



INCIDENCE OF POST-DURAL PUNCTURE HEADACHE IN POST-CAESAREAN SECTION PATIENTS WITH SPINAL ANESTHESIA

Roro Lintang Suryani*, Khofifah Tresno Putri, Dwi Novitasari

Anesthesiology Nursing Study Program, Faculty of Health, Universitas Harapan Bangsa, Jl Raden Patah Nomor 100, Ledug, Kembaran, Purwokerto, Central Java 57552, Indonesia

*rorolintang@uhb.ac.id

ABSTRACT

Delivery via caesarean section can lead to complications, one of which is Post-Dural Puncture Headache (PDPH). PDPH occurs within 3 days, with 66% of PDPH cases emerging within the first 48 hours post-puncture. Although PDPH manifestations may spontaneously recover within one week or after the leak seals, PDPH disrupts the care provided by the mother for her baby. The purpose of this study to determine the incidence of PDPH in post-caesarean section patients with spinal anesthesia at RSUD Kardinah Tegal City. This quantitative research utilized a descriptive design with a cross-sectional approach. The sample size was 35, selected through total sampling, with the sample characteristics being patients aged 17-45 years, ASA 1-2, and 48 hours post-operation. The data was collected through observations using the International Headache Society questionnaire (IHS). Data analyzed with univariate analysis aimed at seeing a picture of the frequency distribution of each variable. The results indicate that PDPH occurred in 2 respondents (5.7%) at 48 hours post-caesarean section with spinal anesthesia, and in 3 respondents (8.6%) at 72 hours. The highest percentage of PDPH incidence at RSUD Kardinah Tegal City was observed within the first 72 hours post-caesarean section with spinal anesthesia. Based on these results, it is evident that post-caesarean section patients can experience PDPH on the third day, which can be used for evaluation and care planning for these patients.

Keywords: caesarean section; post-anesthesia; post-dural puncture headache

First Received 28 July 2024	Revised 18 August 2024	Accepted 15 August 2024
Final Proof Received 25 August 2024	Published 01 December 2024	
How to cite (in APA style) Suryani, R. L., Putri, K. T., & Novitasari, D. (2024). Incidence of Post-Dural Puncture Headache in Post-Caesarean Section Patients with Spinal Anesthesia. Indonesian Journal of Global Health Research, 6(6), 4083-4088. https://doi.org/10.37287/ijghr.v6i6.4169 .		

INTRODUCTION

Health Organization (WHO) in 2021 sets an indicator of caesarean section (SC) of 10%-15% per 1,000 births in each country. WHO data in the 2021 Global Survey on Maternal and Perinatal Health showed that 46.1% of all births in the world are through SC. WHO projected that births with SC will increase every year by 2030. (WHO, 2021). In Indonesia, births with SC account for 17.6% of the total number of births in various health facilities. (Kemenkes RI, 2022). The higher the number of pregnant mothers who are giving birth with SC, the higher the risk of death and disability that both mother and baby can experience. (WHO, 2021). Post-SC complications in mothers can be caused by surgery or anesthesia received, even from both. Post-Dural Puncture Headache (PDPH) is a complication of both spinal and epidural spinal anesthesia that damages the dura. This is due to the involuntary punching of the spine during surgery, lumbar punching, and the epidural injection. (Mohammed et al., 2017). To date, the exact cause of PDPH is unknown, but it is estimated that a leakage of Cerebro Spinal Fluid (CSF) suddenly causes the CSF pressure to decrease. As a result, the structures of the

spine that are sensitive to pain will undergo gravitational traction which ultimately leads to intrakranial structural shifts. (Dehghanpisheh et al., 2019). According to the International Headache Society (IHS), PDPH is manifested as a headache that occurs within 5 days of duration. The pain that is felt originates from the frontal area and extends to the occipite and gets worse within 15 minutes of sitting or standing position, sneezing, coughing, and will improve in 15 minutes after lying down. (Chakraborty & Sinha, 2016). This headache is associated with stiffness in the neck, dizziness, photophobia, tinnitus, diplopia, nausea and even vomiting. (Gupta et al., 2017).

The incidence of PDPH in obstetrics, generally occurs at the time of breathe. Post-SC PDPH with spinal anesthesia can be caused by several factors such as age, gender, and higher rates of exposure to neural blocks (Girma et al., 2022). Factors contributing to increased incidence of PDPH in obstetric patients also include stress changes in hormone levels and dehydration. (Singh et al., 2011). In nursing mothers, the reduction of both intra-abdominal and post-partum epidural pressure increases more CSF leakage than usual. (Singh et al., 2011). The incidence of PDPH in post-SC patients was 0.8%-5% (Girma et al., 2022). Post-SC PDPH may occur immediately after punching the dura, but 90% of PDPH occurs within 3 days and as much as 66% of the PDPH cases begin to appear within the first 48 hours after breastfeeding (Gupta et al., 2017). The Girma study (2022) showed that the greatest incidents in PDPH occurred in the first 24 hours after the dura (43.9%), followed within 48 hours (27.5%), and within 72 hours (9.2%). Although the manifestations of PDPH can recover spontaneously within a week or after the existing leak is closed, PDPH causes an interruption of the care that the mother will be given to the baby. Besides, the cost of health care will also rise and increase the risk of the mother's refusal to undergo spinal anesthesia if later days are indicated. (Girma et al., 2022). The study aims to find out the incidence of PDPH in post-SC patients with spinal anesthesia in Kardinah City of Tegal.

METHOD

This research is descriptive. The study used a cross-sectional survey design to find a picture of the occurrence of Post Dural Puncture Headache in post-sectio caesarea patients with spinal anesthesia techniques. The research was carried out at RSUD Roses Hospitals in Kardinah City of Tegal from October 2023 to May 2024. Data collection was conducted from April to May 2024. This researcher has conducted ethical clearance with number: B.LPPM-UHB/354/05/2024 involving 35 respondents. Sampling method is total sampling with the sample characteristics of patients aged 17-45 years, ASA 1 – 2, and 48 hours after surgery. The study did not involve patients who had a history of hypertension, a migraine history, and were receiving anti-inflammatory treatment. Researchers prioritize research ethics and respect the rights and well-being of all involved. This includes giving informed consent to all potential respondents, confidentiality and privacy, beneficence and non-maleficence, justice, respect for persons. The component ensures that this research is conducted ethically.

The instrument used in the study was a questionnaire on PDPH that included 6 PDPH criteria including headaches that occurred about 15 minutes after the body was sitting or standing and improved within 15 minutes of lying down, frontal occipital headache (frontal/back head pain), stiffness in the neck area (near neck), tinnitus (ears bending), photophobia (eye sensitive to light), and nausea. (Alfhiradina, 2013). If the respondent agrees, the researcher asks the respondents to sign the informed consent provided. The researchers examined the incidence of PDPH 48-72 hours after spinal anesthesia. The data was collected through observations using the International Headache Society questionnaire (IHS). The validity test of the questionnaire showed a p value = 0.0000 and proved reliable with a kappa index value

of 0.7465 (Ketaren et al. 2014). The first visit took place 48 hours after the spinal anaesthetic. The second visit was made 72 hours after a spinal Anaesthesia. The univariate analysis of this study is used to analyze age variables, ASA status, education, birth history, and PDPH incidence.

RESULTS

Tabel 1.

Distribution of respondents by age, ASA status, education, and previous birth history

Respondents Characteristics		f	%
Age	17-25 year	4	11.4
	26-35 year	23	65.7
	36-45 year	8	22.9
ASA Status	ASA 1	6	17.1
	ASA 2	29	82.9
Education history	Elementary-Junior High School	19	54.3
	High School	13	37.1
	College	3	8.6
Birth history	Pervaginam	12	34.3
	<i>Sectio caesarea</i>	22	62.9
	No	1	2.9

Table 1 shows the age range of the most respondents is 26-35 years with a total of 23 respondents (65.7%), the most ASA status of 29 respondents (82.9%), the highest education history is SD-SMP of 19 respondents (54.3%), and the most history of previous births is caesarean partition of 22 respondents (62.9%).

Tabel 2.

Distribution of the frequency of incidence of PDPH in patients after Caesarean Section with Spinal Anesthesia

Variabel	PDPH		No PDPH	
	f	%	f	%
48 hour	2	5.7	33	94.3
72 hour	3	8.6	32	91.4

Table 2 shows a high incidence of PDPH in 72 hours after caesarean section with spinal anesthesia, which is 3 respondents (8.6%).

DISCUSSION

Respondents Characteristics

Most respondents were in the age range of 26-35 years, which is a total of 23 respondents (65.7%). This is because the respondents in this study are all the patients who have undergone *sectio caesarea* surgery with spinal anesthesia. The age of 26-35 is considered the productive age for pregnancy. According to Dumilah (2019), the right age for a woman to want to get pregnant is 20-30 years, if a woman wants to be pregnant at age > 35 years or < 20 years it can pose a risk for the pregnant mother. Pregnancy of a woman under the age of 20 is at high risk. Reproductive function is not mature enough to be able to function to its fullest (Dumilah, 2019). However, not only women under the age of 20 are at high risk, women over 30 also have high risk such as BBLR, preeclampsia, eclampsia, and premature pregnancy (Dumilah, 2019). The results of this study are supported too by Fadli et al. (2023) study that indicated the age of undergoing SC operation at age <20 years as 4 patients (4%), at age 20-35 years as 69 patients (69%), at age >30 years 27 patients (27%).

The majority of respondents, 29 respondents (82.9%) had ASA 2 status. The pregnant mother will undergo physiological changes in her body as a form of compensation for the fetus

developing in the womb. Therefore, pregnant mothers with no history of other diseases are included in ASA 2 status. According to the American Society of Anesthesiologists (2020), mothers with normal pregnancies, well-controlled gestational hypertension, controlled preeclampsia, gestational DM controlled by diet, are included in ASA 2 status. Although pregnancy is not a disease, the physiological condition of the nursing mother changes significantly compared to when not pregnant. Therefore, ASA 2 is prescribed also for women with pregnancies without complications (American Society of Anesthesiologists, 2020). This study is proved in a study conducted by Orhan et al. (2019) obtained a retraction-average of patients who underwent SC action on ASA 1 as 5 respondents (8.6%), ASA 2 as 41 respondent (70%).

Based on educational history, a total of 19 respondents (54.3%) have SD-SMP education. Currently, the Indonesian government has established compulsory education for SD-SMP basic education for all Indonesians. The better facilities and access to educational services make it easy for the community to reach basic education SD-SMP. Specifically, the discussion about basic education is described in section 34 which states that every citizen aged six years can follow a compulsory curriculum for basic education at the SD level up to the Middle Ages. Earlier research conducted by Djajanti & Arfah (2018) indicated that respondents with SD and SME education were 11 respondents (47.8%), high school education was 10 respondent (43.5%), higher education was 2 respondents (4.3%).

Respondents with a history of previous births with caesarean section obtained data of a total of 22 respondents (62.9%). A history of a previous caesarean section may be an indication of a subsequent caesarean section in pregnancy. Therefore, in this study most respondents have a history of an earlier caesarian section. A population study has been conducted by Gondwe et al. (2019), a multigravid woman who is known to have complications in previous pregnancies and also have complication in the fetus during the delivery process, then directly increases the risk of childbirth associated with the cesarean section procedure. Previous Caesarean section history is a major predictor of an increase in the percentage of Caesarea section occurrences. The results of this study were confirmed in a study conducted by Rezeki et al. (2023) that indicated that respondents had a history of pervaginal childbirth as much as 22 respondents (26.19%), respondents with previous history of SC as 62 respondents (73.81%), respondents who had no history of previous birth 46 respondents (35.38%).

Incidence of Post Dural Puncture Headache in Post Caesarean Section Patients with Spinal Anesthesia Techniques

The incidence of PDPH in 72 hours after caesarean section with spinal anesthesia technique has a higher frequency compared to the occurrence of the PDPH within 48 hours after the caesarea section. This may be due to vasodilation in pregnant mothers associated with increased levels of estrogen. In addition, increased pressure of cerebrospinal fluid during childbirth is thought to cause the risk of PDPH becoming higher. The occurrence of PDPH affects the well-being of post-caesarean section patients. Postdural Puncture Headache (PDPH) is an unpleasant complaint to patients and can be fatal with a risk of pain lasting for months or even years (Mustafa dkk., 2022).

PDPH is a iatrogenic complication of a spinal anesthesia headache, usually characterized by frontal and occipital pain that worsened in the standing position and improved in the lying position (Mayasari dkk., 2019). The prevalence of PDPH can be influenced by several factors including age, gender, and pregnancy (Gupta et al., 2020). The results of other studies on the incidence of PDPH in RS.M between June - November 2019 were 83 samples. PDPH

experienced 1.2% of respondents aged 26-35 and 4.8% in respondents age 36-45 years (Karnina & Putri, 2021). Mustafa dkk. (2023) in his research also showed that of the 46 respondents mostly experienced post-spinal anesthesia headaches as much as 32 respondents (69.6%). PDPH can be experienced by patients under post-anesthesia with spinal techniques within 3 days of surgery. According to Thurnbull (2013) in the Kanna (2022) study PDPH occurs within 48 hours of dural punishment. Headaches and back pain are the dominant symptoms that develop after dural punsi. About 90% of headaches will occur within 3 days of the procedure, and 66% start within 48 hours. Rarely, PDPH occurs between 5 and 14 days after the procedure. Incidences vary widely from less than 2% to 40% depending on the procedure and patient factors (Uppal et al., 2023).

Girma et al. (2022) in their study of the incidence of PDPH in caesarean section patients who received spinal anesthesia showed that 43.9% of respondents developed PDPH within the first 48 hours after surgery. Common symptoms of PDPH, such as headaches, begin at 12 or 48 hours and rarely appear after 5 days of breastfeeding. An observational study found that 84.8% of headache symptoms appeared within 3 days of the injection. Other analysis studies also showed 65% had symptoms of PDPH within 24 hours and 92% within 48 hours. Almost 90 percent of PDPH cases occur within 72 hours of a hard bite. The results of the above study indicate that the incidence of PDPH still appears within 72 hours of spinal infestation. The results of this study emphasize that it is possible to consider the time of the return of the patient to the post-caesarean section in order to guarantee the well-being of the postpartum mother without any complications from spinal anesthesia.

CONCLUSION

The highest percentage of cases of PDPH occurred in the first 72 hours of post-caesarean section with spinal anesthesia in the RSUD Kardinah City of Tegal.

REFERENCES

- Alfhiradina, S. J. (2013). Kejadian Postdural Puncture Headache (PDPH) Pada Pasien Yang Menjalani Operasi Ortopedi Ekstremitas Bawah Dengan Anestesi Spinal Menggunakan Jarum Tipe Quincke 26G Di RSUD Arifin Achmad Provinsi Riau. Repository Unri.
- American Society of Anesthesiologists. (2020). Statement On ASA Physical Status Classification System. Committee on American Society of Anesthesiologists
- Chakraborty, A., & Sinha, A. (2016). The Incidence Of Post Dural Puncture Headache Following Spinal Anaesthesia: A Comparison Of Sitting Versus Lateral Decubitus Position. *International Journal of Contemporary Medical Research*, 3(7), 2454-7379.
- Djajanti, A.D., & Arfah, U.K. (2018). Pola Penggunaan Obat Anestesi Pada Tindakan Operasi Caesar Di Instalasi Bedah Di Rumah Sakit Labuang Baji Makassar. *Jurnal Kesehatan Yamasi Makasar*, 2(2).
- Dehghanpisheh, L., Bayani, S., Azemati, S., & Rakhshan, M. The Effect Of Intravenous Administration Of Ondansetron Compared To Aminophylline On Incidence And Severity Of Post-Dural Puncture Headache (PDPH) in Cesarean Section Surgeries. *Biomedical Research*, 30(6).
- Dumilah, R. (2019). Umur, Interval Kehamilan, Kehamilan Yang Diinginkan Dan Perilaku Pemeriksaan Kehamilan. *Jurnal Penelitian Kesehatan Suara Forikes*, 10 (2).

- Fadli, A., Fujiko, M., Gayatri, S. W., Hamsah, M., & Syamsu, R. F. (2023). Karakteristik Ibu Hamil yang Melakukan Tindakan Section Caesarean di Rumah Sakit Sitti Khadijah Makassar Periode 2019 – 2021. *Fakumi Medical Journal*, 3(4), 261-268.
- Girma, T., Mergia, G., Tadesse, M., & Assen, S. 2022. Incidence And Associated Factors Of Post Dural Puncture Headache In Cesarean Section Done Under Spinal Anesthesia 2021 Institutional Based Prospective Single-Armed Cohort Study. *Annals Of Medicine & Surgery Journal*, 78.
- Gondwe, T., Betha, K., Kusneniwar, G.N., Bunker, C.H., Simhan, H., Reddy, P.S., & Haggerty, C. L. (2019). Maternal Factors Associated With Mode Of Delivery In A Population With A High Caesarea Section Rate. *Journal Epidemiologi Global Health*, 9(4), 252-258.
- Gupta, A., Von Heymann, C., Magnuson, A., Alahuhta, S., Fernando, R., Van De Velde, M., Mercier, F. J., Schyns-Van Den Berg, A. M. J. V. (2020). Management Practices For Postdural Puncture Headache In Obstetrics: A Prospective, International, Cohort Study. *British Journal Of Anaesthesia*, 125(6), 1045–1055.
- Gupta, N. M. S., Mahajan A., Dar, M. R., & Gupta N. Role Of Oral Prednisolone In The Management Of Postdural Puncture Headache After Spinal Anesthesia In Urological Patients. (2017). *Anesth Essays Res*, 11(4), 1075–1078.
- Kanna., E. (2022). Hubungan Umur, Ukuran Jarum, dan Riwayat PDPH Terjadinya Post Dural Poneture Headache dengan Anestesi Spinal di RS Dr. Tajuddin Chalid Makassar. Itekes Bali.
- Kemenkes RI. (2022). Profil Kesehatan Indonesia. Jakarta: Kementerian. Kesehatan Republik Indonesia.
- Karnina, R., & Putri, M. (2020). Hubungan Kejadian Post Dural Puncture Headache (PDPH) pada Pasien Sectio Caesarea dengan Anestesi Spinal di Rumah Sakit M Tahun 2019. *Muhammadiyah Journal of Midwifery*, 1(2), 45-50.
- Mayasari, H. R. (2019). Post Dural Puncture Headache (PDPH). Universitas Brawijaya.
- Mohammed, A. D. A. R., Salisu, Nagoma, A. U., Owolabi, L. F., & Ibrahim, A. (2017). An Analysis Of Postdural Puncture Headache In Obstetric Patients: A Study From Kano, Nigeria. *Tropical Journal of Obstetrics and Gynaecology*, 34, 16-20.
- Mustafa, C., Suryani, R. L., & Apriliyani, I. (2023). Gambaran Kejadian Komplikasi Nyeri Kepala Pada Pasien Pasca Anestesi Spinal Di Ruang Kebidanan Rumah Sakit Umum Tgk. Chik Ditiro Kabupaten Pidie Aceh. *Viva Medika*, 16(2), 152–159.
- Singh, J., Ranjit, S., Shrestha, S., Limb,u T., & Marahatta, S. B. (2011). Post Dural Puncture Headache. *Journal of Institute of Medicine Nepal*, 32(2), 30-32.
- Uppal, V., Russell, R., Sondekoppam, R., ..., & Narouze, S. (2023). Consensus Practice Guidelines on Postdural Puncture Headache From a Multisociety, International Working Group: A Summary Report. *JAMA Netw Open*, 6 (8).
- World Health Organization. (2021). Caesarean Section Rates Continue To Rise, Amid Growing Inequalities In Access.