is particularly common among women during and after pregnancy [2,3]. The global burden of LBP is staggering, with estimates suggesting that up to 84% of the world's population may experience back pain at some point in their lives [4]. This pervasive issue presents not only a significant health challenge but also an economic burden due to healthcare costs and loss of productivity [5]. In the context of surgical interventions, LBP can emerge from numerous factors, including the surgical position, pre-existing conditions, and complications related to anesthesia techniques [6]. Spinal anesthesia (SPA) has become a preferred method for various surgical procedures, especially those below the umbilicus, such as lower limb orthopedic surgeries, urological interventions, and cesarean sections. SPA offers several advantages over general anesthesia, including reduced morbidity and mortality, improved postoperative pain management, and quicker recovery times [7]. However, despite its widespread acceptance, SPA is associated with complications, notably LBP, which can occur in approximately 13% to 30% of patients following recovery [8]. The incidence of LBP attributed to spinal anesthesia varies significantly among studies, with prevalence rates reported to range from 2.5% to 54% [9-11]. This variability may be influenced by a range of risk factors, including age, sex, type and duration of surgery, patient positioning during the procedure, and the number of attempts at spinal puncture [10,12]. Furthermore, research indicates that LBP following spinal anesthesia not only affects the physical well-being of patients but also impacts their psychological health and overall quality of life. The economic implications of postoperative back pain extend to increased healthcare costs, as patients may require additional treatments, rehabilitation, and even prolonged absences from work. Given the widespread use of spinal anesthesia in surgical practice, understanding the prevalence of LBP in patients undergoing general surgery is crucial for enhancing clinical outcomes and improving patient care [5]. Recent studies have explored various factors contributing to post-SPA LBP, revealing that the presence of preoperative LBP is a significant predictor of persistent pain after surgery [7]. However, the role of other contributing factors remains contentious, with limited consensus on their impact on the incidence of LBP following spinal anesthesia [5]. In particular, the relationship between patient demographics, surgical techniques, and the likelihood of experiencing postoperative back pain needs further investigation [13]. Therefore, this study aims to analyze the prevalence of low back pain among patients undergoing general surgery with spinal anesthesia. By shedding light on the associated risk factors and implications of LBP, the findings will provide valuable insights for clinicians and healthcare stakeholders.

METHODS & MATERIALS

This meticulously designed cross-sectional study was conducted within the Department of Orthopaedic Surgery, Faridpur Medical College, Faridpur, Bangladesh, over an extensive period of one year, from January 2024 to December 2024. A purposive sampling strategy was employed to recruit a total of 175 patients who underwent spinal anesthesia. The selection of participants was rigorously governed by well-defined inclusion and exclusion criteria, ensuring both the clinical relevance and scientific integrity of the study cohort.

Inclusion criteria:

Patients between the ages of 16 and 70 years who underwent surgical procedures under spinal anesthesia at this hospital during the study period were included.

BDJOURNALS.ORG Copyright © 2026 The Planet. Published by Sher-E-Bangla Medical College, Barishal, Bangladesh. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

Exclusion criteria:
Patients were excluded if they had a history of LBP, had received any anesthetic agent other than bupivacaine, had a previous history of spinal anesthesia, or had passed away before data collection.

A carefully structured questionnaire was developed and rigorously pre-tested to ensure both validity and reliability. Data were extracted from patients' medical records, including variables such as age, gender, body mass index (BMI), occupation, type of surgery, positioning during surgery, duration of the procedure, and puncture site. Each participant received a comprehensive explanation of the study's objectives and methodologies, and written informed consent was obtained. The collection of baseline demographic and clinical data adhered strictly to confidentiality protocols. Ethical clearance was secured from the university's institutional ethics review board before study initiation.

Statistical Analysis
The collected data were meticulously organized into tables and figures, complemented by detailed explanatory notes for enhanced clarity. Statistical analyses were performed using SPSS software (version 26) on a Windows platform. Continuous variables were summarized as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages to ensure a thorough and clear interpretation of the findings. Quantitative variables were compared using an unpaired t-test, and categorical variables were analyzed via the chi-square test. Statistical significance was set at a p-value of ≤ 0.05.

RESULT

The mean age of participants was 39.37 ± 5.42 years, with the majority (34.29%) aged 36–45 years, followed by 26.29% over 45 years. Males comprised 61.71% of the study population, while females accounted for 38.29%. Regarding BMI, over half of the participants (53.71%) were classified as overweight, 38.29% had a normal BMI, and 8.00% were underweight (*Table I*).

Table I
Demographic profile of study participants (*n*=175).

Variables	Frequency (n)	Percentage (%)
Age (years)		
≤ 25	27	15.43
26-35	42	24.00
36-45	60	34.29
> 45	46	26.29
Mean±SD	39.37 ± 5.42	
Gender		
Male	108	61.71
Female	67	38.29
BMI (kg/m2)		
< 18.5	14	8.00
18.5-25	67	38.29
> 25	94	53.71

The chart shows that 52% of patients reported post-spinal low back pain (**Figure 1**).

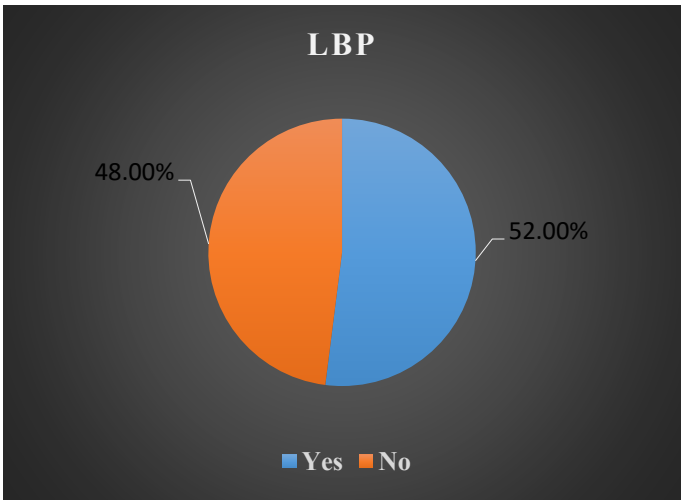


Figure 1 Prevalence of LBP in patients using spinal anesthesia (*n*=175).

Among all, post-spinal low back pain was reported in 91 cases (52%). A significant association was observed between the type of surgery and post-spinal low back pain (p<0.001), with higher proportions in general surgery (34.07%) and cesarean sections (30.77%), whereas orthopedic surgeries showed a higher proportion in patients without back pain (32.14%). Patient positioning was also significantly associated (p=0.024), with supine being the most common position in both groups. Operation duration and puncture site showed no significant association with post-spinal low back pain (p=0.631 and p=0.825, respectively) (*Table II*).

Table II
Factors associated with anesthesia and surgery in relation to post-spinal low back pain.

Variables	Post spinal back pain				P-value
	Yes (N=91)		No (N=84)		
	n	%	n	%	
Type of surgery					
General surgery	31	34.07	20	23.81	<0.001
Cesarean section	28	30.77	29	34.52	
Orthopedic	16	17.58	27	32.14	
Urology	13	14.29	5	5.95	
Gynecologic surgery	3	3.30	3	3.57	
Position					
Supine	58	63.74	63	75.00	0.024
Prone	14	15.38	7	8.33	
Lateral	2	2.20	5	5.95	
Lithotomy	17	18.68	10	11.90	
Operation duration (min)					
≤ 60	27	29.67	24	28.57	0.631
> 60	64	70.33	59	70.24	
Puncture					
L3-L4	13	14.29	12	14.29	0.825
L4-L5	78	85.71	72	85.71	

LBP: Low back pain.

Analysis of risk factors for post-spinal low back pain showed that male gender was significantly associated with a higher likelihood of developing pain (OR=2.9, 95% CI: 1.90–4.16, p<0.001). Operation duration (OR=1.2, 95% CI: 0.75–1.68, p=0.631) and puncture site (OR=0.93, 95% CI: 0.55–1.59, p=0.825) were not significantly associated with low back pain (*Table III*).

Table III
Associated risk factors for low back pain after spinal surgery.

Variables	P-value	OR	95% CI (lower-upper)
Gender			
Male	<0.001	2.9	1.90-4.16
Female			
Duration (min)			
≤ 60	0.631	1.2	0.75-1.68
> 60			
Puncture site			
L3-L4	0.825	0.93	0.55-1.59
L4-L5			

L: Lumbar vertebra, OR: Odds ratio, CI: Confidence Interval.

DISCUSSION

Low back pain is one of the most frequently reported musculoskeletal conditions encountered in clinical practice, often manifesting as acute, subacute, or chronic forms [14]. This prospective cross-sectional study analyzed 175 patients undergoing spinal anesthesia and assessed demographic features, surgical variables, and anesthesia-related factors associated with postoperative low back pain (LBP). The mean age of our study was 39.37±5.42 years, with the majority between 36–45 years (34.3%). Male patients predominated (61.7%), and more than half (53.7%) were overweight (BMI > 25 kg/m²). Comparable trends have been reported by Mahdian et al., where younger to middle-aged adults were most frequently affected by post-spinal back pain, and female gender was identified as a stronger predictor in their cohort [5]. Interestingly, our study, in contrast to some previous reports, demonstrated a significant association between male gender and the development of postoperative low back pain, suggesting that regional variations or differences in surgical selection criteria may play a role in this observed disparity. In our cohort, 52% of patients reported experiencing low back pain following spinal anesthesia, whereas 48% did not report any discomfort. This observed prevalence is relatively consistent with findings from earlier studies. For example, Joudi et al. reported that 38% of patients experienced low back pain on the first postoperative day, with the incidence gradually decreasing to 16% by the third day. Such findings collectively indicate that while low back pain is a common complication following spinal anesthesia, its intensity and prevalence may vary over time and between populations, potentially influenced by patient-specific factors, surgical technique, and perioperative care protocols. [15]. Our findings confirm that LBP is a common postoperative complaint and underscore the need for preventive strategies, especially in high-risk surgical groups. Analysis of surgery-specific associations revealed that patients undergoing general surgery had significantly higher rates of post-spinal LBP (34.07%). Supine positioning was relatively protective, with fewer patients developing LBP compared to those in prone or lithotomy positions. This finding is consistent with previous research indicating that general surgery is associated with a higher incidence of postoperative low back pain. For instance, a study by Forozeshfard et al. reported that postoperative low back pain is frequently observed in patients undergoing general anesthesia, with general surgery procedures contributing to this increased risk [7]. Operation duration (> 60 min) and puncture level (L3–4 vs. L4–5) showed no significant association with LBP, in line with reports by Lee et al., who found no lasting effect of puncture level on postoperative backache [16]. Logistic regression confirmed that male gender was independently associated with increased odds of post-spinal LBP (OR = 2.9, 95% CI 1.90–4.16, P<0.001). Neither duration of surgery nor puncture site reached statistical significance. This contrasts with prior literature where female gender has been more commonly implicated, but aligns with

the possibility that overweight male patients—overrepresented in our study—may be more prone to musculoskeletal strain postoperatively [17]. Other studies, such as Kazdal et al., emphasized that persistent postpartum LBP is influenced more by obstetric load (e.g., baby weight) than anesthesia technique, further underscoring the multifactorial etiology of postoperative back pain [18].

LIMITATIONS

This study was conducted in a single tertiary care hospital with a relatively modest sample size, which may limit the generalizability of the findings to broader populations. The cross-sectional design precludes assessment of long-term outcomes, as low back pain was only evaluated in the immediate postoperative period. Potential confounders such as preoperative physical activity, occupational stress, and psychosocial factors were not assessed, which may have influenced the observed associations. Multicenter, longitudinal studies are needed for stronger validation.

CONCLUSION

This study demonstrates that low back pain is a common postoperative complaint following spinal anesthesia, with a prevalence of 52% among general surgery patients. Male gender was identified as a significant independent risk factor, whereas surgery duration and puncture site showed no association. Supine positioning appeared relatively protective, while prone and lithotomy positions were linked to higher pain incidence. These findings underscore the multifactorial nature of post-spinal LBP and call for targeted preventive strategies, especially in high-risk groups. Further multicenter research is needed to validate these results and guide improved perioperative management.

FUNDING

No funding sources.

CONFLICT OF INTEREST

None declared.

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

REFERENCES

1. Haddox JD, Bonica JJ. Evolution of the specialty of pain medicine and the multidisciplinary approach to pain. Neural Blockade in Clinical Anesthesia and Management of Pain, 3rd edn. Philadelphia: Lippincott-Raven. 1998:1113-34.
2. Ghodke PS, Shete D, Anap D. Prevalence of sacroiliac joint dysfunction in postpartum women-a cross sectional study. Physiother Rehabil. 2017;2(3):149.
3. Pel JJ, Spoor CW, Pool-Goudzwaard AL, Hoek van Dijke GA, Snijders CJ. Biomechanical analysis of reducing sacroiliac joint shear load by optimization of pelvic muscle and ligament forces. Annals of biomedical engineering. 2008 Mar;36:415-24.
4. Ashebir NY, Ayele BW. Prevalence and risk factors of acute backache after spinal anesthesia in surgical procedures at Asella Teaching and Referal Hospital, Asella, Ethiopia. International Journal of Medicine and Medical Sciences. 2019 Jan 31;11(1):1-0.
5. Mahdian M, Varkani MS, Mousavi SG. Epidemiological profile of acute low back pain in operated patients under spinal anesthesia in Kashan University of Medical Sciences' Teaching Hospitals in 2019. International Archives of Health Sciences. 2021 Jul 1;8(3):176-80.
6. Asim HM, Ismail MS. prevalence of persistent low back pain in patients undergoing Spinal anesthesia in orthopedic surgery. Pak J Med Health Sci. 2013 Jan;7(1):254-7.
7. Forozeshfard M, Jahan E, Amirsadat J, Ghorbani R. Incidence and factors contributing to low Back pain in the nonobstetrical patients operated under spinal anesthesia: a prospective 1-year follow-up study. Journal of PeriAnesthesia Nursing. 2020 Feb 1;35(1):34-7.
8. Mohammad Kashif R, Arshad T. < The> causes, prevention and management of post spinal backache: an overview.
9. Benzon HT, Asher YG, Hartrick CT. Back pain and neuraxial anesthesia. Anesthesia & Analgesia. 2016 Jun 1;122(6):2047-58.
10. Schultz AM, Ulbing S, Kaider A, Lehofer F. Postdural puncture headache and back pain after spinal anesthesia with 27-gauge Quincke and 26-gauge Atraucan needles. Regional Anesthesia and Pain Medicine. 1996 Sep 1;21(5):461-4.
11. Khajavi MR, Alavi F, Moharari RS, Etezadi F, Imani F. Evaluation of acute and chronic back pain after spinal anesthesia in midline and paramedian approach: Incidence and functional disability. Archives of Anesthesiology and Critical Care. 2018 Sep 11;4(4):535-7.
12. Miller, R.D., Cohen, N.H., Eriksson, L.I., Fleisher, L.A., Wiener-Kronish, J.P. and Young, W.L. Miller's Anesthesia. Elsevier Inc., Philadelphia. 2014.
13. Azar AT, Aghjehghaleh SM, Karami T. Evaluation of the Relationship of Low Back Pain with Spinal Anesthesia and its Related Factors in Patients Undergoing Urological Surgery. Men's Health Journal.;7(1):e5.
14. Casiano VE, Sarwan G, Dydyk AM, Varacallo M. Back pain. InStatPearls 2023 Dec 11. StatPearls Publishing.
15. Joudi M, Fathi M, Dalili A, Jahanbakhsh S, Ardabili AM, Akhondi M, Izanloo A. The association of anesthetic method with developing back pain after lower extremity operations. Anesthesiology and pain medicine. 2014 Nov 16;4(5):e18194.
16. Lee JH, Yoon DH, Heo BH. Incidence of newly developed postoperative low back pain with median versus paramedian approach for spinal anesthesia. Korean Journal of Anesthesiology. 2020 Dec 1;73(6):518-24.
17. Moradi A, Abedini N. Risk factors for post-spinal anesthesia headache and low back pain after orthopedic lower limb surgery in obese patients in Shohada hospital of Tabriz. Journal of Renal Endocrinology. 2022 Aug 27;8(1):e17075-.
18. Kazdal H, Kanat A, Ozdemir B, Ozdemir V, Guvercin AR. Does the anesthesia technique of cesarean section cause persistent low back pain after delivery? A retrospective analysis. European Spine Journal. 2022 Dec;31(12):3640-6.