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The Effect of Warm Blankets on Body Temperature in Hypothermic Post-Caesarean Patients

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Abstract

Hypothermia is one of the disorders that often occurs in post-operative patients, hypothermia is a condition when body temperature drops to below 36.5ºC. One type of surgery that often experiences hypothermia is a cesarean section (CS) which is caused by the use of anesthetic drugs that can suppress the rate of oxidative metabolism, thereby reducing metabolic heat production. One method that can be given to overcome hypothermia is by providing a regular blanket, but with the development of technology, non-pharmacological methods that can be developed are by providing a blanket warmers. The purpose of this study aims to determine the effect of giving blanket warmers on increasing body temperature in post caesarean section (CS) patients. *This study was a quasi-experimental design with* one group pretest-posttest. The research subjects included hypothermic post caesarean section (CS) patients with SAB anesthesia at Hospital Dr. Mohamad Soewandhi Surabaya. Sample selection was carried out using the total sampling technique with a sample size of 33 respondents. The results demonstrate that a 30-minute application of a blanket warmer significantly increased body temperature in postoperative patients under spinal anesthesia (p = 0.000). This supports the effectiveness of external warming in managing hypothermia, a common complication of spinal anesthesia, and highlights its clinical relevance in improving postoperative thermal stability.

INTRODUCTION

Hypothermia is a disorder that often occurs in post-operative patients. Hypothermia is a condition when the body temperature is below 36,5ºC (Sainsbury, 2017). One type of surgery that is often associated with hypothermia is a cesarean section (CS). A cesarean section is a surgical process to deliver a fetus through an incision in the abdominal wall and uterine wall. (Cunningham et al., 2018). According to Isngadi (2020), Hypothermia generally occurs during surgery, then continues into the post-operative period. Research result Awwaliyah et al (2020) It was stated that the incidence of post-operative hypothermia at Karsa Husada Batu Hospital reached 85%. Meanwhile, in the research Mamola (2020) It was stated that almost 79.4% of patients experienced post-operative hypothermia with SAB anesthesia. Post-caesarean hypothermia with SAB anesthesia occurs because the anesthetic agent can suppress the rate of oxidative metabolism that produces body heat, thereby reducing metabolic heat production and reducing physiological thermoregulatory responses (Masithoh et al, 2018). In addition, the way the SAB anesthetic works is by blocking the sympathetic nerves in the patient, so that the muscles relax and damage autoregulation by inhibiting the vasomotor response. This results in a decrease in heart rate so that ventricular contractility decreases and causes a decrease in blood pressure, so that the patient will be at risk of increased ventricular fibrillation which is characterized by an increase in the respiratory system or tachypnea and if it continues, bradypnea and carbon dioxide retention can occur so that the skin becomes cyanotic (Rositasari, 2017).

As a result, brain metabolism decreases by 6-7% per 1^0C decrease in temperature which results in decreased consciousness, unresponsiveness to pain, even

severe hypothermia, where a person shows clinical signs such as death (Rositasari, 2017). Some actions to treat hypothermia patients include providing internal and external warming. Internal warming that can be given is by providing warm fluids while external warming that is often used is the use of ordinary blankets. However, with the development of technology, external warming can be given with active external, namely with a blanket warmer. Blanket warmer is a warming blanket that can keep body temperature stable when the patient is experiencing hypothermia. This tool basically utilizes heat that is channeled using a blower as a heat transfer medium so that the patient's condition remains warm. Blanket warmers are also called electric blankets (Rositasari et al., 2017).

The purpose of this study was to determine the effect of providing blanket warmers on increasing the temperature of post-caesarean section patients at Dr. Sewewandi Hospital, based on the introduction by the researcher, the incidence of hypothermia in post-caesarean section in November-February was around 85%, this figure is very high, even though blanket warmers were available at the hospital but their use was not optimal. So the author is interested in conducting research to determine the effect of providing blanket warmers on increasing the temperature of post-caesarean section patients.

METHOD

The research design used was a quasi-experiment with one group pretest-posttest. The sample size was 33 respondents, selected based on inclusion and exclusion criteria. Furthermore, the respondents' temperature was measured, and if the temperature was in accordance with the criteria, the patient was given a blanket warmer for 30 minutes. After that, a repeat temperature measurement was carried out.

The research sample was taken using the quota sampling method, data analysis using the paired T-test. Temperature data was taken using an instrument that had been calibrated by the hospital, then the blanket warmer tool has several settings such as a button to adjust the temperature, there is an indicator light and also a timer to determine the time during the blanket warmer administration. This study has gone through a licensing process from the related hospital and has passed the ethics of the hospital. Researchers used an anesthesia enumerator in the room when taking samples.

RESULTS AND DISCUSSION

Results

Table 1. Respondents Age and Gender Distribution

Characteristics	N	%
Age (years)		
20-25	5	15.2
26-30	25	72.7
31-40	4	12.1
Gender		
Female	33	100
Total	33	100

Table 1 shows the frequency of respondent characteristics. Most of the respondents were aged 26-30 years as many as 24 respondents (72.7%).

Table 2. Effect of Blanket Warmer on Postoperative Temperature Increase

Variable	Pre-Test		Post-Test		
	Min-Max	M± SD	Min-Max	M± SD	*p*
Temperature (°C)	31.5-34.7	32.9±0.78	33,1-36.6	34.14±0.77	.000**

The results of table 2 dependent t-tests of the pre-test and post-test values of the temperature of post-operative patients showed a significant change in the mean (p<.000) before and after the intervention. where the minimum value of the respondent's temperature before being given a blanket warmer was 31.5ºC, while the minimum value of the respondent after being given a blanket warmer was 33.1ºC, which shows a difference in temperature increase before and after, which is around 1.6ºC.Therefore, it can be interpreted that the blanket warmer is effective in increasing the temperature of post caesarean section patients.

Discussion

Based on Table 2, the application of a blanket warmer for 30 minutes significantly increased the body temperature of hypothermic patients following cesarean section under spinal anesthesia. The average body temperature rose by 1.17°C, from a baseline mean of 32.98°C to 34.14°C. Results from the dependent t-test showed a p-value of .000 ($p < .05$), indicating a statistically significant effect. These findings suggest that the use of blanket warmers is effective in improving body temperature in post-cesarean patients experiencing hypothermia due to spinal anesthesia.

This is because blanket warmers use electricity so that the body temperature of patients who experience postoperative hypothermia experiences an increase in temperature. Blanket warmers use hot air flowing through the blanket which is referred to as convection (Jarod et al., 2024). Blanket warmer is a tool to maintain the stability of the patient's body temperature when the patient experiences hypothermia. This tool basically utilizes heat that is distributed using a blower as a heat transfer medium so that the patient's condition remains warm, as in the research results Rositasari et al (2017) which showed that electric blankets have an effect in raising the temperature in patients after surgery who experience hypothermia in the recovery room of PKU Muhammadiyah Surakarta Hospital. Research Suswitha (2018) also obtained the same results that blanket warmers (electric blankets) can overcome the incidence of shivering and normalize the temperature of hypothermic patients in postoperative patients at Palembang Hospital.

The use of blanket warmers in dealing with hypothermia is better than using ordinary blankets because blanket warmers have the ability to transfer heat from the warmer to the patient's body so that it can produce and maintain a predetermined temperature (Winarni, 2020). Paul et al, (2016) said that in the use of blanket warmers, conduction occurs to body tissues, thus affecting vasomotor mechanisms and arterial vasodilation, from the hypothalamus response which results in increased blood flow to capillaries, increased metabolism, and an increase in temperature.

The blanket warmer creates a warm environment and prevents heat from escaping from the body. According to researchers, the increase in body temperature that occurs after blanket warmer administration is due to the delivery of warm air from the blanket warmer to the entire body. When the skin of the body is exposed to warm air from outside, then by conduction, the warm temperature will be transferred into the body. The increase in body temperature after giving blanker warmer is in line with the results of research by Muchtar et al, (2023) which explains that the act of giving blanket warmers can increase the body temperature of hypothermic patients at Recovery Room RSUD Raja Ahmad Tabib Tanjungpinang.

The use of blanket warmers is more effective in treating hypothermia, because the heat generated can be adjusted as desired, so that patients who are experiencing hypothermia can receive heat from blanket warmers and transfer it into their bodies. Whereas the use of ordinary blankets only uses penas that already exist in the body and only wraps and protects the patient from heat loss from his body, so there is no heat transfer from ordinary blankets to the patient's body. because ordinary blankets only help prevent the body's natural heat production (Muchtar et al., 2023).

CONCLUSION

The application of blanket warmers in postoperative care is a crucial intervention to prevent persistent hypothermia, which may lead to adverse physiological complications. In this study, a statistically significant increase in mean body temperature was observed following the use of a blanket warmer ($p = 0.000$), indicating its effectiveness. These findings support the implementation of blanket warmers as an evidence-based practice to enhance thermal regulation and promote recovery in postoperative patients.

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