



## EFFECT OF BREATHING AND COUGHING EXERCISES ON BREATHING DIFFICULTY AMONG COPD CLIENTS

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### ABSTRACT

COPD is a preventable and treatable disease with some significant extra pulmonary effects that may contribute to severity in individual patients. Its pulmonary component is characterized by airflow limitation that is not fully reversible. Breathing and coughing exercises are used to improve ventilation and gas exchange. Intention of the present study was to assess the effect of breathing and coughing exercise on breathing difficulty among COPD clients. The objectives of the study are, to assess the severity of breathing difficulty among COPD clients and to assess the effect of breathing and coughing exercise in reducing breathing difficulty. The present study was conducted among 30 COPD clients (15 in experimental group and 15 in control group) admitted in the pay wards & medical wards of NIMS hospital, Neyyattinkara. Non-probability convenient sampling technique was used to select the sample. A quasi-experimental study was adopted. The interventions (Breathing and coughing exercises) were given to each sample of experimental group. The breathing and coughing exercises, in the study was proved to be effective (value 11.9) in reducing breathing difficulty among COPD clients at 0.05 level of significance. On comparison, the researchers observed a significant reduction in breathing difficulty among experimental group.

**KEYWORDS :** Assess, Effect, Breathing and Coughing exercises, COPD Clients

### INTRODUCTION

The updated version, 2007 of gold Guide Lines defines COPD as follows: "COPD is a preventable and treatable disease with some significant extra pulmonary effects that may contribute to severity in individual patients. Its pulmonary component is characterized by airflow limitation that is not fully reversible. The air flow limitation is usually progressive and associated with an abnormal inflammatory response of lung to noxious particles or gases."

Chronic obstructive pulmonary diseases include chronic bronchitis and emphysema, is a progressive disease which is characterized by airflow obstructions that is either not reversible or only partially reversible. It refers to an obstruction of air flow which result in air becoming trapped in the lungs. It is most often due to tobacco smoking, but can due to other airborne irritants and antitrypsin deficiency.

Breathing and coughing exercises are used to improve ventilation and gas exchange. Breathing exercises include diaphragmatic and pursed lip breathing. Diaphragmatic breathing reduces respiratory rate, increase alveolar ventilation and help expel as much an air as possible during expiration pursed lip breathing helps slow respiration, prevents collapse of small airways and control the rate and depth of respiration coughing exercises helps to clear the airways.

COPD is of major public health importance. Because it is largely preventable if identified in the early stages and treated properly. In initial stages, no abnormal signs are seen.

If not detected and attended to with proper medication, deterioration slowly sets in as it progresses into moderate form with breathlessness and /or wheezing on moderate exertion. Most importantly the patient's inability to exert results in reduced ability to work and loss of wages. The patient is not only suffering from physical discomfort but also undergoes medical treatment resulting in financial and psychological distress. The disease is gradually progressive with each episode; exacerbate leading to further respiratory disability and ultimately death.

The study result showed a prevalence rate of 5% in 18217 man and 3.2% of 17078 women, of over 35 years of age. In Kerala, annual incidence of COPD among people having more than 35 years is about 5% in 12143 man and 20.2% of 10214 women.

In NIMS, there are about more than 120 patients are coming with complaints of COPD each year. Hence it was decided to conduct a study to assess the effectiveness of breathing and coughing exercises in reducing in breathing difficulty among COPD patients in NIMS hospital, Neyyattinkara.

### MATERIALS AND METHODS

The objectives of the study are, to assess the severity of breathing difficulty among COPD clients and to assess the effect of breathing and coughing exercise in reducing breathing difficulty. The study was based on the conceptual framework of General system theory developed by Von Ludwig Bertalanffy (1968). The research design adopted for the study was quasi-experimental research design. Setting for the study is NIMS hospital, Neyyattinkara. The target population includes adults over 35 years who have admitted with COPD. The sample consist of 30 people over 35 years admitted with COPD in NIMS hospital, Neyyattinkara. In this study, convenient sampling techniques is used for data collection. Structured interview method is used for the present study where it consists of 3 parts; Structured questionnaire to asses demographic variables, structured questionnaire to assess clinical data and Scale to asses breathing difficulty. In this there is a control group an experimental group, each with 15 members. The experimental group is exposed to the special treatment that is breathing and coughing exercise for 3 days and control group is given no special treatment or given routine treatment. Before giving the special treatment the level of breathing difficulty of both the control group and experimental group are assessed using the modified Borg Scale. After giving the special treatment also the level of Breathing difficulty of both groups are assessed and then compared the Borg scale scores of both groups in the pretest and post-test. Data analysis done by descriptive and inferential statistics.

### RESULT

#### Section I: Demographic Variables.

- Majority 13 (43.3%) were having more than 65 yrs of age
- Majority 17 (56.6%) were females.
- Majority 29 (96.7%) were living in rural areas.
- Majority 20 (66.6%) is having basic school level education.
- Majority 15 (50%) are unemployed
- Majority 18 (60%) is having diagnosis of COPD since 2-4 year.
- Majority 16 (53.3%) are having regular treatment for COPD.

- Majority 15 (50%) is having Diabetes Mellitus.
- Majority 22 (73.3%) are having no history of smoking

**Section II: Effect of breathing and coughing exercises on breathing difficulty.**

Breathing and coughing exercises had a significant impact on breathing difficulty impact on breathing difficulty among COPD clients. There was a significant reduction on breathing difficulty among COPD clients after interventions.

This study concludes that breathing and coughing exercises in the study were proved to be effective in reducing breathing difficulty among COPD clients. The interventions were cost effective and could be practiced in hospital and community settings.

**Table 1: Mean, Standard Deviation, Degree Of Freedom, 't' Value Among Experimental Group**

| Modified Borg scale score | Mean  | Standard Deviation | Degree of freedom | 't' value |       |
|---------------------------|-------|--------------------|-------------------|-----------|-------|
| Pretest score             | 2.933 | 771                | 14                | 11.9      | 1.761 |
| Post test score           | 0.8   | 0.653              |                   |           |       |

Significant at 0.05 level

**Table 2: Mean, Standard Deviation, Degree Of Freedom And Calculated 't' Value Between Experimental And Comparison Group**

| Modified Borg scale score | Mean | Standard Deviation | Degree of freedom | 't' value  |       |
|---------------------------|------|--------------------|-------------------|------------|-------|
|                           |      |                    |                   | Calculated | Table |
| Experimental group        | 0.8  | 0.653              | 28                | 11.282     | 1.701 |
| Comparison group          | 3    | 2.22               |                   |            |       |

Significant at 0.05 level

**DISCUSSION**

The present study assessed the level of breathing difficulty among COPD clients. In experimental group the pretest mean Score was 2.93 and the post test mean score was 0.8. The calculated 't' value was statistically significant at 0.05 levels. Therefore the hypothesis stated H "the mean post test modified Borg scale Score lower than the mean post- test, modified Borg scale score among experimental group at 0.05 level of significance" is accepted.

With reference to the comparison of level of breathing difficulty between experimental and control group, It was observed that the mean score in experimental group was 0.8 and in the control group was 3. And the table value was 1.701 and the calculated 't' value was 11.282. This show there is a significant at 0.05.

Leelasrungraub D, Pothongsunum P, Yarkai A, Pratanaphan, conducted a study regarding acute clinical benefits of chest wall stretching exercises on expired tidal volume, dyspnoea & chest expansion in a patient with COPD. The results showed a significant clinical improvement of expired tidal volume, reduction in dyspnoea level & increase in chest expansion. This study supports the formulated objectives.

**NURSING IMPLICATIONS**

The present study has got implications in the field of health and educational planning, nursing administration and nursing research. The findings of the study have implication for improving the staff nurses knowledge and practice regarding use of breathing and coughing exercises in reducing breathing difficulty, these enhancing quality of life of COPD clients and quality of nursing profession.

**Nursing Service**

1. The study enhances knowledge of nurses regarding the

relaxation techniques. Adequate knowledge can promote desirable standards which help the nurses to provide quality cares for which were accountable.

2. The study prepares the nurses as educators, care providers and supporters for COPD clients.

**Nursing Administration**

1. Nurse administrators can facilitate and encourage staff nurses to update their knowledge and skill in administration of breathing and coughing exercises in reducing breathing difficulty, by providing periodic education and training programs.
2. Administrators can make standard for improving quality care rendered to COPD clients.
3. Administrators can direct and motivate staff nurses and COPD clients to use breathing and coughing exercises in reducing breathing difficulty.

**Nursing Education**

1. The finding could be incorporated, while teaching breathing and coughing exercise to nursing students.
2. The clinical supervision should develop skill and import this knowledge to students which will enable them to practice during their clinical practice.
3. The study can be utilized as a reference for research scholars.

**Nursing Research**

1. Similiar study can be replicated on a large scale
2. A descriptive study can be conducted to find out the attitude of COPD clients and care givers towards the administration of breathing and coughing exercises to reduce breathing difficulty.
3. The same study can be replicated in another setting with other measures or can compare between settings measures etc.
4. A follow up study could be conducted to find out the long term effect of interventions on COPD treatment outcome.

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