

Efficacy of Buteyko breathing technique on Anxiety, Depression and Self-efficacy in Coronary Artery Bypass Graft Surgery patients: A Randomized Clinical Trial

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Method Article

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Abstract

Background: In India, with increasing trends of Coronary Artery bypass graft surgery, there has been little consideration in importance of psychological evaluation in those undergoing surgery. Our study aims to evaluate the efficacy of Buteyko breathing technique as a psychological intervention along with Phase 1 Cardiac Rehabilitation on Anxiety, Depression and Self-efficacy in CABG patients.

Method: In this study, 44 CABG Patients will be enrol. Conventional group will receive 2 weeks Phase I Cardiac Rehabilitation and Experimental group will receive Buteyko Breathing exercises along with 2 weeks Phase I Cardiac Rehabilitation. The evaluations for Anxiety, Depression and Self-efficacy will be performed.

Discussion:

Collaborating secondary prevention for Psychological consequences in the management strategy after revascularization will help in decrease in-hospital stay, speedy return to work and can further ameliorate symptoms. This will open a window of opportunity for integrating early rehabilitation for psychosocial consequences to provide holistic management for CABG patients.

The clinical trial registry-India(CTRI) registration number for this trial is CTRI/2021/05/033632.

Introduction

Globally, Coronary Artery Disease is one of the foremost causes of morbidity and mortality. Approximately 1,40,000 Coronary Artery Bypass Graft (CABG) surgeries are performed in India per year. It is a revascularization procedure done by diverting the blood flow to other artery in order to increase blood supply to heart muscles.(1) It aims to, improve ventricular function, decrease chances of restenosis and increase life expectancy of such patients. Besides that, it is usually associated with various psychological consequences such as mood disorders, weakness, anxiety, stress and depression which is disabling and distressing. Up to 60% of patients suffers from psychological symptoms in which about 23% of patients experience major Post-operative depression that are usually associated with degeneration of venous grafts and poor quality of life.(2) In various studies depression has been found to be an independent prognostic factor for rehospitalisation, lack of functional benefits and mortality within 6 months to 5 years post-surgery. (3,4)

Various researches pinpoint aetiologies behind stressors encountered by patients before and after open heart surgery during their hospital stay like use of curtains as spacers between beds, nurses working in hurry, the death of other patients, inability to sleep, being in pain, presence of nasal and oral endotracheal tubes, chest tubes, being away from home and unfamiliarity with time. Such findings are often overlooked or not asked/reported and cause considerable distress and can result in negative outcomes (5) like reduced cardiac symptom relief, more frequent rehospitalisation,(6) slower wound healing, reduced physical and mental health and early demise.(7) All these factors lead to sedentary behaviour, decrease social participation, overall quality of life and rising healthcare burden.

Emotional stress triggers the flight or fights response in which rapid respiration develops in anticipation of increased exertion combined with increased adrenergic drive. Hyperventilation is a common reaction to emotional extremes such as fear, anxiety, or stress. (8) Evidence shows that practicing reduced breathing exercises that modify carbon dioxide tolerance have been showed to provide therapeutic benefits (9) to those suffering from anxiety and depression (10). The technique of observing and slowing down the breath and cultivating a sense of introspection has been shown to relax the mind and improve resilience in stressful situations. Such exercises create a slight accumulation of carbon dioxide conditions in the brain to tolerate higher concentrations of the gas. Gently subjecting the body to the feeling of air hunger for short periods of time will also reduce the body's fear response, reducing the risk of hyperventilation. Although, the feeling of air hunger is a normal phenomenon that we experience many times a day, especially during physical activity, hence there is no need for the body to react with panic in response to the feeling.

While many breathing strategies aim to slow down breathing, the Buteyko breathing technique named after the originator Konstantin Pavlovich Buteyko, to the best of my knowledge, this is the only breathing strategy that decreases breathing volume to generate a tolerable need for oxygen. In essence, the theory works like a vaccine: reducing breathing to cause an air hunger is equivalent to giving the body a small, regulated dose of symptoms, which can be a useful tactic for combating the fear of the sensations that come with a full-blown panic attack. The long-term goal is to restore normal breathing volume by resetting the respiratory centre. Breathing from the upper chest, noticeable breathing and repeated sighing are all behaviours that can be easily tackled by re-educating the breath and decreasing breathing rate to a healthier level (11). In this study, breathing which is one of the most powerful and fastest ways to influence the internal emotional and psychological state with respect to its environment help in enhancing self-efficacy and creating a sense of introspection in CABG patients.

Reagents

Equipment

Procedure

1. Patients will be screened by keeping in mind inclusion and exclusion criteria, informed consent & medical history will be obtained from patients.
2. Perform baseline assessment.
3. Randomization (n=44) and Allocation (Experimental Group (22 patients) and Control Group (22 patients)).
4. Both groups will receive Pre-operative training including Patient education, ADL training, splinted coughing and only patients in Experimental group will receive additional Buteyko breathing exercise training.
5. both groups will receive Post-operative 2 weeks Phase I Cardiac Rehabilitation program and Experimental group will receive additional Buteyko Breathing exercises.
6. Perform post-training assessment.
7. Patient will be follow up after 2 weeks of discharge.
8. Statistical Analysis.

Troubleshooting

Time Taken

Study Duration: 1 year

Anticipated Results

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Figures

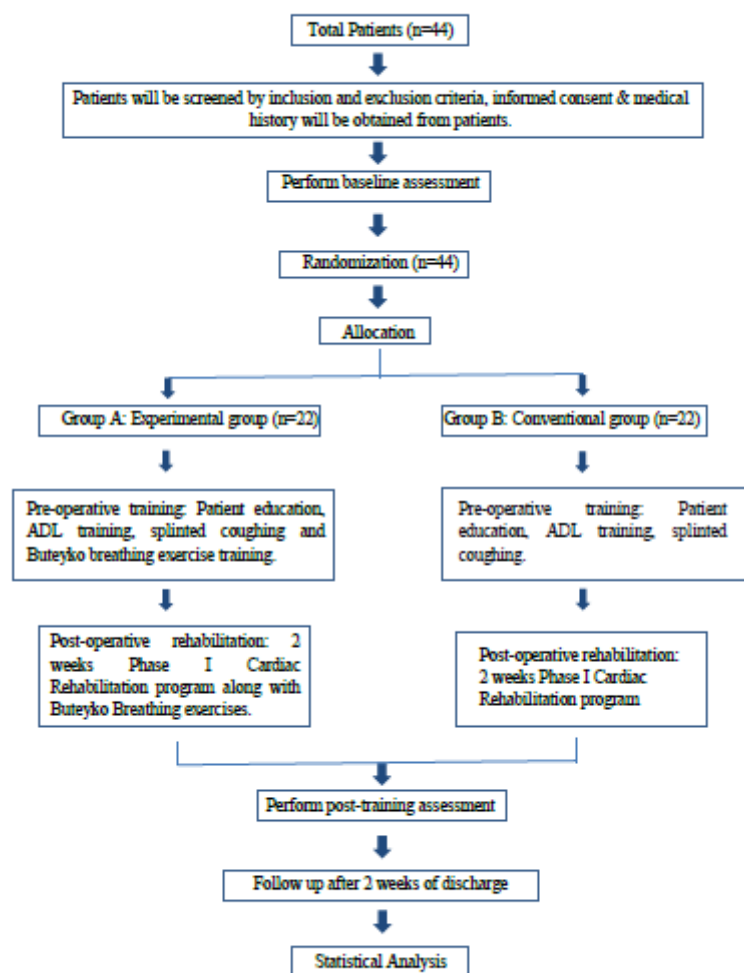


Figure 1

Flow chart of the Study design