Mitigating Surgical Site Infection Risks via Thermal Regulating Modalities

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Problem

Forced-air warmers (FAW) are used in the operating room to manage hypothermia. Recent evidence suggests an association between the use of FAWs and surgical site infections, especially in patients undergoing general, orthopedic, and vascular procedures.

Literature Review

Two research questions were developed to assist in the systematic review of the literature. PICO: In patients undergoing surgical procedures (P), how does the use of forced-air warmers (I) compared to other body warming devices (C), influence postoperative infection rates (O) within the perioperative period (T)?

PICO: In Adventist University student registered nurse anesthetists (P), does a 30-minute (T) PowerPoint Presentation regarding body warming devices and their impact on adverse outcomes (I) result in an increase in knowledge base (O)?

A literature review found that perioperative hypothermia was identified to be a problem in the surgical setting. Up to 70% of patients undergoing surgery in the US experience some level of hypothermia, while other estimates report up to 90% of surgical patients experience complications from hypothermia leading to negative patient outcomes and increasing hospital costs. Although effective at reducing the incidence of perioperative hypothermia, forced-air warmers are hypothesized as a link to the increase of surgical site infections. The literature indicated that other safe warming modalities exist.

Methods

An educational PowerPoint was conducted, with the objective of helping ADU SRNAs understand the infection risk associated with FAWs and offering recommendations to safely decrease the infection risks while preventing hypothermia perioperatively. A pre-test and a post-test were conducted before and after the presentation to evaluate for increased knowledge base.

Analysis & Conclusions

Paired sample tests from the pre-test and the post-test showed that percentage scores significantly increased knowledge by 26.8.

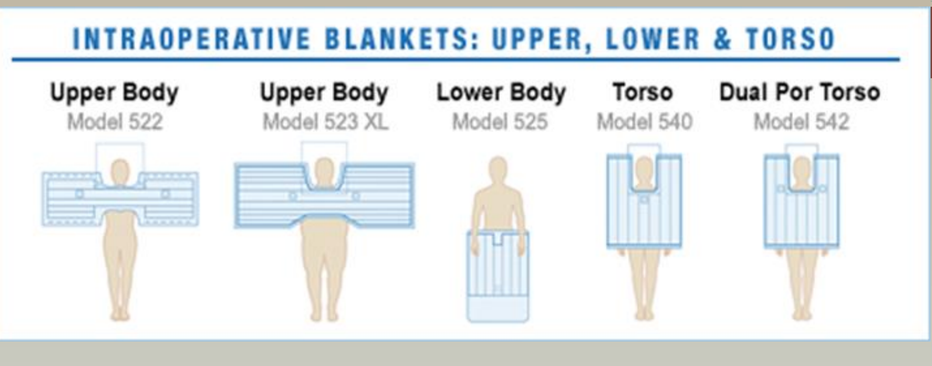
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	68.6000	50	21.85387	3.09060
	Post-Test	95.4000	50	9.08239	1.28444

Analysis & Conclusions

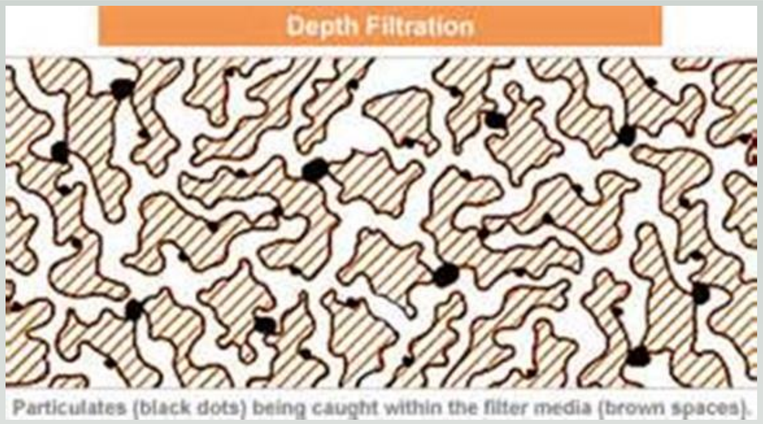
The F test demonstrated that there was significantly less variance in the post-test percentage scores compared to the pre-test scores ($p<0.001$).

	Variable 1	Variable 2
Mean	68.6	95.4
Variance	477.5918367	82.48979592
Observations	50	50
df	49	49
F	5.789708065	
P(F<=f) one-tail	3.73052E-09	
F Critical one-tail	1.607289463	



Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test - Post-Test	-26.80000	18.78341	2.65637	-32.13818	-21.46182	-10.089	49	.000



Findings

These results suggest that the educational PowerPoint presentation successfully helped the ADU SRNAs expand their knowledge of risks associated with FAWs and SSIs.

Potential Implications:

1. Applied = improve patient outcomes.
2. Cost savings.
3. Educate colleges.
4. Advocate for safer modalities.

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References: Available upon request