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Effect of inspiratory muscle training on clinical outcomes of patients undergoing cardiothoracic surgeries

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Cardiothoracic surgery is associated with a significant risk of serious complications. So, cardiothoracic surgical patients require intensive care management postoperatively. Many of these complications are likely caused in some part by the exaggerated systemic inflammatory response to Cardio-Pulmonary Bypass (CPB). Postoperative Pulmonary Complications (PPCs) are the most frequently observed complications after cardiothoracic surgery, of which pneumonia and atelectasis are the most common. PPCs have significant clinical and economic impact associated with increasing morbidity, length of stay and associated cost. Inspiratory muscle training is a therapeutic strategy that aimed at preventing post-operative pulmonary complications. This study is aimed to study the effect of inspiratory muscle training on clinical outcomes of patients underwent cardiothoracic surgeries. A quasi-experimental study was conducted in Cardiothoracic Surgery Department at Student Hospital affiliated to Tanta University. A sample of 40 adult patients of both sexes underwent cardiothoracic surgeries based on statistical power analysis were selected and divided into 2 equal groups: Group 1 (Control Group): was received routine hospital care. Group 2 (Study Group): was received pre and postoperative inspiratory muscle training which was implemented by the researcher. Three tools were used to collect data: Tool (I) Cardiothoracic Patient Assessment Tool, Tool (II) Cardiovascular and Respiratory System Assessment Tool, Tool (III) Clinical Outcome Assessment Tool. The incidence of post-operative pulmonary complications was higher in the control group (70% and 60%) while it was (30% and 25%) of the study group during the 5th and 7th post-operative day respectively. Duration of stay in ICU was longer in the control group 4-17 days while it was 2-9 days in the study group. None of the study group compared to fifth (20%) and fourth (25%) of the control group needed re-intubation and ICU readmission respectively. A high proportion of the study group (55% and 70%) had dyspnea relieved by practicing of inspiratory muscle training compared to none of the study group. Inspiratory muscle training is an effective strategy in improving patient's outcomes after cardiothoracic surgery. It was recommended that all cardiothoracic surgical patients should receive pre and post-operative inspiratory muscle training as a daily routine care.

Post-operative pulmonary complications at post-operative days of follow up	The studied adult patients undergoing cardiothoracic surgeries (n=40)				χ^2	P
	Control group (n=20)		Study group (n=20)			
	n	%	N	%		
•1 st post-operative day: No complications Significant pulmonary complications	8 12	40.0 60.0	12 8	60.0 40.0	1.600	0.206
•3 rd post-operative day: No complications Significant pulmonary complications	7 13	35.0 65.0	13 7	65.0 35.0		
•5 th post-operative day: No complications Significant pulmonary complications	6 14	30.0 70.0	14 6	70.0 30.0	6.400	0.011*
•7 th post-operative day: No complications Significant pulmonary complications	8 12	40.0 60.0	15 5	75.0 25.0		

*Significant (P<0.05)

Fig.01

Biography

Hend M Elazazey is Assistant Professor in Medical Surgical Nursing Department, King Saud bin-Abdulaziz University, King of Saudi Arabia, have a more than 30 years of experience in clinical and education setting both in hospital and education institutions, has more than 20 research published papers in respected international journals, supervised more than 8 master and PhD thesis, attended many national and international conferences.

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