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A Quasi-Experimental Study to Assess the Effectiveness of Deep Breathing Exercise among Patients with Chronic Obstructive Pulmonary Disease in Apollo Loga Hospital Karur

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Abstract: *Chronic Obstructive Pulmonary Disease (COPD) is a progressive condition characterized by airflow limitation that is not fully reversible. It presents a major burden to individuals and healthcare systems globally. Patients often experience chronic breathlessness, reduced exercise tolerance, and recurrent hospitalizations (WHO, 2023). Although pharmacologic therapies are essential in COPD management, non-pharmacologic interventions, such as breathing retraining, have shown promise in reducing dyspnea and improving quality of life.*

Keywords: Chronic Obstructive Pulmonary Disease

I. INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a progressive condition characterized by airflow limitation that is not fully reversible. It presents a major burden to individuals and healthcare systems globally. Patients often experience chronic breathlessness, reduced exercise tolerance, and recurrent hospitalizations (WHO, 2023). Although pharmacologic therapies are essential in COPD management, non-pharmacologic interventions, such as breathing retraining, have shown promise in reducing dyspnea and improving quality of life.

Breathing exercises, especially deep breathing, aim to strengthen respiratory muscles, increase lung capacity, and reduce respiratory distress. This study explores the effectiveness of deep breathing exercises in alleviating dyspnea among COPD patients.

Methodology Design: This was a quasi-experimental, non-randomized, control group pre-test post-test study.

Setting: Apollo Loga Hospital, Karur.

Participants: A total of 60 patients diagnosed with COPD were selected using purposive sampling. They were divided equally into an experimental group (n = 30) and a control group (n = 30).

Inclusion Criteria:

- Diagnosed with COPD
- Aged 18 years or older
- Able to understand Tamil or English
- Willing to participate in the study

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Exclusion Criteria:

- Critical illness
- Concurrent use of other complementary therapies
- Non-cooperation or inability to perform breathing exercises

Intervention:

The experimental group received deep breathing exercises for 25 minutes, twice daily, over a 6-week period. The control group received standard hospital care without the breathing intervention.

Data Collection Tool: The Modified Borg Dyspnea Scale was used to assess the level of dyspnea before and after the intervention.

Demographic Distribution of COPD Patients

Demographic Variable	Experimental Group (f)	Experimental (%)	Control Group (f)	Control (%)
Age				
16–30 years	1	3.3	2	6.7
31–45 years	9	30.0	11	36.7
46 years and above	20	66.7	17	56.6
Sex				
Male	17	56.7	14	46.7
Female	13	43.3	16	53.3
Smoking				
Smoker	24	80	12	20
Non-smoker	6	40	18	60

2. Pretest and PosttestDyspnea Scores – Experimental Group

Dyspnea Level	Pre-test (f)	Pre-test (%)	Post-test (f)	Post-test (%)
No Dyspnea	0	0	0	0
Very Slight Dyspnea	0	0	6	20
Slight Dyspnea	0	0	10	33.3
Moderate Dyspnea	7	23.3	11	36.7
Severe Dyspnea	23	76.7	3	10
Very Severe Dyspnea	0	0	0	0

3. Pretest and PosttestDyspnea Scores – Control Group

Dyspnea Level	Pre-test (f)	Pre-test (%)	Post-test (f)	Post-test (%)
No Dyspnea	0	0	0	0
Very Slight Dyspnea	0	0	0	0
Slight Dyspnea	0	0	1	3.3
Moderate Dyspnea	8	26.7	7	23.3

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Severe Dyspnea	22	73.3	21	70
Very Severe Dyspnea	0	0	1	3.3

4. Comparison of Mean Dyspnea Scores and t-Test

Group	Mean ± SD	t-value	Significance
Experimental	Pre: 2.73 ± 0.63		
	Post: 1.93 ± 0.69	2.64	Significant
Control	Pre: 2.70 ± 0.60		
	Post: 2.53 ± 0.57	2.07	Not Significant

Data Analysis:

Descriptive statistics were used to summarize demographic variables. Paired t-tests compared pre- and post-test scores within groups. Independent t-tests compared outcomes between groups. A significance level of $p < .05$ was considered statistically significant.

Results In the experimental group, the mean post-test dyspnea score was significantly lower than the pre-test score ($t = 2.64$, $p < .05$), indicating reduced breathing difficulty after the deep breathing intervention. The control group did not exhibit significant change ($t = 2.07$, $p > .05$).

The comparison between the experimental and control groups showed a statistically significant difference in post-test dyspnea scores ($t = 4.51$, $p < .05$), supporting the effectiveness of the intervention.

Discussion

The findings are consistent with prior studies that support the role of breathing exercises in improving respiratory function and reducing dyspnea in COPD patients (Das et al., 2018; Geddes et al., 2018). This study affirms the potential of deep breathing exercises as a cost-effective, non-pharmacologic addition to standard COPD care.

Limitations

It include a small sample size, short duration, and lack of randomization. Future research with larger, randomized samples and longer follow-up periods is recommended.

II. CONCLUSION

Deep breathing exercises significantly reduce dyspnea in patients with COPD. Given its simplicity and accessibility, this intervention can be integrated into routine care for improved patient outcomes.

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[3]. World Health Organization. (2023). Chronic obstructive pulmonary disease (COPD). https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd)Introduction Chronic Obstructive Pulmonary Disease (COPD) is a progressive condition characterized by airflow limitation that is not fully reversible. It presents a major burden to individuals and healthcare systems globally. Patients often experience chronic breathlessness, reduced exercise tolerance, and recurrent hospitalizations (WHO, 2023). Although pharmacologic therapies are essential in COPD management, non-pharmacologic interventions, such as breathing retraining, have shown promise in reducing dyspnea and improving quality of life.