

Section: General Nursing

Hot pack and blanket warmer for hypothermia management in patient with post-spinal anaesthesia

Christina Diah Ikawati Karaeng , Septi Wardani, Dwi Sulistiyono, Reni Mareta

Authors information

Department of Nursing, Universitas Muhammadiyah Magelang, Indonesia

 **Contactable email:** Christkaraeng@gmail.com / Article DOI: *On process*

Abstract

Patients undergoing surgery under spinal anaesthesia are at high risk for perioperative hypothermia, which is further exacerbated by prolonged exposure to a cold operating room environment. To address this complication, a combination of hot compresses and warming blankets can be implemented as an effective management strategy. The purpose of this study was to evaluate the clinical effect of combining hot compresses and warming blankets on hypothermic patients in the post-anaesthesia care unit. In this specific case, a post-caesarean section patient with premature rupture of membranes (PROM) presented to the recovery room complaining of feeling cold. Perioperative hypothermia was successfully managed by applying the combined hot compress and warming blanket protocol for a duration of 30 minutes.

Keywords: Hypothermia management, perioperative nursing, post-caesarean section, spinal anaesthesia, surgery

Introduction

Spinal anaesthesia (subarachnoid) is a regional anaesthesia involving the injection of local anaesthetic drugs into the subarachnoid space (Hunie et al., 2021; Pierson et al., 2025). Patients undergoing surgery with spinal anaesthesia predominantly experience hypothermia (Tubalawony & Siahaya, 2023). Perioperative hypothermia is an unintended decrease in core body temperature to $<36^{\circ}\text{C}$ during the perioperative period (Rauch et al., 2021). Anaesthetic drugs are suspected to have a heat-blocking effect resulting from metabolic processes, leading to a post-operative temperature decrease (Habib et al., 2024). A side effect of spinal anaesthesia is impaired thermoregulatory function, characterized by a reduced vasoconstriction threshold caused by spinal anaesthesia inhibiting sympathetic block, muscle relaxation, and sensory block of peripheral temperature receptors, thereby impairing the compensatory response to temperature. Hypothermia occurs as a result of the effects of anaesthetic drugs administered and can be caused by several other factors such as age, fluid intake during surgery, amount of bleeding, exposure to operating room temperature, and duration of surgery, which can affect the duration of the anaesthetic effects received. A longer surgery duration will naturally prolong the anaesthetic effects, and if the surgery takes too long, the body will be exposed to lower temperatures in the operating room for an extended period. Another cause of perioperative hypothermia is exposure to operating room temperatures that cause patients to shiver. Operating room temperature settings are regulated by Ministry of Health Regulation No. 40 of 2022, with a standard temperature range of 22°C – 26°C . Temperatures within this range can cause a decrease in body temperature.

Nurses play a crucial role in maintaining patients' condition to ensure stability and facilitate their return to their pre-operative state during the recovery period. During the recovery process, monitoring must be conducted to assess the patient's condition progression, with the aim of preventing complications. Several non-pharmacological interventions to prevent hypothermia in post-operative patients that can be applied in the central surgical unit include the administration of warm intravenous fluids, the use of electric blankets, the application of hot packs, and pre-operative warming using a forced-air warmer (Yulianita et al., 2023). A study conducted by Syamsuddin et al. (2025) investigated the effect of warm compresses using hot packs on increasing body temperature in post-operative hypothermic patients in the Recovery Room. The treatment of hypothermia in post-operative patients that can be used is the use of active warming devices, namely blanket warmers. Blanket warmers are considered more effective in treating hypothermia because they generate heat that can be adjusted to a specific temperature, allowing the heat to be transferred to the patient's body, thereby causing heat transfer from the blanket warmer to the patient's body. The use of a blanket warmer can be administered to patients undergoing abdominal surgery to prevent intraoperative hypothermia. The target output temperature of the blanket warmer is 37.5°C – 38.5°C , controlled thermostatically by warming the patient through the process of conduction, where the blanket warmer transfers thermal energy when it comes into contact with the patient's skin surface.

A hotpack is a sealed package containing gel at a temperature of 40° C. The use of hot packs can increase the average core temperature by 0.44° C, thereby significantly reducing the incidence of hypothermia (Dzuhuri et al., 2024). The use of hotpacks is an effective non-pharmacological technique for quickly restoring body temperature. The sensation and effects of heat are transmitted through the skin and received by the dermal nerves, causing the dermal capillaries to dilate and blood flow to increase on the skin's surface, thereby raising the skin's surface temperature. The use of hot packs is more practical as there is no need to refill with hot water, and it is safer to use as there is no risk of hot water spilling and causing burns to the patient (Handoyo et al., 2022). The results of the survey conducted by the author on May 27, 2025, revealed a total of 9 patients who underwent spinal anesthesia at the Surgical Unit of Tidar General Hospital in Magelang City, consisting of cases of cesarean section and hemorrhoidectomy. The operating room temperature was set at 26°C, which is in accordance with Ministry of Health Regulation No. 40 of 2022, which stipulates that operating room temperatures should be between 22°C and 26°C. One post-operative cesarean section patient was identified as experiencing hypothermia. Perioperative hypothermia occurred due to exposure to the cold operating room temperature of 26°C. Patients exposed to cold operating room temperatures for an extended period may develop hypothermia, leading to the conclusion that the longer the surgery duration, the higher the risk of hypothermia. The management of hypothermia at the Surgical Department of Tidar General Hospital in Magelang City involves the use of blankets. The use of blankets on hypothermic patients requires a significant amount of time, resulting in prolonged feelings of coldness and shivering, which cause discomfort for the patient. Additional management measures, such as hot packs and blanket warmers, are needed to accelerate the recovery from hypothermia.

Case Description

The nursing care assessment was conducted on May 27, 2025, at 08:30 a.m. in the Recovery Room of Tidar Magelang Regional General Hospital. The nursing care assessment was conducted on a post-caesarean section patient with premature rupture of membranes (PROM). The following case assessment data was obtained: The client is Mrs. S, aged 23 years, the client is Muslim, works as a teacher, and is covered by BPJS health insurance. The patient's pregnancy is her first, and she is 34 weeks pregnant. During her pregnancy, the patient regularly attended check-ups at the Gelangan Health Center in Magelang. The patient reported not feeling any contractions but noticed leakage and blood-stained discharge from the vagina. The patient was advised to be admitted for hospitalization, and immediate action was required to deliver the baby via caesarean section. On May 26, 2025, at 11:30 PM, Mrs. S was transferred to the VIP room and scheduled for a caesarean section at 8:00 AM. On March 27, 2025, at 8:30 AM, Mrs. S gave birth to her first child via caesarean section. Mrs. S's condition at this time, after leaving the operating room and being in the recovery room, is that she is complaining of feeling cold and shivering due to the cold operating room and the medical diagnosis of premature rupture of membranes (PROM). The patient reported feeling cold and shivering after undergoing a caesarean section (SC) and complained of nausea. GCS 15 (E 4, M 6, V 5). Vital signs: BP 120/75 mmHg, HR 90 beats per minute, RR 20 breaths per minute, temperature 35.5°C, SpO2 99%.

To address the client's hypothermia, the nurse conducted a thorough assessment that began with monitoring the patient's body temperature using a thermometer gun, which registered at 35.5°C. In identifying the root cause of the hypothermia, it was noted that the patient was post-operative following a C-section (SC) under spinal anaesthesia administered one hour prior, alongside exposure to an operating room temperature of 22°C. The monitoring of clinical signs and symptoms revealed that the patient complained of feeling cold, displayed cold skin, maintained a low core temperature of 35.5°C, and experienced grade 2 shivering. In response to these findings, nursing interventions were initiated, beginning with passive warming through the application of a basic blanket. This was followed by active external warming, which involved applying a warm blanket device set to 32°C for a duration of 30 minutes to restore the patient's normal body temperature.

Discussion

The nursing intervention used was the application of hot packs and blanket warmers to hypothermic patients for 30 minutes. The warm blanket successfully increased the patient's body temperature significantly, consistent with previous research that also noted that blanket warmers are effective in addressing intraoperative and postoperative hypothermia. This effectiveness was particularly evident in patients with mild hypothermia, whose body temperatures returned to normal after 30 minutes of using the warm blanket (Anisa et al., 2024). Blanket warmers are considered more effective in managing hypothermia because they generate heat that can be adjusted to a specific temperature, allowing the heat to be transferred to the patient's body, thereby facilitating heat transfer from the blanket warmer into the patient's body. The use of hot packs is an effective non-pharmacological technique for quickly restoring body temperature. The sensation and effects of heat are transmitted through the skin and received by the dermal nerves, causing the dilation of dermal capillaries and increased blood flow to the skin surface, thereby raising the skin surface temperature. The use of hot packs is more practical as there is no need to refill with hot water, and it is safer to use as there is no risk of hot water spilling and causing burns to the patient (Handoyo et al., 2022).

Conclusion

Administration of a combination of hot packs and blanket warmers to patients undergoing post-spinal anaesthesia on May 27, 2025, from 8:30 to 9:00 AM. After the combination of hot packs and blanket warmers was administered, the problem of hypothermia was resolved with the following criteria: normal body temperature of 36.2°C, no shivering, and warm skin.

References

- Anisa, P., Burhan, A., & Susanti, I. H. (2024). Pengaruh selimut hangat terhadap kejadian hipotermi pada pasien pasca anestesi spinal di RSD Gunung Jati Cirebon. *Jurnal Inovasi Global*, 2(10). <https://doi.org/10.58344/jig.v2i10>
- Dzuhuri, M. A., Sukmaningtyas, W., & Yudha, M. B. (2024). Implementasi Hot Pack Untuk Peningkatan Suhu Tubuh Pada Pasien Hipotermi Pasca Operasi. *Kolaborasi: Jurnal Pengabdian Masyarakat*, 4(5), 373–380. <https://doi.org/10.56359/kolaborasi.v4i5.409>
- Genitsaridi, I., Salpea, P., Salim, A., Sajjadi, S. F., Tomic, D., James, S., Thirunavukkarasu, S., Issaka, A., Chen, L., Basit, A., Luk, A. O. Y., Ma, R. C. W., Mbanya, J. C., Ramachandran, A., Wild, S. H., Duncan, B. B., Boyko, E. J., & Magliano, D. J. (2026). 11th edition of the IDF Diabetes Atlas: global, regional, and national diabetes prevalence estimates for 2024 and projections for 2050. *The lancet. Diabetes & endocrinology*, 14(2), 149–156. [https://doi.org/10.1016/S2213-8587\(25\)00299-2](https://doi.org/10.1016/S2213-8587(25)00299-2)
- Habib, Z., Arifuzaman, M., Gupta, A., Muscat, N., Fawzy, S. I., Rasool, M. U., Elbeltagi, A., Bilgrami, S. A. A., Puthan Peedika, M. S., & Bhattacharya, S. (2024). Perioperative Hypothermia in Surgical Patients: A Retrospective Cohort Analysis at a Busy District General Hospital. *Cureus*, 16(9), e70139. <https://doi.org/10.7759/cureus.70139>
- Handoyo, D., Nabhani, N., & Aulia, A. (2022). Efektifitas penggunaan hotpack dengan selimut tebal terhadap grade shivering. *Jurnal Sains dan Kesehatan*, 6(1), 137–150. <https://doi.org/10.57214/jusika.v6i1.640>
- Hunie, M., Fenta, E., Kibret, S., & Teshome, D. (2021). The Current Practice of Spinal Anesthesia in Anesthetists at a Comprehensive Specialized Hospital: A Single Center Observational Study. *Local and regional anesthesia*, 14, 51–56. <https://doi.org/10.2147/LRA.S300054>
- Pierson, D., Certoma, R., Hobbs, J., Cong, X., & Li, J. (2025). A Narrative Review on Multimodal Spinal Anesthesia: Old Technique and New Use. *Journal of anesthesia and translational medicine*, 4(1), 25–32. <https://doi.org/10.1016/j.jatmed.2025.02.002>
- Rauch, S., Miller, C., Bräuer, A., Wallner, B., Bock, M., & Paal, P. (2021). Perioperative Hypothermia-A Narrative Review. *International journal of environmental research and public health*, 18(16), 8749. <https://doi.org/10.3390/ijerph18168749>
- Syamsuddin, F., Nurlia, N., Purwanto, R., & Mooduto, N. (2025). The Effect of Giving Warm Compress Using Hotpack on Increasing Body Temperature in Post-Operative Patients with Hypothermia in the Recovery Room. *Journal La Medihealtico*, 6(1), 60–66. <https://doi.org/10.37899/journallamedihealtico.v6i1.1771>
- Tubalawony, S. L., & Siahaya, A. (2023). Pengaruh Anestesi Spinal Terhadap Kejadian Hipotermia Pada Pasien Post Operasi. *Jurnal Inovasi Penelitian*, 44(2), 471–478
- Yulianita, H., Yudianto, K., Sugiharto, F., Rahmawati, N., & Hidayat, N. N. F. (2023). Intervensi Non Farmakologi untuk Mencegah Hipotermi pada Pasien Post Operasi. *Journal of Telenursing (JOTING)*, 5(2), 2911–2919. <https://doi.org/10.31539/joting.v5i2.7481>