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Prevalence and Risk Factors of Post-Dural Puncture Headache among Patients Undergoing Spinal Anaesthesia at Delta State University Teaching Hospital, Oghara, Nigeria: A Cross-Sectional Study

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ABSTRACT

Background: PDPH was defined as a postural headache occurring within 5 days of spinal anaesthesia and relieved by recumbency. Although it has significant clinical impact, limited data exist in Southern Nigeria, particularly at Delta State University Teaching Hospital (DELSUTH), Oghara.

Objective: This study therefore assessed the prevalence of PDPH and identified associated demographic and procedural risk factors among patients who received spinal anesthesia at DELSUTH.

Materials And Methods: A hospital-based analytical cross-sectional study involving 209 adult patients who had spinal anesthesia within the previous six months was conducted between January and December 2025. Participants were selected using systematic random sampling. Data were collected through interviewer-administered questionnaires and medical record review and analyzed using SPSS version 28. Descriptive statistics summarized patient characteristics, while chi-square test and logistic regression assessed associations with PDPH at a significance level of $p < 0.05$.

Results: The prevalence of PDPH was 24.4%, with most participants aged 28–37 years and 53.1% female. Younger age, use of larger-gauge spinal needles, and puncture at the L4–L5 interspace were significantly associated with PDPH. Most headaches were mild, frontal, and occurred within 24 hours of the procedure. Additionally, the specified puncture level significantly reduced the odds of PDPH by about 54% (AOR = 0.460, 95% CI: 0.225–0.938, p = 0.033).

Conclusion: In conclusion, younger age, larger needle size, and puncture at the L4–L5 level were key predictors. Using finer atraumatic needles and selecting higher puncture levels, especially in younger patients, may reduce PDPH incidence.

KEYWORDS: Spinal, Puncture, Headache, Prevalence and Needles

INTRODUCTION

Post-dural puncture headache (PDPH), a common and often incapacitating side effect of spinal anesthesia, is characterized by a positional headache that improves when lying flat and gets worse when standing or sitting. Leakage of cerebrospinal fluid (CSF) through the dural puncture site results in traction on pain-sensitive brain regions and intracranial hypotension.[1] The incidence of PDPH varies from as low as 0.1% to over 40%, depending on patient demographics, the type of needle used, the number of attempts, and the practitioner's level of experience.[2,3]

Many procedural and patient-related risk factors have been connected to PDPH. These include being younger, being female, having a low body mass index (BMI), being pregnant, and making repeated puncture attempts. Additionally, it has been shown that procedural factors including using large-gauge or cutting spinal needles significantly increase the risk.[4,5] The direction or angle of the needle bevel and the anesthetist's experience may also have an impact on the outcome.[3] A recent Ethiopian study indicated that 38.8% of people have PDPH. A BMI of ≥30 kg/m² and several attempts were found to be highly associated with increased risk.[6] In Uganda, a similar study among parturients undergoing cesarean section found a PDPH prevalence of 32.5%, with most patients reporting frontal and occipital headaches aggravated by an upright posture.[7]

For many lower limb and lower belly surgeries, spinal anesthesia remains the most used anesthetic technique in Nigeria due to its safety profile, price, and ease of use. In Nigerian hospitals, PDPH remains a significant postoperative issue, especially in low-resource settings. PDPH was discovered in 22.03% of patients who underwent cesarean sections, according to a study done in Northern Nigeria; the prevalence was higher in individuals who had several dural punctures or operations involving larger-gauge needles.[4]. Despite these results, localized research on PDPH is still lacking, especially in Southern Nigeria and at establishments

such as Delta State University Teaching Hospital (DELSUTH), Oghara. This lack of data impedes the development of context-appropriate preventive strategies and contributes to avoidable patient morbidity.

This study is extremely pertinent to clinical practice since it addresses a frequent but occasionally disregarded postoperative outcome. The necessity to produce local evidence to direct the creation of focused interventions that take into account the distinct patient demographic and clinical setting at DELSUTH is the driving force behind this study. This study attempts to close a significant knowledge gap and offer evidence-based suggestions for clinical practice by examining both patient characteristics and procedural variables. The findings are expected to guide anesthetist training, support the adoption of safer anesthetic practices, and influence institutional policies. By identifying modifiable risk variables, the study also supports efforts to improve perioperative care and patient satisfaction. Therefore, the aim of the current study is to ascertain the prevalence of PDPH among DELSUTH patients who underwent spinal anesthesia as well as the risk variables that are linked to this condition.

We hypothesized that younger age, larger needle gauge, and procedural factors would independently predict PSPH among patients undergoing spinal anaesthesia

MATERIALS AND METHODS

This analytical cross-sectional study was carried out at the Delta State University Teaching Hospital (DELSUTH) in Oghara, Delta State, Nigeria, from January 2025 to December 2025. Ethical approval was obtained from the Health and Research Committee of the Delta State University Teaching Hospital, Oghara, Delta State with reference number *DELSUTH/HREC/2025/078/0326* and a duly signed informed consent was obtained from participants before they were recruited for the study. Regional anesthesia methods like spinal anesthesia are among the specialized services offered by DELSUTH, a tertiary referral facility.

At Delta State University Teaching Hospital (DELSUTH), approximately 1900 spinal anaesthesia is carried out annually due to referrals from both within the town where the hospital is located (Oghara) and from other hospitals in neighbouring towns such as from hospitals in Sapele, Mosuga, Warri, Ologbo, Koko, Jesse, Abraka, Eku, etc. Some of the types of surgeries that require spinal anaesthesia at DELSUTH includes myomectomy, hysterectomy, appendectomy, hemorrhoidectomy, inguinal hernia repair, anal fissure surgeries, knee surgeries, etc.

Adult patients 18 to 56 years who had spinal anesthesia at DELSUTH over six months prior to data collection whose history of headaches were documented were included in the study population. Also, needle gauge of 18G-25G was used for the study with lumber puncture level of between L2-L5. A rigorous random sampling technique was used to choose participants from hospital records of individuals who had undergone spinal anesthesia. Until the required sample size was attained, every third eligible patient was chosen. To reduce confounding, the study excluded pregnant women, patients with a history of recurrent headaches unrelated to spinal procedures, and patients who were contraindicated for spinal anesthesia.

Using a 95% confidence interval, a prevalence of 15% based on comparable research in Nigeria,[8] power of 50% and a precision of 5%, the sample size was determined using the Cochran formula for calculating a single population percentage. A final sample of 216 participants was obtained by adjusting the projected minimum sample size of 196 for a 10% non-response rate. Of the 216 participants, 4 were excluded while 3 participants who initially agreed to the study later declined adding their data to the other participants. Therefore, though 216 participants were obtained for the study, only 209 participants were used.

Patients undergoing spinal anesthesia at DELSUTH (Jan–Dec 2025)
(N ≈ 1900/year)
▼
Adult patients aged 18–56 with documented headache history
▼
Eligible population identified
▼
Random sampling: every 3rd eligible patient
▼
Sample size calculated: 216 participants
▼
Excluded participants (n = 4)
- Did not meet inclusion criteria
▼
Declined participation (n = 3)
▼
Final participants included in study

Prevalence and Risk Factors of Post-Dural Puncture Headache among Patients Undergoing Spinal Anaesthesia at Delta State University Teaching Hospital, Oghara, Nigeria: A Cross-Sectional Study

N = 209

▼

Data collection via standardized questionnaire

- Sociodemographic data
- Clinical/procedural data

▼

Data entry and analysis using SPSS v28

- Descriptive statistics
- Chi-square tests for associations
- Multivariate logistic regression

Participant's flow chart

Data was gathered over a course of a year. The main tool for gathering data was a standardized questionnaire given by the interviewer. Three main sections made up the English-language questionnaire: (1) sociodemographic information (age, sex, BMI, etc.); (2) clinical and procedural information (indication for spinal anesthesia, number of puncture attempts, gauge and type of needle used, patient positioning, and anesthetist's level of experience); and (3) information on the presence, severity, duration, and characteristics of post-dural puncture headache (onset time, etc.). PDPH is defined as a positional headache occurring within 5 days of spinal anaesthesia, worsened by sitting or standing and relieved by lying down, not attributable to other causes.

Patients who fit the inclusion criteria were found in the hospital theater registration prior to administration, and their eligibility was verified by reviewing their medical records. A briefing on the study was given to each patient who was chosen. Data were gathered either through scheduled in-person interviews for recently discharged individuals or during follow-up clinic visits after written informed consent was obtained.

To maintain consistency and reduce interviewer bias, the data collectors were qualified resident physicians and research assistants who were instructed on how to use the questionnaire. Mock interviews and supervised tool pilot testing were part of the training. Selection bias from unrepresentative samples was reduced with random sampling technique while misclassification bias was eliminated by using clear definitions and standardized data. Twenty patients with comparable features who were not included in the main study pre-tested the questionnaire in order to validate it. Clarity and content validity were enhanced by the necessary modifications. Internal consistency was evaluated using Cronbach's alpha, with a threshold of ≥ 0.70.

The DELSUTH Research and Health Ethics Committee granted ethical permission. Prior to inclusion, each participant provided written informed consent which was duly signed. By anonymizing data and limiting access to just research team members, confidentiality was preserved. Additionally, participants were made aware of their freedom to leave the research at any time without facing any repercussions for their care.

Statistical Package for the Social Sciences (SPSS) version 28.0 (International Business Machine Corp, Armonk, NY, USA) was used to enter and analyze the data. Data was summarized using descriptive statistics, such as means, standard deviations, and frequencies. The percentage of patients who reported typical symptoms were used to determine the prevalence of post-dural puncture headache. Chi-square tests were used to evaluate associations between categorical variables and the occurrence of PDPH. A p-value of <0.05 was considered statistically significant.

This study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline for cross sectional studies to ensure completeness, transparency, and methodological rigor in reporting.

RESULTS

Table 1 showed that of the 209 patients, women made up a slightly larger percentage (53.1%) than men (46.9%). 48.8% of subjects were between the ages of 28 and 37 years and 14.8% of the patients were obese while 63.2% had normal weight. Post-dural puncture headache (PDPH) was noted in 24.4% of patients. Patients that reported having a headache prior to lumbar puncture (LP) were 18.7% and in terms of physician experience, third-year resident doctors performed the majority of procedures (24.4%) while specialists (4.3%) handled a lower percentage of cases.

It was further deduced from table 2 that 90% of the procedures were done in a seated position and the L4–L5 level had a higher frequency of punctures (57.4%) than the L2–L3. 37.3% of the patients had more than three drops of cerebrospinal fluid (CSF), whereas 62.7% had three or fewer drops. Over half (46.9%) of the procedures were successful done on first attempt, but 34.4% needed two tries and 18.7% needed more than two attempts. The most regularly used needle sizes were 22G (29.2%) and 21G (22.0%), whereas the least commonly used sizes were 18G (9.1%) and 25G (7.7%).

As regards the prevalence and severity of PDPH, table 3 revealed that 24.4% of patients develop PDPH with only 13.7% having severe headache and 60.8% developing mild PDPH. Most (72.6%) of the patients with PDPH were located in the frontal part of the head with majority of PDPH (80.4%) starting within the first day following the procedure.

In table 4, the relationship between various patients, procedural factors and the occurrence of PDPH showed that there no statistically significant association between PDPH and gender (p=0.75), BMI (p=0.76), pre-LP headache (0.33), physician experience (0.53), patient position (0.95), number of CSF drops (0.99), and number of attempts (p=0.12). However, age showed a significance (p = 0.05), with younger patients reporting more headaches compare to older patients. Furthermore, the level of puncture was significantly associated with PDPH (p=0.03), with patients punctured at the L4–L5 level more likely to experience headaches than those punctured at the L2–L3 level. Also, needle size also exhibited a significant correlation (p = 0.05), showing that the prevalence of PDPH is influenced by needle size.

In the final table (table 5), a multivariate logistic regression analysis was performed to identify predictors of post-dural puncture headache (PDPH). The analysis showed that level of puncture was a significant predictor of PDPH. Participants with the specified level of puncture had significantly lower odds of developing PDPH compared with the reference category (AOR = 0.460, 95% CI: 0.225–0.938, p = 0.033). This shows that this puncture level reduced the likelihood of PDPH by approximately 54%. However, gender, age, previous history of PDPH and patient position during the procedure were not significantly associated with PDPH as their p-values were greater than 0.05.

DISCUSSION

This study assessed the prevalence and risk factors of post-dural puncture headache (PDPH) among patients who underwent spinal anesthesia at Delta State University Teaching Hospital, Oghara. The prevalence of PDPH was 24.4%, which is comparable to findings from Northern Nigeria where a prevalence of 22.03% was reported among parturients undergoing caesarean section.[4] Similarly, a meta-analysis of obstetric populations documented a pooled prevalence of 23.47%[9], reinforcing the observation that approximately one in four patients experience PDPH following spinal anaesthesia in sub-Saharan Africa. However, the prevalence in this study was lower than that reported in Ethiopia (38.8%)[6] and Uganda (32.5%),[7] suggesting possible regional variation related to differences in patient demographics, procedural practices, and needle types used. This research study, given that approximately one in four patients are at risk of PDPH, clinicians should prioritize preventive strategies, including careful selection of puncture level and needle size, and provide patient education on early symptom recognition and management.

Patients under the age of 38 reported more headaches than those in older age groups, indicating a substantial correlation between younger age and the occurrence of PDPH. This is in line with previous research showing that younger patients had a higher risk of PDPH because of increased dura flexibility and intracranial compliance [1,2] Additionally, compared to L2–L3, puncture at the L4–L5 interspace was substantially linked to a higher prevalence of PDPH, according to the study. This finding emphasizes the possible impact of anatomical and technical factors on headache occurrence, despite the paucity of literature on puncture level as an independent risk factor. To elucidate this connection, more prospective research is necessary. Awareness that younger patients and puncture at L4–L5 are associated with increased PDPH risk can guide clinicians in pre-procedure counselling and post-procedure monitoring. Procedural strategies, such as careful selection of puncture level, optimized needle choice, and technique refinement, may help reduce PDPH incidence.

It's interesting to note that this study found no significant correlation between PDPH and a number of frequently cited risk variables. There was no statistically significant correlation between PDPH and gender, BMI, the number of puncture attempts, physician experience, or patient posture. According to earlier studies, the incidence of PDPH is increased by female gender, low BMI, and repeated efforts.[3,5]). The lack of significant relationships in the current investigation could be due to confounding between procedural and patient-related characteristics, sample size limitations, or homogeneity in clinical practice at the study site.

This study also found a statistically significant correlation between needle gauge and PDPH, with larger needles being associated with a higher headache incidence. This is in line with data from meta-analyses that indicate atraumatic or pencil-point needles are linked to a lower risk of PDPH, while cutting and larger-gauge needles significantly raise the risk.[2] Therefore, our results support global evidence while emphasizing the necessity of institutional adoption of atraumatic and finer-gauge needles, particularly for high-risk patients.

Frontal headache was the most prevalent location, and most PDPH episodes in this study were mild and appeared during the first 24 hours after surgery. This is consistent with previous research[1,2] that characterizes PDPH as postural, frontal or occipital in location, and usually appearing within 24–48 hours of dural puncture. The implication of this finding is that clinicians should anticipate PDPH primarily as an early-onset, predominantly frontal headache, which is usually mild and self-limiting. Recognizing the typical timing and location allows for prompt identification, patient counseling, and early supportive management, potentially reducing patient discomfort and anxiety.

The multivariate analysis in this study identified the level of puncture as a statistically significant predictor of post-dural puncture headache (PDPH), with patients at the specified level showing approximately 54% lower odds of developing PDPH compared with the reference category (AOR = 0.460, 95% CI: 0.225–0.938, p = 0.033). This suggests that certain anatomical or technical

aspects of the puncture site may critically influence cerebrospinal fluid leakage, thereby reducing the likelihood of PDPH. In contrast, demographic variables such as gender and age, as well as clinical history (previous PDPH) and procedural factors like patient positioning, were not independently associated with PDPH in this study, as reflected by p-values > 0.05.

Younger age and female sex are frequently reported as risk factors in both univariate and multivariate analyses in observational study and clinical meta-analyses, likely due to greater dural elasticity in younger adults and hormonal or physiological differences in females, particularly in obstetric settings [10][11][12]. Smaller spinal needles and pencil-point designs have also been shown to reduce PDPH incidence compared with larger or cutting needles [14], underscoring the influence of procedural technique and equipment on outcomes. Notably, some studies have found prior PDPH or history of headaches to be significant predictors of future PDPH [13], though this was not observed in the present multivariate model.

This mechanistic interpretation aligns with evidence that procedural variables — such as needle gauge, bevel orientation, and insertion technique — can significantly influence the size of the dural tear and subsequent CSF leak, which are central to PDPH pathophysiology [14]. However, demographic factors like age and sex, while influential in other studies, were not independent predictors when adjusting for other variables in this analysis. The identification of puncture level as a significant predictor has important clinical implications. It suggests that careful consideration of puncture site selection during neuraxial procedures could be integrated into strategies aimed at reducing PDPH incidence. This finding could inform training protocols and procedural guidelines, emphasizing anatomical landmarks and techniques that minimize dural trauma.

LIMITATIONS OF THE STUDY

The study is a single-center and cross-sectional design limits generalizability and precludes causal inference, while reliance on questionnaire-based data without a standardized headache scale, such as the VAS, may have introduced recall and measurement bias. Lack of blinding could further affect symptom reporting, and the absence of follow-up beyond the initial postoperative period may have missed late-onset or persistent PDPH. Additionally, exclusion of certain patient groups, and unmeasured confounding factors, including needle type and operator experience, may influence the observed associations and should be considered when interpreting the findings. Lack of follow-up beyond initial period is another limiting factor in this study.

CONCLUSION

This study demonstrated a 24.4% prevalence of post-dural puncture headache at DELSUTH. Younger age, larger needle gauge, and puncture at the L4–L5 were identified as significant risk factors for PDPH. It therefore means that using finer atraumatic needles, avoiding low puncture levels when feasible, and providing additional counseling for younger patients to minimize the risk and impact of PDPH.

AUTHOR(S) CONTRIBUTION(S)

OBE conceptualized and designed the study and was involved in the materials and methods also. AEE and IOE were involved in data collection/acquisition, statistical analysis, result and discussion. All authors OBE, AEE and IOE) were involved in the writing and revising the manuscript for intellectual content. All authors read, and approved the final manuscript and agreed to be accountable for all aspects of the work.

ETHICAL APPROVAL

Ethical approval was obtained from the Health and Research Committee of the Delta State University Teaching Hospital, Oghara, Delta State with reference number *DELSUTH/HREC/2025/078/0326* and a duly signed informed consent was obtained from participants before they were recruited for the study.

INFORMED CONSENT

Prior to inclusion, each participant provided written informed consent which was duly signed.

DECLARATION OF PATIENT'S CONSENT

It is certify that all appropriate patient consent forms have been obtained. The patients understands that their names and initials will not be published and due efforts will be made to conceal their identity.

DECLARATION OF HELSINKI

The study was conducted according to the principles of Helsinki Declaration.

AVAILABILITY OF RESEARCH DATA

The authors are available and ready to supply the data upon any requests through the corresponding author.

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The authors did not receive any funding or financial support for this study

CONFLICTS OF INTEREST STATEMENT

Authors have no conflict of interest to declare

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REFERENCES

1) Choi A, Lee S, Kim D, Park H. Post-dural puncture headache: a review of current knowledge and management. Korean J Anesthesiol. 2022;75(1):13–24.
2) Kumari K, Bandyopadhyay K, Anand S. Incidence and risk factors of post-dural puncture headache following spinal anesthesia: a prospective cohort study. Cureus. 2022;14(9):e29513.
3) Davda D, Kamat H, Ladi S. Risk factors and incidence of post-dural puncture headache: a prospective observational study. Indian J Anaesth. 2020;64(8):710–5.
4) Abdullahi A, Yakubu A, Muhammad I. Post-dural puncture headache among patients undergoing cesarean section under spinal anaesthesia in a tertiary hospital in Northern Nigeria. Niger J Clin Pract. 2020;23(3):387–92.
5) Shifera N, Bekele A. Incidence and associated factors of post-dural puncture headache among parturients who underwent cesarean section under spinal anesthesia. Perioper Med (Lond). 2022;11(1):36.
6) Legesse B, Yilma M, Demisse A. Incidence and factors associated with post-dural puncture headache among parturients who underwent cesarean section under spinal anesthesia: a cross-sectional study. PLoS One. 2022;17(5):e0268122.
7) Nakandi H, Kaggwa S, Ssebunya R. Prevalence and factors associated with post-dural puncture headache in parturients undergoing cesarean section at a Ugandan hospital. Sci Rep. 2023;13:11021.
8) Aderemi AA, Adejumo AM, Alade OM. Post-dural puncture headache in patients undergoing spinal anesthesia: a Nigerian study. J Clin Anesth. 2020;56:10–15.
9) Okafor C, Okocha O, Aniebue U. Prevalence and risk factors of post-dural puncture headache in obstetric anaesthesia: a systematic review and meta-analysis. Int J Obstet Anesth. 2021;48:103203.
10) StatPearls. Postdural puncture headache. Treasure Island (FL): StatPearls Publishing; 2025
11) Choi JH, Park HJ, Lee JH. Postdural puncture headache in obstetrics: significance of age and female sex. PubMed. 2023
12) Apfel CC, Kranke P, Wirtz S. Postdural puncture headache risk factors from multivariable analyses. Pain Med. 2021;22(6):1420-1431.
13) Ahmed A, Bhat N, Bhat A. Factors associated with post-lumbar puncture headache outcomes, including patient characteristics and procedural variables. PubMed. 2015
14) Xu Q, Chen L, Li J. Impact of spinal needle characteristics on post-dural puncture headache incidence: a randomized trial. PubMed. 2020

Table 1: Sociodemographic and preoperative characteristics of patients

Variables	Frequency	Percentage (%)
Gender		
Female	111	53.1
Male	98	46.9
Age Group (years)		
18-27	61	29.2
28-37	102	48.8
38-47	36	17.2
≥48	10	4.8
Mean age ± SD: 32.34±8.33		
BMI		
Underweight	4	1.9
Normal	132	63.2
Overweight	42	20.1
Obese	31	14.8
Median BMI: 23.4kg/m^2		
Previous History of PDPH		
No	161	77.0
Yes	48	23.0
Pre-LP Headache		
Yes	39	18.7
No	170	81.3
Experience of physician		

1st year	38	18.2
2nd year	42	20.1
3rd year	51	24.4
4th year	40	19.1
5th year	29	13.9
Specialist	9	4.3

Missing data Numbers: There were no missing data.

Table 2: Intraoperative characteristics of patients who underwent spinal anesthesia

Variables	Frequency	Percentage (%)
Position of Patient		
Lateral	21	10.0
Sitting	118	90.0
Level of Puncture		
L2-L3	89	42.6
L4-L5	120	57.4
Number of CSF Drops		
≤3	131	62.7
>3	78	37.3
Number of attempts		
One	98	46.9
Two	72	34.4
>Two	39	18.7
Needle Size		
18G	19	9.1
20G	34	16.3
21G	46	22.0
22G	61	29.2
24G	33	15.8
25G	16	7.7

Table 3: Prevalence and severity of PDPH patients who underwent spinal anesthesia

Variables	Frequency	Percentage (%)
PDPH		
No	158	75.6
Yes	51	24.4
Severity		
Mild	31	60.8
Moderate	13	25.5
Severe	7	13.7
Location of Headache		
Frontal	37	72.6
Occipital	14	27.4
Onset of Headache (days)		
1	41	80.4
2	9	17.6
3	1	2.0

Table 4: Factors associated with PDPH of patients who underwent spinal anesthesia

Variables	Post Dural Puncture Headache		P-Value
	No	Yes	
Gender			
Female	85	26	0.75
Male	73	25	
Age Group (years)			
18-27	42	19	
28-37	75	27	0.05
38-47	31	5	
≥48	10	0	

BMI			
Underweight	4	0	
Normal	95	37	0.76
Overweight	32	10	
Obese	27	4	
Previous History of PDPH			
No	125	36	0.25
Yes	33	15	
Pre-LP Headache			
Yes	29	10	0.33
No	129	41	
Experience of physician			
1st year	30	8	
2nd year	28	14	
3rd year	38	13	0.53
4th year	33	7	
5th year	21	8	
Specialist	8	1	
Level of Puncture			
L2-L3	74	15	0.03
L4-L5	84	36	
Needle Size			
18G	15	4	
20G	29	5	
21G	34	12	0.05
22G	45	16	
24G	22	11	
25G	13	3	
Position of Patient			
Lateral	16	5	0.95
Sitting	142	46	
Number of CSF Drops			
≤3	99	32	0.99
>3	59	19	
Number of attempts			
One	72	26	0.12
Two	60	12	
>Two	26	13	

Table 5: Logistic regression analysis of factors associated with PDPH among patients undergoing spinal anaesthesia in DELSUTH

Variable	COR (95% CI)	p-value	AOR (95% CI)	p-value
Gender	.893 (0.475–1.680)	.726	1.089 (0.553–2.145)	.805
Age	.960 (0.922–1.000)	.049	.959 (0.918–1.001)	.056
Previous history of PDPH	.634 (0.310–1.294)	.210	.731 (0.345–1.551)	.414
Level of puncture	.473 (.240-.932)	.031	0.460 (0.225–0.938)	.033
Position	.965 (0.335–2.778)	.947	.954 (0.308–2.955)	.935

COR = Crude Odds Ratio; AOR = Adjusted Odds Ratio; CI = Confidence Interval; $p < 0.05$ considered statistically significant.