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The Effect of Incentive Spirometry and Deep Breathing Exercise in Cardiopulmonary Patient: An Interventional Study

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ABSTRACT

Introduction: Pulmonary complications are one of the most frequent issues following cardiopulmonary and thoracic surgery, even in the face of improved surgical care. Atelectasis, secretion retention, postoperative pain and anxiety, compromised ventilatory function are commonly encountered making it difficult for patients to breathe deeply or cough efficiently and contribute to extended stays in the hospital and increased costs of recovery. To treat these problems, respiratory physiotherapy is commonly employed. Of the options available Incentive Spirometry (IS) and Deep Breathing Exercises (DBE) are the most prevalent. IS stimulates the patient to breathe slowly and deeply with visual feedback, whereas DBE is based on controlled inhalation via the nose with relaxed exhalation. Both are simple to use, risk-free, and cost-effective.

Objective: The aim of this study was to evaluate the role of IS and DBE in patients recovering from cardiopulmonary surgery and to compare their effect on oxygen saturation and chest expansion.

Methods: Thirty patients aged between 40 and 69 years were included, all treated at Apex Hospital and Apex College of Physiotherapy, Varanasi. They were equally distributed into two groups: 15 patients in Group A underwent IS, and 15 in Group B had DBE. The intervention was for a period of three weeks, with three supervised sessions weekly. Outcomes were assessed through oxygen saturation (SpO_2), as measured using a pulse oximeter, and chest expansion, as measured with a tape. Pre- and post-programme assessments were done.

Results: Both groups improved greatly. In Group A, p-values were 0.000000015 for SpO_2 and 0.000073 for chest expansion. In Group B, p-values were 0.0000000074 and 0.0000000043, respectively. The findings indicate that both interventions increased lung capacity, oxygenation, and alleviated breathlessness.

Conclusion: Incentive spirometry and the performance of DBE were similarly effective in improving postoperative pulmonary function. Since both are useful techniques, the selection can be based on patient comfort and preference. Incorporation of either of these easy manoeuvres into standard care can reduce complication rates, accelerate recovery, and enhance results.

Keywords: Forced expiratory volume, Lung capacity, Post-surgical

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