

A CASE STUDY: EFFECT OF MYOFASCIAL RELEASE IN INTERCOSTAL AND PARAVERTEBRAL MUSCLES ON OXYGEN SATURATION ,DYSPNEA AND RESPIRATORY RATE AMONG COPD SUBJECT.

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ABSTRACT:

AIM: To determine the effectiveness of myofascial release in intercostals and paravertebral muscle on oxygen saturation, dyspnea and respiratory rate among COPD subjects. **METHODOLOGY:** A subject diagnosed with COPD from Agroha Medical college and hospital (General medicine department) will be selected based on inclusion and exclusion criteria. Detailed procedure will be explained in subject's words to the patient and an informed consent will be obtained. Initially that patient will be assessed with dyspnea, oxygen saturation and respiratory rate by using BORG scale and pulse oximeter. Many physiotherapy techniques are helpful in COPD patients in that manual techniques like myofascial release for intercostals and paravertebral muscles will improve the oxygen saturation level, dyspnea and respiratory rate. Myofascial release will be given for 4 weeks (5 days per week), single session per day and the outcome will be measured after 4 weeks by using BORG's scale and pulse oxymetry. **CONCLUSION:** From the result, it has been concluded that Myofascial release in intercostals and paravertebral muscle is significant in patient with chronic obstructive pulmonary disease reduced respiratory rate and improved oxygen saturation and also controlled dyspnea.

Key Point: Chronic Obstructive Pulmonary Disease, Myofascial release, Intercostals, Paravertebral muscle.

INTRODUCTION:

Chronic obstructive pulmonary disease (COPD) is an ill-defined term that is often applied to patients who have a combination of chronic bronchitis and emphysema⁽¹⁾. According to GOLD Classification (2016): Chronic obstructive pulmonary disease a common preventable and treatable disease, is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases⁽²⁾. Chronic Obstructive Pulmonary Disease is a leading cause of morbidity and mortality worldwide and results in an economic and social burden that is increasing prevalence of COPD is about 20% of Indian population⁽³⁾. The airflow limitation is usually progressive and result in abnormal inflammatory response of the lungs to noxious particles or gases⁽⁴⁾. Risk factors of COPD are Genetic factor, Tobacco smoke, occupational dust, vapour, fumes, infection, outdoor air pollutant, gender (males are affected more than females)⁽⁵⁾. The symptoms of COPD are chronic and progressive dyspnea, cough, and sputum production. Whistled breathlessness is the main symptomatic features of COPD. Less common symptom include wheezing and chest tightness⁽⁶⁾. The pathological changes include chronic inflammation, with increased numbers of specific inflammatory cell types in different parts of the lung, and structural changes resulting from repeated injury and repair^(7,8). Hyperinflation develops early in the disease and is the

main mechanism for exertional dyspnea⁽⁹⁾. Dyspnea is common in patients with respiratory disease as well as in healthy individual who are obese. It is caused due ageing process, a gradual deterioration in lung function due to decrease in lung elasticity and increase in the stiffness of the chest wall and decrease in respiratory muscle strength⁽¹⁰⁾. In this study dyspnea is measured by BORG Scale.(0-10). SPO₂ is saturation of partial pressure of oxygen .Generally SPO₂ is >95% is considered to be normal .In the patients with COPD an SPO₂ of 92% or less is identified and hence need further treatment. It is measured by using Digital pulse oximeter⁽¹¹⁾. Normal respiratory rate is about 14-16 bpm for normal individual. But individuals who have COPD disease have respiratory rate is about >25bpm.In this study respiratory rate is measured by digital pulse oximeter. Physiotherapy management: Aimed at reducing the work of breathing, improving ventilation, increasing function and enabling relief of dyspnea. Manual therapy is defined as the interventions that uses hands to provide treatment to musculoskeletal system . In the study we used myofascial release of intercostals and paravertebral muscle technique. Manual therapy that include both soft tissue and joint mobilization immediately decreases dyspnea perception in patients with COPD. Many of the studies prove that immediate and short term effect of manual therapy but studies on myofascial release on intercostal and paravertebral muscle alone are less. This study concentrates on respiratory muscle like intercostal and paravertebral muscles to improve the COPD subjects. So the aim of the study is to find the effect of myofascial release in intercostal and paravertebral muscles on oxygen saturation, dyspnea and respiratory rate among COPD subject.

MATERIALS AND METHODS

A single pre and post experimental study was conducted at Agroha medical college hospital. Scientific review board approval and ethical committee approval was obtained prior to the study. Following the ethical clearance, data collection procedure was initiated. Detailed procedure was clearly explained to the patient by providing information sheet and written informed consent was taken from the patient.

Single subject who was diagnosed with chronic obstructive pulmonary disease was selected based on inclusion and exclusion criteria. Study included a male aged 40 years, who was diagnosed with chronic obstructive pulmonary disease and also with decreased thoracic expansion. Study excluded those with any thoracic spinal deformities, who cannot perform pulmonary function test , who had any cognitive impairment, unstable angina, unresponsive patient.

Subject was treated with myofascial release on intercostal and paravertebral muscle, the subject was assessed for pre test outcomes of respiratory rate and oxygen saturation measured with digital pulse oximeter, borg's scale was used to determine his dyspnea levels and thoracic expansion measured with inch tape are pre test outcomes. Following the intervention period of 4 weeks same tests were repeated for post test.

MYOFASCIAL RELEASE OF INTERCOASTAL MUSCLES

Patient position: sitting on the chair or stool or supine lying

Therapist position: side of the patient

Before doing the corrective procedure, carefully assess the lateral rib cage with specific intercostal spaces are tight, tenderness is present. The restriction/tightness directly present on lateral, or more anterior or posterior and then perform the mobilization, focusing on each spot. From the tightness spot, move the fingers slightly inferior to the edge of the rib. Contact the superior edge of the rib with a reinforced thumb contact, reinforced index fingers. Turn the patient on the involved side arm over their head and show them how to move. Ask the patient to take a long inhale, expanding the rib cage, and have them a side-bend into the restricted area. Ask him to "Push your ribs into my hand. Ask the patient to repeat this motion several times.

MYOFASCIAL RELEASE OF PARAVERTEBRAL MUSCLE

Therapist position: Stand contralateral to affected side

Patient position: Supine with legs bent hand positioning:

Technique: Placing the hand under the contralateral lumbar muscles and your other hand on the patient's knees. Applying the perpendicular stretch to the lumbar muscles by leaning back. . Moving the patient knees away from you to cause a counter torque. Continue this technique until you have released the entire area

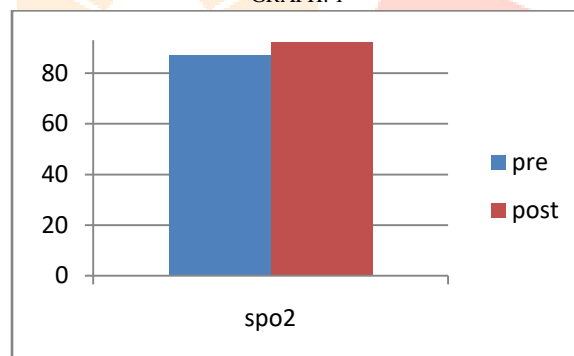
Treatment Protocol

Duration of each session : Session-1 session/ day, each muscle (3-5 rep) 5 days/week

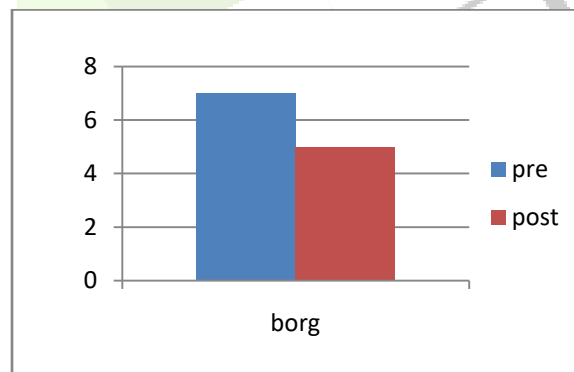
Duration : 4 weeks

RESULT: A subject who was diagnosed with chronic obstructive pulmonary disease was selected based on inclusion criteria. The collected data was tabulated and analyzed using descriptive and inferential statistics. The graph shows the pre and post comparison of oxygen saturation, dyspnoea score and respiratory rate and also observed that significant difference between pre and post comparisons from the Data.

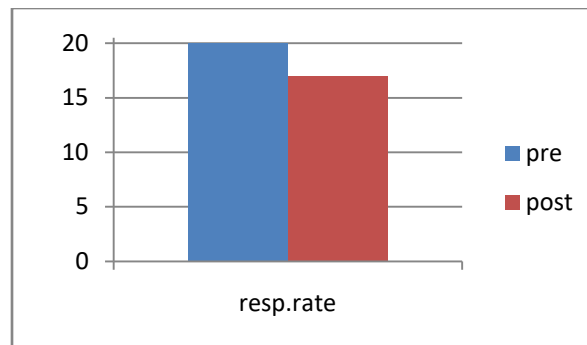
GRAPH: 1



GRAPH:2



GRAPH:3



DISCUSSION:

GulDenizyilmazyelmaz et al studied about the immediate effect of manual therapy on respiratory function and inspiratory muscle strength in patients with chronic obstructive pulmonary disease, whereas in this study it is found out the effect of myofascial technique in intercostals and paravertebral muscle. One of the best manual therapy technique is Myofascial release. In most of the studies there are debate with Myofascial release most other techniques are used in Chronic Obstructive pulmonary disease. But in this study we have used only Myofascial release as primary constant for evaluating COPD patient. Most of the studies they concentrated more on FVC and FEV1 and in this study we have concentrated more in Respiratory muscle which is more useful for respiration which stands alone or more different than other studies that include COPD patients. In this study we used Myofascial release in intercostal and paravertebral to identify improvement on oxygen saturation, Dyspnea, and Respiratory rate among chronic obstructive pulmonary disease patients and the outcome was extremely significant. It was a single session treatment for 4 weeks and the patient reported after 4 weeks for post treatment and hence found Myofascial Release in intercostals and paravertebral muscle was significant in chronic obstructive pulmonary disease with reduced.

CONCLUSION:

From the result, it has been concluded that myofascial release in intercostals and paravertebral muscle is effective on respiratory rate, oxygen saturation, and dyspnea in chronic obstructive pulmonary disease subject.

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