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A STUDY TO ASSESS THE EFFECTIVENESS OF BALLOON BLOWING EXERCISE ON RESPIRATORY PARAMETERS AMONG PATIENT WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN SELECTED HOSPITAL

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ABSTRACT

Chronic Obstructive Pulmonary Diseases is the third leading cause of death in world wide. A quasi-experimental pretest-posttest control group design was used to assess the effectiveness of balloon blowing exercises on respiratory parameters among 60 patients with chronic obstructive pulmonary disease by using non probability purposive sampling technique. Modified respiratory status assessment scale was used to assess the respiratory parameters. Balloon blowing exercise was implemented using semi fowler's position for 10-15minutes twice a day for five days. The paired t test showed highly significant (t=15.28) for respiratory parameters. The un paired t test showed highly significant (t= 3.73). It revealed that balloon blowing exercise was effective in improving the respiratory parameters and quality of life.

INTRODUCTION

Respiratory parameters involve highlighting key metrics like respiratory rate, tidal volume, minute ventilation, and lung compliance. These parameters are crucial in assessing respiratory function and play a vital role in clinical settings, such as monitoring patients in critical care or evaluating lung health in research contexts. Understanding these parameters provides valuable insights into respiratory physiology and aids in diagnosing and managing various respiratory conditions [1].

In worldwide COPD is the third leading cause of death. Smokers are more likely to experience respiratory issues and poor lung function. Up to 60–70% of COPD cases occur in low and middle income countries (LMICs).

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Non-smoking risk factors account for more than 50% of the worldwide burden of COPD, since LMICs account for more than 85% of all instances of the disease. Workplace exposures to chemicals, gases, and organic and inorganic dusts represent an underappreciated environmental major risk factor for COPD.

In India, the percentage of people dying from COPD will be more than 64.7 estimated age-standardized deaths per 100,000 in both sexes in 2022. The morbidity rate in COPD is million, contributing 4.8% of disability-adjusted life years (DALY) in the country.[2] The most leading causes of COPD are exposure to tobacco smoke and indoor and outdoor air pollution in India. The major symptoms are dyspnea, wheezing, chest tightness, fatigue, activity limitation, and coughing with or without sputum production. A systematic review revealed that the gender wise prevalence rate of COPD in males ranged from 2% to 22% andthat for females between 1.2 and 19%.

In Tamil Nadu, the COPD death prevalence is reported at 2.4% among the general population. The disease prevalence rate in Tamil Nadu was 6.19%. Smoking is a major cause of COPD in Tamil Nadu. The most common symptoms are coughing, sometimes with phlegm, difficulty breathing, wheezing, and tiredness.

Exercise using balloon blows is the best method for improving respiratory parameters. The diaphragm and ribs expand and rise as a result of the intercostal muscles contracting during the balloon-blowing exercise. As a result, the lungs may now take in oxygen and exhalecarbon dioxide [3].

Conducted a study to assess the effectiveness of balloon blowing exercise on respiratory status among COPD patients at Kongunadu Hospital in Coimbatore. They used a pretest-posttest control group design. The sample was selected using the purposive sampling technique. The sample size was 30 patients, with 15 patients in the experimental group and 15 patients in the control group. An experimental group taught balloon blowing exercises three times a day for five consecutive days by using Borg's dyspneascale and spirometry, respectively. The findings of the study reveal that the experimental group had lung capacities of 0.7 ±0.2 and 1.32 ±0.7, and dyspnea scores of 2.4 ±0.7 were highly significant ($P<0.05$).

The researcher saw during the clinical experience that bronchodilators and steroids were used to treat patients who had been diagnosed with chronic obstructive pulmonary disease. [4] Because balloon-blowing activities are affordable and accessible, the researcher was motivated to investigate their effects on respiratory parameters in patients with chronic obstructive pulmonary disease.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of balloon blowing exercise on respiratory parameters among patient with chronic obstructive pulmonary disease in selected hospital.

OBJECTIVES

- To assess the pretest and posttest score of respiratory parameters among patients with chronic obstructive pulmonary disease in experimental group and control group.
- To evaluate the effectiveness of balloon blowing exercise on level of respiratory parameters among patients with chronic obstructive pulmonary disease.
- To find out the association between pretest score of respiratory parameters among patient with chronic obstructive pulmonary disease in experimental and control group with their selected demographic variables and clinical variables.

HYPOTHESES

H1: There is a significant difference between pre and posttest score of respiratory parameters among patients with chronic obstructive pulmonary disease in experimental group and control group.

H2: There is a significant association between pretest score of respiratory parameters among patients with chronic obstructive pulmonary disease in experimental and control group with their selected demographic variables and clinical variables.

RESEARCH METHODOLOGY

The research approach used for the present study was Quantitative research approach. The research design adopted for the present study was Quasi experimental pretest posttest with control group design. The study was conducted in Holy cross Hospital, Nagercoil. Non probability purposive sampling technique was used to select the sample for this study with the sample size of 60 includes 30 samples for experimental group and 30 sample for control group. Modified respiratory status assessment scale was used to measure the respiratory parameters in both experimental and control group. The collected data was analyzed by using descriptive and inferential statistics.

The study analyzed demographic variables among patients with chronic obstructive pulmonary disease (COPD) in an experimental and control group. The experimental group had a majority of patients aged 66-75 years, with a majority of males (66.7%) and females (33.3%). The majority of patients were married, with a majority of women (30%). The experimental group had a higher percentage of illiterate individuals (33.3%) and a higher percentage of graduates (26.67%). The experimental group had a higher percentage of private employees (33.3%) and a higher percentage of government employees (33.4%). The experimental group had a higher percentage of residents in urban areas (46.7%), a lower percentage of COPD family history (80%), and a lower smoking habit (63.3%).

The study compared the frequency and percentage distribution of clinical variables among patients with chronic obstructive pulmonary disease (COPD) in an experimental group and a control group. [5] The experimental group had a longer duration of COPD (46.7%), with a higher percentage of nebulization (36.7%). The experimental group had a higher frequency of nebulization (36.7%), a higher frequency of meter dose inhaler (63.3%), and a higher position while sleeping (43.3%). The experimental group had a higher percentage of co-morbidities (50%) and a higher frequency of regular follow-up (76.7%).

Table 1: Frequency and Percentage distribution of pretest and posttest level of respiratory parameters among patient with chronic obstructive pulmonary disease in experimental group and control group N= 60

S.No	Respiratory Parameters	Experimental group (n= 30)				Control group (n=30)			
		Pretest		Posttest		Pretest		Posttest	
		f	%	f	%	f	%	f	%
1.	Normal breathing pattern	0	0	4	13.3	0	0	0	0
2.	Mild respiratory problem	13	43.3	18	60	11	36.7	15	50
3.	Moderate respiratory problem	15	50	8	26.7	13	43.3	12	40
4.	Severe respiratory problem	2	6.7	0	0	6	20	3	10

Table 2: Comparison of pretest and posttest level of respiratory parameters among patient with chronic obstructive pulmonary disease in experimental group and control group N=60

					Paired 't' test
Respiratory Parameters	Experimental group (n =30)	Pretst	8.43	3.83	15.28***
		Posttest	4.87	3.31	
	Control group (n =30)	Pretest	8.97	4.58	1.26#
		Posttest	8.56	4.18	

DISCUSSION

The first objective of the study was to assess the pretest and posttest score of respiratory parameters among patients with chronic obstructive pulmonary disease in experimental group and control group.

Table 1 represents that during pretest, in experimental group, level of respiratory parameters among 30 patients with chronic obstructive pulmonary disease 0(0%) had normal breathing pattern, 13 (43.3%) had mild respiratory problem, 15 (50%) had moderate respiratory problem, 2 (6.7%) had severe respiratory problem and in posttest 4(13.3%) had normal breathing pattern, 18 (60%) had mild respiratory problem, 8 (26.7%) had moderate respiratory problem, 0 (0%) had severe respiratory problem. [6] In control group, about pretest among 30 patients with chronic obstructive pulmonary disease 0(0%) had normal breathing pattern, 11 (36.7%) had mild respiratory problem, 13(43.3%) had moderate respiratory problem, 6 (20%) had severe respiratory problem and in posttest 0(0%) had normal breathing pattern, 15 (50%) had mild respiratory problem, 12 (40%) had moderate respiratory problem, 3 (10%) had severe respiratory problem.

The Second objective of the study was to evaluate the effectiveness of balloon blowing exercise on level of respiratory parameters among patients with chronic obstructive pulmonary disease.

Table 2 shows the comparison of mean, standard deviation and paired 't' value on pre and posttest level of respiratory parameters among patient with chronic obstructive pulmonary disease in experimental group and control group. [7] The mean level of respiratory parameters among patient with chronic obstructive pulmonary disease in experimental group is 8.43 in pretest and 4.87 in posttest. The paired 't' value for respiratory parameters is 15.28*** which is significant at $p \leq 0.05$ and highly significant at $p \leq 0.01$, $p \leq 0.001$. The findings showed that balloon blowing exercise are effective in respiratory parameters among patient with chronic obstructive pulmonary disease.

Third Second objective of the study was to find out the association between pretest score of respiratory parameters among patient with chronic obstructive pulmonary disease in experimental and control group with their selected demographic variables and clinical variables

The study found that demographic and clinical variables such as smoking habits and age significantly associated with pretest levels of respiratory parameters in patients with chronic obstructive pulmonary disease. However, other variables like age, gender, marital status, education, income, and COPD history showed no significant association.

NURSING IMPLICATIONS

The investigator has concluded the following implications from the study for nursingpractice, nursing education, nursing administration and nursing research.

RECOMMENDATIONS

- To extrapolate the study findings, a similar investigation involving a larger sample size might be carried out.

- A comparable investigation might be carried out on females with persistent knee and low back discomfort.
- A comparable study can be conducted in different contexts to assess how well balloon blowing exercise works for postural problems, asthma, and lower respiratory infections.

CONCLUSION

The breathing exercise was effective in improving the respiratory parameters among patient with chronic obstructive pulmonary disease. In experimental group, there was a significant association between the demographic and clinical variables such as family history of COPD, duration of COPD, position while sleeping

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